

Comprehensive Evaluation of the Base Station Hospital System *Final Report*

County of San Diego

San Diego, California

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PUBLIC
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A project of this scale could not be accomplished without significant assistance from many key stakeholders, whose participation contributed to the information, findings, and recommendations detailed in this final report. Public Consulting Group LLC's (PCG's) consulting team extends our sincere appreciation to all professionals who work hard daily to provide prehospital and hospital care for the County of San Diego.

Because of the size and complexity of this project engagement, it is not possible to acknowledge each person individually for their contributions; however, there are several key personnel who served as the driving force behind this engagement. We want to sincerely thank the San Diego County EMS Office project team who led this initiative and worked closely with PCG for the duration of the project: Marc Regier, Andrew Parr, Brian Christison, Tareq Haidari, Josh Smith, Melissa Keane, and Brad Trousdale, as well as the County EMS staff that provided information in support of this project.

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- ▶ Alvarado Hospital
- ▶ Ambulance Association of San Diego County
- ▶ American Medical Response - San Diego
- ▶ Base Station Physicians Committee
- ▶ Behavioral Health Advisory Board
- ▶ County Paramedics Agencies Committee
- ▶ ED RNs and MICNs
- ▶ Emergency Medical Care Committee
- ▶ Express Ambulance
- ▶ Falck Ambulance
- ▶ Health Services Advisory Board
- ▶ Health Services Capacity Task Force
- ▶ Hospital Association of San Diego and Imperial Counties
- ▶ Kaiser Permanente
- ▶ Lakeside Fire Protection District
- ▶ McAlister Institute
- ▶ Medical Audit Committee
- ▶ Mercy Air
- ▶ North County Fire Protection District
- ▶ Oceanside Fire Department
- ▶ Palomar Medical Center
- ▶ Paradise Valley Hospital
- ▶ Prehospital Audit Committee
- ▶ Prehospital EMS Providers
- ▶ Rady Children's Hospital
- ▶ REACH Air Medical Services
- ▶ San Diego Association of Prehospital Professionals
- ▶ San Diego County Fire Chiefs Association (SDCFCA)
- ▶ San Diego Health Connect
- ▶ Scripps Memorial Hospital La Jolla
- ▶ Scripps Mercy Hospital San Diego
- ▶ SDCFCA EMS Section
- ▶ Sharp Grossmont Hospital
- ▶ Sharp HealthCare
- ▶ Sharp Memorial Hospital
- ▶ Trauma Directors and Managers
- ▶ Tri-City Medical Center
- ▶ UC San Diego Health
- ▶ UCSD Medical Center Hillcrest

SECTION 1: INTRODUCTION & PROJECT OVERVIEW

1.1 – Executive Summary

On November 17, 2020, and February 9, 2021, the San Diego County Board of Supervisors directed the County Chief Administrative Officer to develop a plan for a comprehensive evaluation of the base station hospital system and trauma center catchment area designations, which included a recommendation to contract with a consultant.

As the designated Local Emergency Medical Services Agency (LEMSA), the San Diego County Emergency Medical Services Office (County EMS) is responsible for ongoing oversight of the Emergency Medical Services (EMS) system. This oversight includes the designation of base station hospitals, trauma centers, and trauma center catchment areas. As a region, San Diego County offers a robust system of emergency, specialty, and trauma medical care through its cooperating hospitals. The County contains a well-organized EMS delivery system that includes fire department first responder agencies, fire department ambulance services, and private ambulance providers.

In response to the recommendations made by the County Board of Supervisors, a request for proposals (RFP) process was led by County EMS beginning July 29, 2022, and ending August 29, 2022. Public Consulting Group (PCG) LLC was awarded a contract for the study in December 2022. Over the next twelve months, County EMS and PCG conducted a comprehensive evaluation of the County base station hospital system and trauma center catchment area designation. The project scope of work included:

- ▶ conducting community listening sessions and interviews with key stakeholders, health systems, and the EMS community,
- ▶ reviewing and evaluating the current base station hospital system and trauma center catchment areas,
- ▶ analyzing population data and projected regional growth,
- ▶ researching current structure in San Diego County and leading practices and models used by other jurisdictions, and
- ▶ providing recommendations in a comprehensive, evidence-based final report, including a cost/benefit analysis or other multidimensional framework of all options.

All activities conducted by PCG were designed to emphasize equity across San Diego County communities and ensure access to timely and appropriate health services. Listed below are the findings and recommendations for the County of San Diego's consideration regarding the base station hospital (BSH) system that provides medical direction and guidance to the EMS system paramedics. Additional details regarding the findings and recommendations are included in **Section 9** of the report.

1.1.1 – Findings Overview

There were several findings identified regarding the various components of the BSH system, as well as common themes expressed by both prehospital and hospital EMS stakeholders from the executive/administrator and the healthcare provider perspectives. The consultants used a strengths, challenges (weakness), opportunities, and threats (SCOT) analysis approach to stakeholder interviews, listening sessions, and survey instruments. The opinions of the BSH system SCOTs varied based on the participant's EMS system affiliation: prehospital or hospital

and administrator or healthcare provider. In addition to stakeholder feedback, data analysis of computer-aided dispatch information and hospital base records was completed. BSH system feedback opportunities were provided through over 100 EMS stakeholder (in-person or virtual) interviews, 19 in-person or virtual listening sessions, and over 300 BSH system survey responses. Based on the feedback provided by EMS stakeholders the consultants identified common themes for the SCOT analysis based on the frequency of specific responses. Some feedback was factually verifiable while some feedback was based solely on BSH system perceptions and unable to be validated. Listed below are the findings that were mentioned the most.

1.1.1.1 – Strengths

- ▶ San Diego benefits from a mature healthcare delivery system with established protocols, contributing to efficient and effective care.
- ▶ Paramedics value collaboration with MICNs on critical incidents.
- ▶ Effective communication and collaboration exist between BSHs and paramedics.
- ▶ MICNs are well-trained and provide a depth of medical knowledge and support.

1.1.1.2 – Challenges

- ▶ The requirement that all 9-1-1 system ALS calls require base station contact can be challenging due to the high volume of calls and limited MICN availability.
- ▶ Paramedics “base shop” because of delays with contacting a BSH.
- ▶ The MICN process is labor intensive (paper log; BSHR entry).
- ▶ MICNs can only handle one call at a time.
- ▶ Inconsistencies between MICNs regarding radio reports and documentation of medical direction provided.
- ▶ There is a lack of technological alternatives relying on the current radio system.
- ▶ Decreased paramedic attendance at BSH educational programs.
- ▶ Challenges related to data collection and management, with the County EMS Office not receiving 100% of ePCR data from EMS agencies.

1.1.1.3 – Opportunities

- ▶ Reduce radio traffic and contact base hospitals only for essential medical direction needs.
- ▶ Expand standing orders to reduce the need for base station calls.
- ▶ Leverage technology like apps for data transmission and real-time hospital status updates.
- ▶ Move towards a centralized medical direction system to enhance efficiency and consistency.
- ▶ Explore opportunities to unify, streamline, and improve coordination with paramedics, which may include a centralized base station that acts as a countywide traffic controller for ambulances. This system can balance patient loads, manage resources efficiently, and potentially offer telemedicine services.
- ▶ Expand community paramedicine and telehealth programs to alleviate strain on the system.
- ▶ Establish direct communication channels between EMS providers and receiving hospitals, bypassing the need for a base station intermediary.

1.1.1.4 – Threats

- ▶ Resistance to change by some stakeholders representing hospital providers.
- ▶ Concerns with BSHs investigating themselves regarding prehospital QA/QI complaints.
- ▶ Some stakeholders perceive the Pre-PAC/PAC/PEARLS process as punitive.
- ▶ The perception by paramedics that they are not represented in committees and decision-making.
- ▶ Transitioning to a single base station system was perceived by some stakeholders as a threat to the BSH system.
- ▶ Distrust between different parts of the system.
- ▶ BSH physicians are not perceived as familiar with the County EMS system policies and protocols.

1.1.1.5 – Electronic Base Hospital Record Analysis Summary

A comprehensive analysis of the electronic base hospital records (eBHR) from 2018 to 2022 was completed and the detailed analysis is contained in **Section 4** of this report. A summary of key findings include:

- ▶ In 2022 there were 266,649 BSH calls made, representing a 13% increase in calls since 2018.
- ▶ BSHs provided medical direction for approximately 14% (36,243) of all BSH system calls in 2022.
- ▶ BSHs rerouted less than approximately 1% (0.9%) of patient transports to their BSH when another receiving hospital was initially requested.
- ▶ Individual MICN documentation of calls for “medical direction provided” is inconsistent.
- ▶ The peak call time for 12-hours is between 0900 – 2100 and 1100 – 1500 for a 4-hour peak time period.

1.1.2 – Recommendations

There were several recommendations developed based on the San Diego County EMS system stakeholder engagement consisting of interviews, listening sessions, and an electronic survey. In addition, industry standards and best practices were also instrumental in developing recommendations for the County base station hospital system. The recommendations were grouped into five areas related to the base station hospital system functions as well as a recommendation for a single standalone Emergency Medical Command and Control Center (EMCCC). Listed below are the recommendations for the County’s consideration.

1.1.2.1 – General Recommendations

1. **Increase Collaboration and Transparency:** Foster open communication and collaboration among all stakeholders to build trust and ensure transparency in decision-making processes.
2. **Optimize BSH Radio Reports:** Reserve BSH radio reports for incidents requiring medical direction or orders, alleviating capacity strain and preventing "base shopping" by paramedics.

3. **Direct Notification to Receiving Hospitals:** Implement a system for direct transmission of brief alert/notification reports to receiving hospitals for all transports, relieving the burden on BSH MICNs.
4. **Enhance EMS Education Coordination:** BSHs should coordinate education/training with EMS provider agencies to enhance EMS education and support.
5. **Include EMS Field Providers in Decision-Making:** Ensure representation of EMS field providers in decision-making committees to incorporate their perspectives into EMS system decisions.
6. **Clarify Decision-Making Processes:** Improve understanding of EMS system decision-making processes regarding protocols and directives among stakeholders to enhance transparency.
7. **Designate EMS Liaisons in Hospitals:** All hospitals should designate EMS Liaisons, ideally paramedics employed by the hospitals, to facilitate communication and coordination with EMS agencies, provide patient care follow-up, and offer continued education.
8. **Provide Real-Time Hospital Status to EMS Field Personnel:** Implement a system for providing real-time updates on ED availability to EMS field personnel to streamline communication and enhance efficiency.
9. **Consider County EMS for Patient Load Leveling:** Explore the use of County EMS staff for patient load leveling management during high call volumes to balance patient transportation and minimize impact on ambulance offload times and ED overcrowding.

1.1.2.2 – Medical Direction Recommendations

1. **Pediatric Facility for Primary Medical Direction:** Evaluate the feasibility of designating a pediatric facility as the primary medical direction resource for pediatric patients, addressing field providers' need for specialized pediatric medical guidance.
2. **Establish a Core Group of Emergency Medical Physicians:** Create a dedicated group of emergency medical physicians to consistently provide medical direction to paramedics, ensuring familiarity with County EMS policies and protocols for improved consistency.
3. **Expand Standing Orders and Review Medical Direction Requirements:** Review existing requirements for medical direction and consider implementing standing orders where appropriate, based on feedback from prehospital and hospital EMS stakeholders, to streamline protocols and enhance efficiency.
4. **Utilize Emergency Medical Fellows for Medical Direction:** Explore the possibility of involving emergency medical fellows from UCSD in providing medical direction to paramedics, leveraging their training and expertise to support the EMS system, while addressing potential concerns from hospital stakeholders about influence on patient destination decisions.

1.1.2.3 – Quality Assurance/Improvement Recommendations

1. **Incorporate EMS Agencies' QI Plans into County QA/QI Program:** Request and review EMS agencies' QI plans, incorporating them into a collaborative QA/QI system involving EMS provider agencies, BSHs, and County EMS, focusing on EMS performance indicators from national and state initiatives.

2. **Ensure Understanding of Legal Protections:** Educate EMS provider agencies on California Evidence Codes 1157 & 1157.7 to ensure they understand the legal protection provided for QA/QI activities, addressing concerns about data sharing and discovery.
3. **Expand QA/QI Activities to Receiving Hospitals:** Expand BSH QA/QI activities to include participation from receiving satellite hospitals, fostering collaboration, and improving feedback loops between hospitals and EMS agencies.
4. **Define Prehospital Patient Care (Pre-PAC) Process:** Establish clear guidelines and procedures for the Pre-PAC process, addressing concerns raised by prehospital providers and ensuring consistency in prehospital patient care assessment.
5. **Consider Name Change to Clarify Committee's Purpose:** Consider renaming the PAC to EMS QA Committee to better reflect its purpose and focus on quality assurance within the EMS system.
6. **Facilitate Transcript/Recording Sharing for QA Purposes:** BSHs should provide transcripts or recordings of paramedic calls to agency QA staff for internal QA/QI activities, addressing concerns about HIPAA while ensuring necessary information exchange through Business Associate Agreements (BAA).

1.1.2.4 – Technology Recommendations

1. **Transition to Telephone Contact with Backup Radios:** Implement a telephone system between BSHs and prehospital providers, utilizing radios as a backup, ensuring consistent communication. Maintain radio contact for areas with limited cell phone coverage.
2. **Adopt App-Based Communication Tools:** Introduce app-based communication tools like Pulsara™ or Twiage™ to streamline patient care coordination and enable live video calls between prehospital personnel and medical staff.
3. **Expand SAFR EMS Hub for Real-Time Data Transmission:** Collaborate with San Diego Health Connect to expand the SAFR EMS Hub for real-time data transmission between EMS providers and hospitals, enhancing patient outcomes and communication efficiency.
4. **Encourage ECC Dispatch Triage with Technology Integration:** Encourage Emergency Communication Centers to integrate dispatch triage apps like Good Sam or MD Ally to connect low-acuity patients with healthcare providers, reducing system demand without dispatching first responders.
5. **Explore Tele911 and Other Telehealth Solutions:** Investigate Tele911 and similar mobile apps integrating telehealth into EMS systems, allowing paramedics to conduct physician telehealth visits instead of ED transportation, alleviating ED overcrowding.
6. **Engage San Diego 211 for Resource Exploration:** Initiate discussions with San Diego 211 to explore available services and resources, reducing demand on EMS and hospital systems through non-emergency medical transportation and social services.
7. **Establish a Technology Committee/Advisory Group:** Form a technology committee with stakeholders from prehospital and hospital providers to identify and implement technologies enhancing EMS system delivery in San Diego County.

1.1.2.5 – Data Recommendations

1. **Ensure Compliance with LEMSIS Reporting Requirements:** Require EMS agencies to provide minimum ePCR data to meet San Diego LEMSIS reporting compliance, as mandated by California Health and Safety Code 1797.227 and County EMS Policy S-601, fostering participation and data integrity.

2. **Establish Routine QA Data Reporting:** Implement a requirement for EMS agencies to routinely provide QA data, collaborating with County EMS to develop QA/QI metrics for regular reporting, reflecting the current landscape where most agencies have dedicated QA/QI staff.
3. **Provide Clear Definitions for the eBHR Data Elements:** To eliminate inconsistencies in documentation, specifically define what criteria is used to indicate “medical direction” and when MICNs should indicate that “medical direction” is provided.
4. **Include Location Information in Trauma Registry Data:** Enhance trauma registry data by including location information, preferably latitude/longitude correlation, to facilitate correlation with dispatch data and develop GIS heat maps, improving analysis and planning.
5. **Incorporate Air Ambulance Transport Data into Trauma Registry:** Ensure inclusion of air ambulance transport information in trauma registry data to provide a comprehensive view of trauma cases, enhancing data accuracy and analysis for Trauma Centers.

1.1.2.6 – Transition to a Single Standalone Emergency Medical Command & Control Center (EMCCC)

1. **Establish an EMS stakeholder group to develop a 3-year transition plan to establish a single Emergency Medical Command and Control Center (EMCCC) for medical direction, MCI patient distribution, patient load leveling, patient destination guidance, and other services to enhance the delivery of EMS throughout San Diego County.** This recommendation needs both significant EMS system stakeholder and non-EMS stakeholder involvement to develop a comprehensive EMCCC. The pros and cons should be thoroughly explored including the impact on EMS delivery and hospital ED services.
2. **Explore funding options including state and federal grants, service fees, and other revenue options.** The responsibility of funding a single EMCCC in support of the County EMS system is a primary concern for successful implementation and sustainability into the future. Additional details on this recommendation are provided in *Section 9* of this report.

1.2 – Study Methodology

The County of San Diego released RFP #11886 for the Consultant Services for Comprehensive Evaluation of the Base Station Hospital System and/or Trauma Center Catchment Area Designations on July 29, 2022. Public Consulting Group LLC (PCG) was notified of the intent to award the project to the firm on December 16, 2022. To begin, PCG and officials from the San Diego County EMS Office held a project kick-off on February 13, 2023, which entailed reviewing the RFP's scope of work and the comprehensive project plan. PCG staff for this project included three operations staff for project oversight and six subject matter experts, along with additional support from PCG data analysts as needed.

The PCG team was onsite for multiple days on five separate occasions to conduct in-person interviews, in-person listening sessions, MICN observations at all base hospitals, and ride-along observations with the Oceanside Fire Department, the San Diego Fire-Rescue Department, AMR, and Falck Ambulance. In addition to these activities, onsite visits and observations of the San Diego County and San Diego Fire-Rescue emergency communication centers were completed. A separate trip was made, along with County EMS staff, to the Los Angeles County LEMSA's Medical Alert Center (MAC). Interviews with LA County LEMSA staff were conducted as well as a tour and demonstration of the MAC's operations.

1.2.1 – Approach to the Scope of Work

To maximize stakeholder engagement and obtain input representing diverse perspectives, the scope of work included:

- ▶ conducting multiple in-person and virtual listening sessions for EMS stakeholders and the general public,
- ▶ interviewing EMS system stakeholders, and
- ▶ releasing three surveys including an EMS system stakeholder survey, a public input survey, and a comment collection form for general comments related to the current base station hospital system and trauma center catchment area designations.

Throughout the project, state, local, and national EMS system research was conducted to identify best practices, EMS system alternatives, and national standards and guidelines for EMS systems.

PCG maintained ongoing contact with the San Diego County EMS Office staff during each phase of this project by attending two virtual meetings a week. The meeting included executive members from each team, and the second meeting included all members from both parties. The meeting frequency was changed as the project progressed.

Although two separate reports were requested by County EMS, both study areas included in the RFP were conducted concurrently. Many of the key stakeholders for the base station hospital system and the trauma system were the same.

1.2.1.1 – Project Team

Chief Ken Riddle brings over 40 years of emergency service industry knowledge and experience to this project as its Project Advisor and as a Lead Subject Matter Expert within the fire/EMS industry. Ken holds multiple fire service credentials, has prior clinical and administrative experience in EMS system delivery, and is also credentialed as an Executive Fire Officer (EFO). His background includes extensive executive chief officer experience within the fire service overseeing all levels of operations within a large, metropolitan fire/EMS system. In addition to this experience, Ken has been providing fire and EMS consulting services for over 30 years.

Chief Tim Nowak brings 20 years of emergency service industry knowledge and experience to this project as a Lead Subject Matter Expert within the fire/EMS industry. Tim holds a Bachelor of Science degree in Fire Science, an Undergraduate Certificate in Human Resource Management, an Associate of Applied Science degree as a Fire Protection Technician, and a Technical Diploma as an EMT-Paramedic. He is a Nationally Registered Paramedic (NRP) with two decades of clinical and instructional experience. His background includes prehospital and hospital-based clinical care, training delivery and development, quality assurance and data management, and protocol development for EMS agencies ranging in rural, suburban, and urban demographics throughout four states. As an experienced chief officer, he brings executive-level experience overseeing the areas of EMS administration and compliance, operations, special operations and emergency preparedness, logistics and supply chain management, accreditation, policy development, training, quality assurance, and community risk reduction.

John Eric Henry, CEO of Strategic EMS Consulting, brings over 18 years of experience working with ambulance providers and hospital systems to evaluate data and develop key metrics around productivity, growth, and efficiency. Serving as Subject Matter Expert, John Eric provided expertise on the Base Station Hospital System Evaluation components of this project.

Bill Bullard, president of Healthcare Strategists LLC, represents 35 years of experience in emergency services, including trauma, EMS, and emergency preparedness. Bill served as a

Subject Matter Expert specifically focusing on the Trauma Center Catchment Area Designations (TCCAD) report.

Ms. Alina Coffman brings over 15 years of project management experience to this project as its Project Director and as a point of contact for this project's execution. Alina holds a Master of Public Affairs degree and is a certified Project Management Professional (PMP). Her background includes experience in EMS agency cost collection and project management oversight for multiple fire and EMS operational studies.

Ms. Kaitlynn Edwards brings over eight years of administrative and operational support experience to this project as a part of its Project Support team. Kaitlynn holds a Bachelor of Arts degree in English and has experience serving in a project manager role for multiple consulting projects. Her background also includes report copy editing, contract management, project research, and business development.

Ms. Lauren Cantley brings nearly five years of administrative and operational experience to this project as a part of its Project Support team. Lauren holds a Bachelor of General Studies degree in English and has experience serving in a project support role for multiple consulting projects. Her background also includes report copy editing, project research, and business development.

1.2.1.2 – Interviews

The PCG team interviewed over 100 stakeholders, which exceeded the interview requirements within the scope of work. Most interviews were conducted virtually via Microsoft Teams, with a few taking place in person during PCG's first and subsequent on-site visits.

The required interviewees for this project are listed below:

- ▶ Chair and/or Vice Chair (or designee) of the Base Station Physicians Committee
- ▶ Chair and/or Vice Chair (or designee) of the Medical Audit Committee
- ▶ Chair and/or Vice Chair (or designee) of the Emergency Medical Care Committee
- ▶ Chair and/or Vice Chair (or designee) of Prehospital Audit Committee
- ▶ Chair and/or Vice Chair (or designee) of the Ambulance Association of San Diego County
- ▶ A representative of the San Diego County Fire Chiefs Association (SDCFCA)
- ▶ A representative of the EMS Section of the San Diego County Fire Chiefs Association (SDCFCA)
- ▶ President and/or Vice President of the Hospital Association of San Diego and Imperial Counties
- ▶ Hospital Leader Selectees
- ▶ Chair and/or Vice Chair (or designee) of the County Paramedics Agencies Committee (CPAC)
- ▶ Chair and/or Vice Chair (or designee) of the Health Services Capacity Task Force (HSCTF)
- ▶ A representative from the Behavioral Health Advisory Board
- ▶ A representative from the Health Services Advisory Board

1.2.1.3 – Listening Sessions

PCG conducted listening sessions both in the Spring and Fall of 2023. Five in-person and six virtual listening sessions took place in the Spring of 2023, while five in-person listening sessions took place in the Fall of 2023. The Spring listening sessions were open to all stakeholders and the public, with each session asking participants to list the strengths, challenges, opportunities, and threats of both the base station hospital system (BSHS) and the trauma center catchment area designations (TCCAD). The Fall listening sessions were also open to all stakeholders including the public, with each session listing PCG's initial findings and recommendations for the BSHS and TCCAD and asking participants for feedback. Three additional virtual listening sessions were conducted specifically for the Hospital Association of San Diego and Imperial Counties, the San Diego County Fire Chiefs Association (SDCFCA), and the Ambulance Association of San Diego County.

1.2.1.4 – Surveys

Finally, the PCG team released three anonymous surveys: an EMS system stakeholder survey, a public input survey, and a comment collection form for general comments regarding the project.

- ▶ The stakeholder survey was available from May 19, 2023 - June 30, 2023. 367 responses from County EMS stakeholders were provided.
- ▶ The public input survey was available from August 1, 2023 - September 30, 2023. 30 responses were provided.
- ▶ Finally, the public comment collection form, which was not a requirement of the scope of work, was available from May 12, 2023 - September 30, 2023. No responses were received.

1.2.1.5 – Data

PCG received data from the Trauma Center Registry and Base Hospital Records (eBHR). Computer-aided dispatch (CAD) data was received from the San Diego County EMS system. All data was analyzed as necessary to complete the scope of work for this study. The PCG team utilized GIS data analysis for the trauma and CAD data to determine where most trauma calls originate. The CAD data was also utilized to review wall times, as well as transport and delay times. The availability of comprehensive data from EMS agency patient care records was incomplete due to non-participation from some EMS providers with the local EMS information system (LEMSIS).

1.3 – Final Report Introduction

1.3.1 – Report Structure

This report is organized into nine sections and includes eleven appendices. **Section 1** includes the executive summary of findings and recommendations as well as a project overview. **Section 2** provides specific information regarding the County's geographical diversity and demographics. **Section 3** includes a high-level overview of the County EMS Office and feedback from various County EMS staff members. **Section 4** describes the current base station hospital system and current operations. **Section 5** includes research information on industry standards and best practices related to providing medical direction to EMS personnel. **Section 6** provides information regarding California EMS systems for medical direction and six alternate models for providing medical direction used in other EMS systems. **Section 7** includes information obtained in the EMS stakeholder engagement activities including interviews and listening sessions. **Section 8** includes the analysis summary of survey responses from the EMS stakeholder survey and the public

survey. Finally, **Section 9** contains the consultant's study findings regarding the base station hospital system and recommendations in support of enhancing the BSH system.

1.3.2 – Limitations and Disclaimers

There were minimal limitations to conducting this study. The primary limitation was the lack of comprehensive EMS system data from patient care records (PCR) provided by EMS provider agencies. Only approximately 30 percent of EMS system PCR data was available. There were some challenges with CAD data analysis as multiple CAD systems provide data to County EMS. The findings and recommendations are based on the culmination of EMS system stakeholder opinions, information on the County EMS system, and data analysis of CAD and eBHR data.

***Public Consulting Group LLC (PCG)** is a national fire and EMS consulting firm with experience in providing feasibility studies, data analysis, strategic and master planning, operational reviews, cost reporting analysis, ambulance supplemental payment program design, and professional recommendations for public safety agencies.*



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SECTION 2: SAN DIEGO COUNTY DEMOGRAPHICS

2.1 – Overview

The San Diego County Emergency Medical Services (EMS) delivery system ensures that all residents and visitors have access to exceptional, timely, and patient-centered emergency medical care. ^[11] Multiple public and private organizations provide EMS care to more than 3.3 million residents across 18 cities, 18 federally recognized tribal reservations, 16 major naval and military installations, and the unincorporated areas of the County. ^[12] Emergency Medical Services (EMS) response times can be influenced by various factors, including population demographics and the geographical location within the County. In issuing the request for proposals regarding the base station hospital system and the trauma center catchment area designations, the County of San Diego aimed to better understand the impact of EMS delivery through an analysis of the County's population data and projected regional growth as well as demographic risk factors related to health disparities and the use of EMS. To fully understand the context of this study, it is important to examine these and other factors that could potentially influence the provisions of EMS delivery in the County.

2.2 – Geography

San Diego County is the State of California's second most populated county after Los Angeles County and is the ninth largest county based on land mass in California. ^[13] The County sits along 70 miles of the Pacific Ocean coastline and is home to diverse coastal topography from valleys, hills, and mountains, to the Anza Borrego Desert. The County extends north to Orange and Riverside County, east to Imperial County, and borders Mexico to the south. The entirety of San Diego County encompasses a total of 4,300 square miles. ^[14]

The 2021 San Diego Association of Governments (SANDAG) Regional Plan identified three primary challenges surrounding the San Diego County traffic patterns and transportation system. ^[15] Congestion is one of the challenges and is a result of 79% of commuters driving to and from as single passengers in their vehicles. Additionally, only 12% of low-income residents live within a half-mile of public transport, resulting in a lack of access to transportation for all County residents. Without necessary access to transportation, EMS has the potential to be utilized as a means of transportation versus a source of emergency medical care for individuals living in areas lacking transportation.

Four major interstates run through San Diego County: Interstate 5 (I-5) and Interstate 805 (I-805) along the west, Interstate 15 (I-15) which passes through the County from the north, and Interstate 8 (I-8) which runs towards the southern part of the County from east to west. California freeways CA-94, CA-15, CA-163, and CA-274 intersect in the southwest part of San Diego County and split out towards the northwest and southeast. The major roadways in the southwest align with the most populous areas of the County. Towards the east of the County, there are three California freeways: CA-76, CA-78, and CA-79, with no major interstate traffic.

Traffic and climate change are two complex and interrelated phenomena. While there is no direct correlation between the two, climate change can have an impact on traffic and vice versa. According to the *San Diego County Climate Action Plan Update*, transportation is the largest source of greenhouse gas emissions in the county, accounting for approximately 50% of total emissions. ^[16] The plan aims to reduce these emissions by promoting sustainable transportation options such as biking, walking, and public transit.

In addition, climate change can have an impact on traffic patterns. For example, extreme weather events such as heavy rain or snow can cause road closures and traffic congestion. ^[17] The San Diego Foundation report states that climate change could lead to more frequent flooding, which could disrupt transportation and lead to property damage. ^[18]

It is important to note that the relationship between climate change and traffic is complex and multifaceted. While there is no direct correlation between the two, they are both important issues that require attention and action and can impact the delivery of EMS. ^[19]

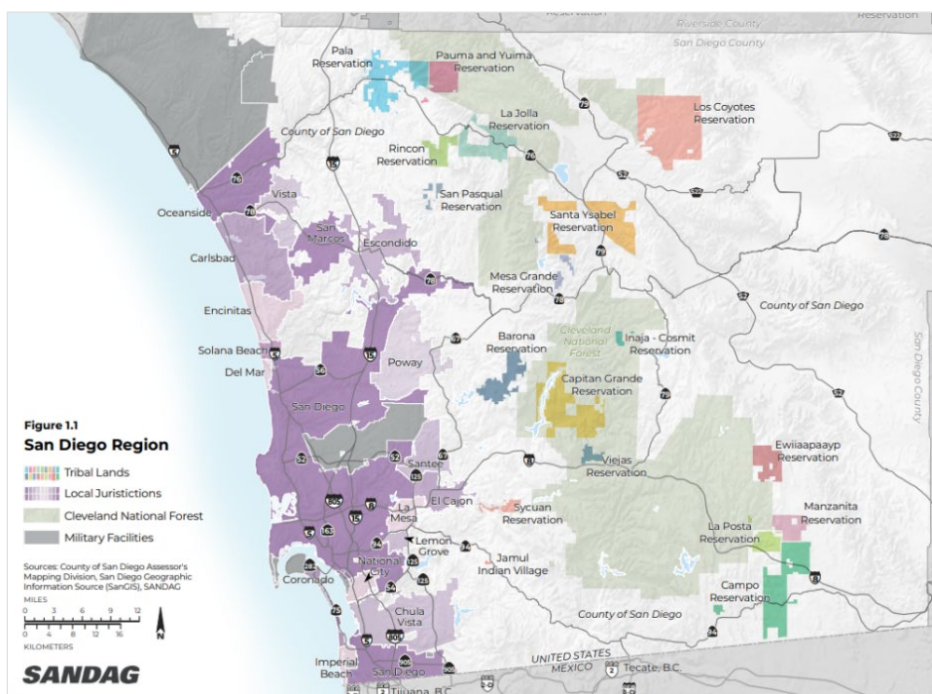


Figure 2.1: Map of San Diego County

2.3 – Demographics

The fifth-largest county in the nation, San Diego County is estimated to have a population of 3,298,634 residents based on the 2020 U.S. Census. ^[20] The County's population is ethnically diverse with a trend of population growth for certain ethnic groups. As of 2021, 43% of San Diego County's population was White (Non-Hispanic), 11.8% of the population was Asian, 4.4% was Black, and 0.2% were Native American. Additionally, 35% of San Diego County's population is Hispanic. **Figure 2.2** shows the demographic breakdown across age ranges and ethnicities.

The Community Health Statistics Unit (CHSU) of the County of San Diego's Health and Human Services Agency provides demographic and health data at the municipality level to help planners, community partners, jurisdictions, and the public identify needs and focus areas. ^[21] The demographic profiles include demographic characteristics of specific populations in San Diego County, including race/ethnicity distributions, school enrollment, educational attainment, income, occupation, housing, and other social determinants of health (SDOH). ^[22] Many of these factors have been implicated as the roots of health disparities. CHSU aids in effective decision-making and helps to identify opportunities for preventive efforts using data reporting, visualizations, and

predictive analytics. CHSU also provides or refers persons to available local, state, and national statistics for comparison. [23]

The CHSU has designated six specific geographical regions (Central, East, North Central, North Coastal, North Inland, and South) and 41 subregional areas across all regions. Various information is collected related to healthcare demographics at the municipality and unincorporated County levels. Each region has a balanced portion of the County's overall population.

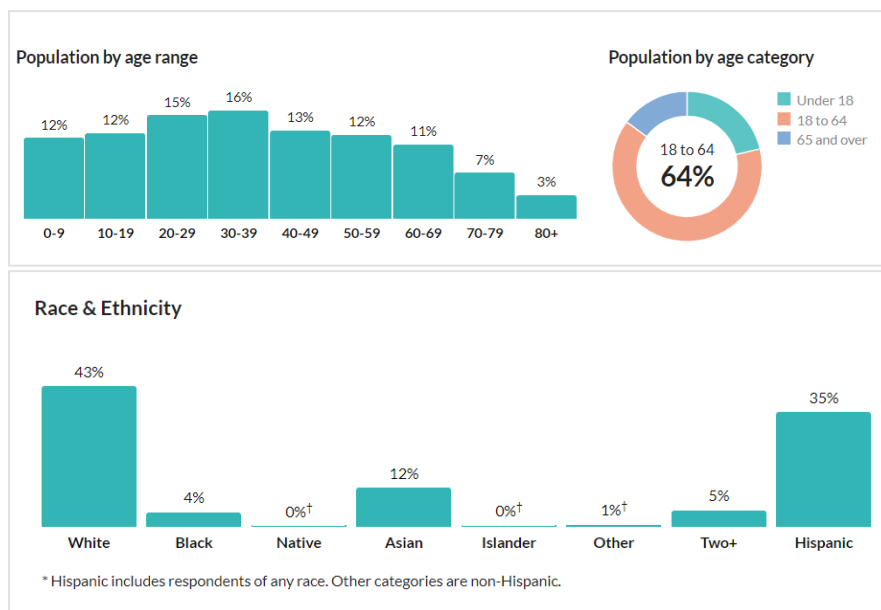


Figure 2.2: Demographic Breakdown of San Diego County

Further examining San Diego County's population statistics, all regions have similar populations despite significant differences in the geographic area as demonstrated in the 2021 Region SRA Demographic Profiles. [24] **Figure 2.3** provides a map of San Diego County's regions by area.

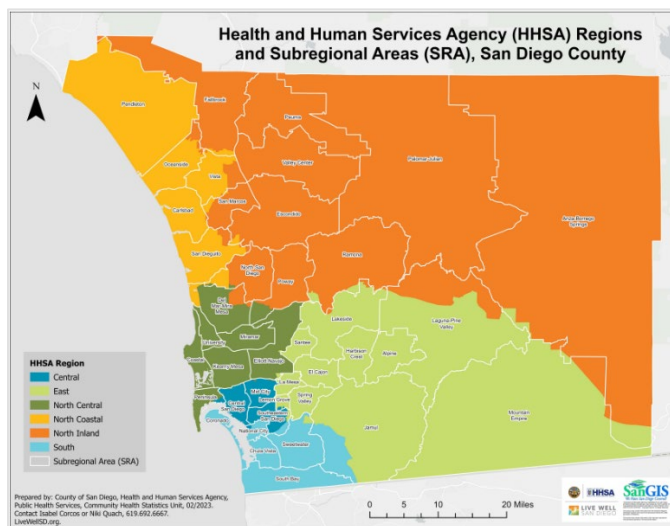


Figure 2.3: Map of HHSA Regions and Subregional Areas

As shown in **Figure 2.3** the South, Central, and East regions lie closest to the Mexico border. The proximity to the border has an impact on the population in these three regions as immigration from Mexico into San Diego County has been on an upward trend. **Figure 2.4** shows the percentage of the County's population by region.

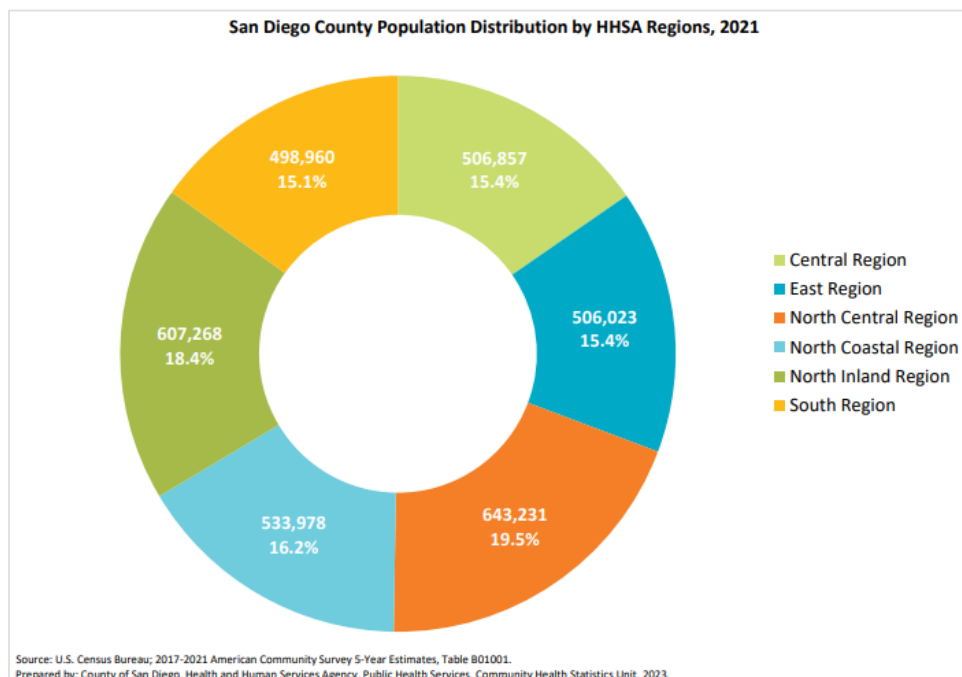


Figure 2.4: Population Distribution by Area

The Central, North Central, and South regions have condensed populations in small areas. These regions also have the highest population of Hispanic persons. In the Central region, 41.3% of the population is Hispanic, and 62.1% of the South region is Hispanic. Additionally, the largest number of Black persons live within the Central region (51,894), making up 10.2% of the region's population. 43% of San Diego County's population is White. The Central and South regions are the two regions in the County where the percentage of White persons is lower than the County-wide percentage. The Central region is home to a 30.7% White population, with the South region following with a 17.5% White population.

2.4 – Health Disparities

Many factors affect the health outcomes of an entire community and specific populations within that community. According to the Center on Policy Initiatives, top demographic trends in San Diego County demonstrate worsening inequalities from 2019 to 2021, with the highest prevalence of inequality centering in the City of San Diego, which is in the Central region. Key findings highlighted worsening income inequality, with 11.7% of incomes in the City of San Diego below the federal poverty level, and Black and Latinx people experiencing higher rates of extreme poverty. In 2021, 24.7% of Black and 15.1% of Latinx individuals were living in poverty in the City of San Diego, compared to 9% of White individuals.

In San Diego County, individuals living in rural areas have higher rates of injury compared to those living in urban areas. According to the 2022 Health Equity Report Series Executive Summary, rural residents were found to have more fall-related injuries such as hip fractures, motor-vehicle

injuries, and self-inflicted injuries than urban residents. ^[25] Urban residents face a higher burden of behavioral health-related disorders including PTSD, depression, and impulse disorders. It is important that EMS providers understand the call types, or injury patterns, that community members are most likely to experience in each region of the County. While both a hip fracture and a behavioral disturbance can be medical emergencies, they involve very different resources and needs from the health system. Understanding the most prevalent EMS needs allows providers to be more aware of the resources available to those community members who may need them the most.

In 2021, hospital data from the Community Health Statistics Unit identified 11,594 unique individuals discharged from the Emergency Department who experienced homelessness. ^[26] The average number of visits for these individuals is 3.1 times per year, which resulted in the total number of Emergency Department discharges for individuals experiencing homelessness in 2021 at 35,790. Homeless individuals are often identified as repeat 9-1-1 callers and tend to have emergencies and non-emergencies that are a result of a lack of access to preventative medical care, as well as a lack of understanding, education, or communication as to what other resources may be available to provide them with care.

Socio-economic status (SES) has been identified as having a direct impact on health outcomes in the County. Areas with the lowest SES are the Mid-City area in the Central region, National City and Chula Vista in the South region, Pendleton in the North region, and Palomar-Julian, Anza-Borrego Springs, and Mountain Empire in the East and North Inland regions. Individuals in the lowest SES group were found to have the highest burden of poor health outcomes compared to other SES groups. Poor health outcomes include the burden of chronic disease, assault, motor-vehicle injuries, self-inflicted injuries, poor sexual health outcomes, and poor behavioral health outcomes including alcohol and substance-use-related disorders. The level of SES distribution across the County highlights that certain subregional areas may require increased access to healthcare services and education. Additionally, there are areas with the lowest SES both by major interstates and in harder-to-access areas. This may have an impact on accessibility to treatment and overall health outcomes for preventable disease and injury.

San Diego County has identified 39 zip codes as Health Equity Zip Codes. All areas mentioned above with the lowest socio-economic statuses are included in this list. An analysis of San Diego County ambulance transport data by zip code revealed that four of the above areas with the lowest SES are experiencing transport times that are significantly higher than the county average of 15.20 minutes. **Table 2.1** below shows the average transport duration by zip code.

Area	Zip Code	Average Transport Duration (Minutes)
National City	91950	14.56
Chula Vista	91911	14.71
San Diego County	N/A	15.20
Mid-City	92105	16.32
Pendleton	92055	43.18
Mountain Empire	91906	51.47
Palomar-Julian	92070	58.21
Anza-Borrego Springs	92004	64.70

Table 2.1: Average Transportation Duration by Zip Code

National City, Chula Vista, and Mid-City are areas with the lowest SES, but they experience transport duration similar to the County average. The lower average transport duration for these

three areas is a result of close proximity to major hospitals in the Central and South regions and access to multiple interstates, allowing for high mobility to emergency medical services.

Pendleton, Mountain Empire, Palomar-Julian, and Anza-Borrego Springs experience the opposite and are impacted by higher average transport durations. These four areas have decreased access to emergency departments due to their location and low mobility. San Diego County's major hospitals are clustered in the Central and North Central regions, causing limited access to emergency care for individuals living in more rural areas of the County. Decreased access to emergency medical services poses an unequal threat to the overall health of residents living in these areas.

The U.S. News *Healthiest Communities Rankings 2022*, which is an evaluation created in partnership with data gathered and analyzed by the University of Missouri Extension Center for Applied Research and Engagement Systems, included an equity assessment for San Diego and other counties nationwide. ^[27] This equity assessment incorporated income, education, health, and social equality determinants of health to further understand San Diego County's residents' opportunity to live a healthy life. The County received an overall equity score of 37 out of 100. A further breakdown revealed an education equity score of 19, a health equity score of 45, an income equity score of 56, and a social equity score of 60. San Diego County's overall scores place them at 463 out of 500 counties included in the U.S. News Healthiest Communities rankings.

Figure 2.5 highlights three disparities in San Diego County related to equity. The scores are recorded on a scale of zero to one, with a lower score indicating a smaller gap in the disparity. Both the racial disparity in education attainment score and the premature death disparity index score are higher than the national median (the higher the value, the worse the indicator).

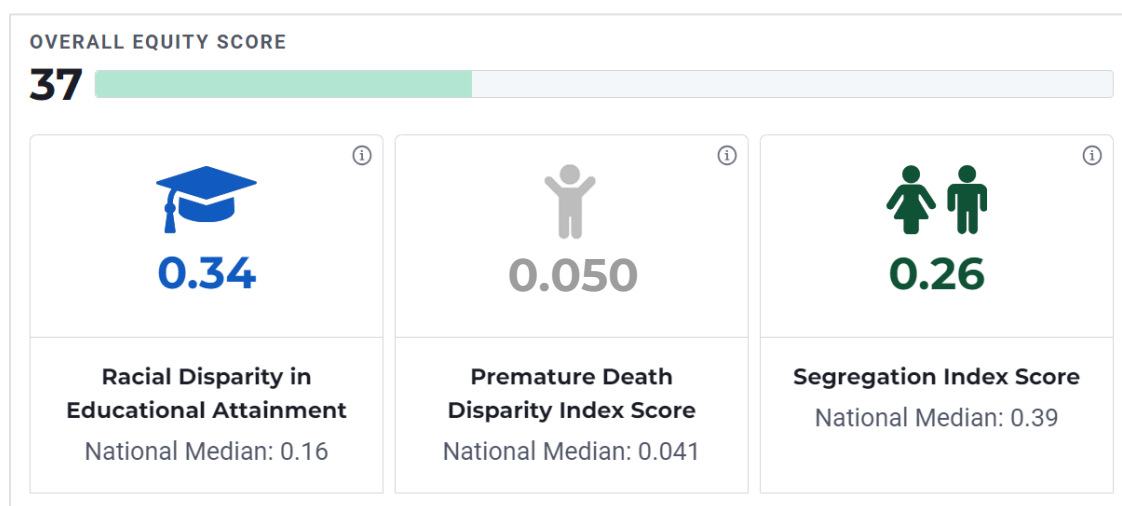


Figure 2.5: San Diego County Equity Score

2.5 – Regional Growth

According to the US Census, San Diego County's population grew 8.54% (264,317) from 2010 to 2023 and had an estimated population of 3,359,630 in 2022 with a growth rate of 0.61% from 2022 to 2023. The annual growth rate has stayed between 0.61-0.66% since 2010, decreasing by ~0.01 every two to three years. The population of San Diego County is expected to steadily

grow in upcoming years, with forecasts released by the San Diego Association of Governments (SANDAG) estimating the County population to rise to 4.38 million people by 2050. ^[28]

Year	Population Estimate	Growth Rate
2020	3.3M	0%
2030	3.54M	0.73%
2035	3.85M	1.75%
2040	4.16M	3.94%
2050	4.38M	0.53%

Table 2.2: SANDAG Population Forecasts

Housing forecasts reflect the steady growth of the County's population. The Series 14 Regional Growth Forecast conducted by SANDAG identified Total Housing Unit estimates by jurisdiction from 2016-2050, with the 2016 housing unit count as the baseline. ^[29] It is estimated that the number of housing units in the region will increase from 1,190,555 units in 2016 to 1,471,286 units in 2050. This estimate reflects a 280,731-unit change, or a 23.6% increase, in housing units.

Jurisdiction	2016	2025	2035	2050	Change (2016-2050)	
					Number	Percent
Carlsbad	46,152	49,299	51,552	52,494	6,342	13.7%
Chula Vista	82,794	89,448	96,765	114,346	31,552	38.1%
Coronado	9,577	9,592	9,641	9,716	139	1.5%
Del Mar	2,611	2,615	2,641	2,668	57	2.2%
El Cajon	36,012	36,751	39,012	40,464	4,452	12.4%
Encinitas	26,040	26,703	27,249	27,746	1,706	6.6%
Escondido	48,462	54,551	56,647	58,201	9,739	20.1%
Imperial Beach	9,756	10,506	10,765	11,027	1,271	13.0%
La Mesa	25,760	26,455	30,852	31,151	5,391	20.9%
Lemon Grove	9,032	9,349	9,617	9,821	789	8.7%
National City	16,641	18,297	20,456	20,901	4,260	25.6%
Oceanside	65,851	69,225	72,049	72,953	7,102	10.8%
Poway	16,606	17,243	17,331	17,640	1,034	6.2%
San Diego	531,423	583,765	661,826	686,843	155,420	29.2%
San Marcos	30,539	34,250	36,113	42,050	11,511	37.7%
Santee	20,525	21,683	24,064	24,611	4,086	19.9%
Solana Beach	6,497	6,605	6,749	6,854	357	5.5%
Vista	32,195	34,305	36,431	37,074	4,879	15.2%
Unincorporated	174,082	187,565	200,093	204,726	30,644	17.6%
Region	1,190,555	1,288,207	1,409,853	1,471,286	280,731	23.6%

Figure 2.6: SANDAG Housing Unit Forecast

2.6 – Current Events

San Diego County has faced a continual increase in opioid use and related deaths since 1999, in comparison to a decrease in non-natural deaths including suicide, motor vehicle accidents, firearm accidents, and homicide. Since 2013, the Prescription Drug Abuse Medical Task Force has worked with local County entities to combat opioid-related deaths focusing on prescription

drug abuse. Unintentional deaths due to prescription drug abuse were decreasing in 2013, in part due to the Task Force's efforts. Prescription drug abuse and deaths in the County continued to decrease through 2016 when the Centers for Disease Control and Prevention (CDC) released guidelines for prescribing opioids to patients. After 2016, prescription opioid-related deaths in San Diego County continued to decline, but illicit opioid-related deaths became increasingly prevalent. In 2021, the rate of fentanyl-caused deaths in San Diego County reached a record high at 814 deaths per 100,000 residents. ^[30] The County of San Diego is addressing the opioid epidemic through programmatic and campaign strategies. As of March 2023, a public education campaign, a naloxone distribution program, and a strategic plan for emergency departments are all in development.

EMS within the County is being further enhanced to address community health needs for hard-to-serve populations to reduce possible health disparities. The first phase of a three-stage plan began in 2021 and focused on community health and injury prevention in San Diego County's rural areas. ^[31] This initiative focused on residents in rural areas who were older, had a lower income, and did not speak English as their first language. The program offered training to the targeted residents on CPR and the Stop-the-Bleed program, both of which promote survival in emergency situations before first responders arrive on the scene. Another key feature of the program focused on the Mountain Empire subregion community and provided residents with in-home medical support and coordination with primary care physicians to promote support of vulnerable residents and aid in reducing readmission to the Emergency Department.

The second phase of the plan will focus on triage to alternate destinations with the goal of providing residents with better healthcare services on-scene and in non-hospital facilities. This second phase will be a critical step in implementing a community paramedicine model in San Diego County that addresses the needs of vulnerable populations. Under this phase, there will be efforts to transport medically stable patients with behavioral health needs to appropriate facilities including behavioral health service centers and rehabilitation centers. The third phase of this plan will address long-term public health needs in the county which will be jointly addressed by County Fire and HHSA. These needs will be addressed through evaluating medically appropriate practices based on acuity and fiscal sustainability for providers and patients. Areas to be explored include hospital readmission and discharge follow-up, treatment of low-level medical needs outside of the hospital, and telehealth visits.

UC San Diego Health hospitals in the San Diego region are witnessing a concerning surge in injuries resulting from falls from the border wall, reaching a new record of over 360 cases. ^[32] This trend has persisted for four consecutive years since the wall's height increased from 17 feet to 30 feet in 2019. The injuries from these falls are severe, akin to those seen in high-impact car crashes, including severe brain injuries, pelvic fractures, and contusions. Records indicate that over 1,000 migrants have been hospitalized, with 23 fatalities attributed to these incidents.

Noteworthy findings include an increase in the hospitalization of women, accounting for almost half of the fall patients in 2023, including pregnant women, some of whom experienced miscarriages. Long-term treatment is challenging due to the underinsurance of these patients and their reluctance to seek medical care out of fear of being detained. The financial impact is substantial, with the median cost per patient nearly \$300,000, mostly covered by taxpayer dollars through the state's Medi-Cal system. U.S. Customs and Border Protection (CBP) used to cover medical expenses, but a shift occurred, and CBP now only covers expenses if a patient is in custody upon discharge.

Physicians from UC San Diego Health are collaborating with counterparts in Texas and Arizona, where similar increases in injuries due to higher walls have been observed. Trauma center executives are also meeting with County EMS officials regarding the future distribution of these patients between trauma centers.

SECTION 3: SAN DIEGO COUNTY EMS SYSTEM

3.1 – San Diego County EMS System Overview

San Diego County EMS system serves more than 3.3 million residents across approximately 4,500 square miles and includes 18 cities, 18 federally recognized tribal reservations, 16 major naval and military installations, and the unincorporated areas of the County.

The San Diego County EMS system is a well-organized, comprehensive system that provides timely and patient-centered emergency medical care to all residents and visitors.^[33] System participants include local governments, fire protection districts, private ambulance providers, federal installations, tribal areas, a hospital district, and a County Service Area (CSA 17). The system is comprised of more than 50 first responder EMS agencies, 10,000 credentialed EMS professionals, numerous policies, procedures, and protocols, seven paramedic base hospitals, 23 emergency departments (ED), and hospital-based specialty care programs including 14 cardiac receiving centers (STEMI), 18 stroke receiving areas, and six trauma centers (five adult and one pediatric). **Figure 3.1** below shows the County EMS service areas and hospitals. Information provided in the County EMS 2023-2027 Strategic Plan indicates the following:^[34]

- ▶ 9,000 active EMS personnel in the region
- ▶ 21 ED-licensed hospitals
- ▶ Six trauma centers
- ▶ 12,739 trauma patients
- ▶ 1,153,654 emergency room visits
- ▶ 255,000 EMS responses in the region
- ▶ 220,432 ambulance transports in the region
- ▶ 32 fire agencies providing EMS response services
- ▶ 17 ground and air private ambulance providers

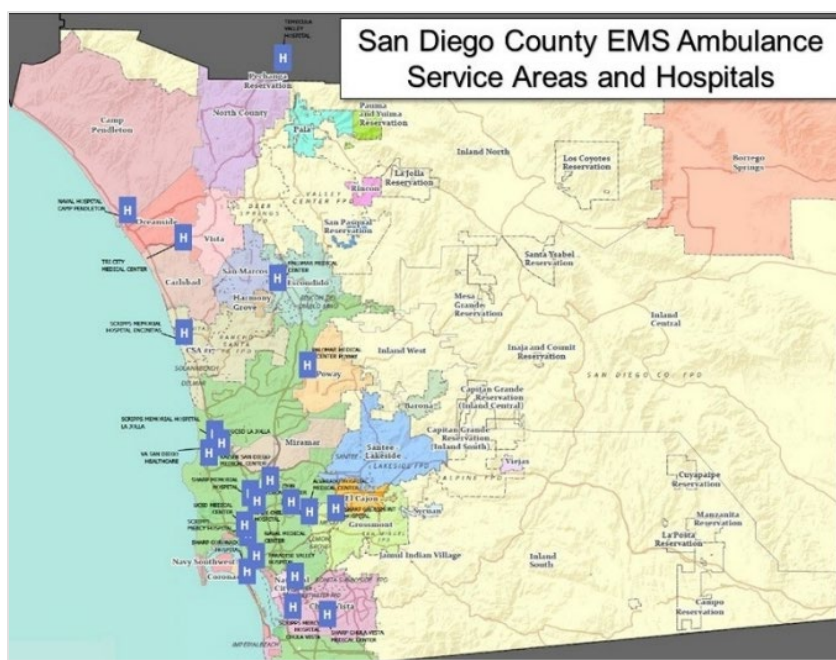


Figure 3.1: San Diego County EMS Ambulance Service Areas and Hospitals

3.2 – San Diego County EMS Office

The County of San Diego Board of Supervisors designated the EMS Office as the Local EMS Agency (LEMSA).^[33] In July 2021, the EMS Office was moved from the Health and Human Services Agency and became a division of County Fire as part of the Public Safety Group. As the LEMSA, the EMS Office is responsible for overseeing and coordinating the regional EMS system. These coordination responsibilities include providing medical oversight, permitting ambulance providers, designating hospital services, and organizing shared data and communication platforms. The County EMS system components include:

- ▶ Emergency 9-1-1 Communication Centers
- ▶ Non-Transport First Responders/Fire Agencies
- ▶ 9-1-1 First Responders/Fire Agencies
- ▶ 9-1-1 Transport Permitted Agencies
- ▶ Non-Emergency Transport Permitted Agencies
- ▶ Hospitals

A listing of the agencies that make up these components is included on the County EMS website.^[35]

The County EMS Office is staffed with an EMS Administrator responsible for providing oversight of the LEMSA administration and operations supporting four primary program areas:

- ▶ **Prehospital Standards:** LEMSA Regulatory Responsibilities
- ▶ **Quality Care:** Clinical Programs and EMS System QA/QI
- ▶ **Epidemiology:** EMS Epidemiology and Integrated Data Systems
- ▶ **Community Paramedicine:** Community Paramedic, Alternate Destination, and Innovative EMS Programs

These programs are staffed with full-time personnel to ensure that they are successful.

As required by CA HSC 1797.202, County EMS employs a full-time system Medical Director to ensure compliance with all State Statutes and regulations regarding EMS delivery within the County EMS system and its components. The Medical Director's responsibilities include providing medical direction (prospective, immediate, and retrospective) as well as overall management of the EMS system, approving standards, policies, protocols, and procedures. Numerous other responsibilities and activities are listed on the Medical Director page of the County EMS website.^[36]

In 2018 the EMS Administrators' Association of California (EMSAAC) updated its position paper "*The Roles and Responsibilities of Local Emergency Medical Services Agencies Within California*" based on various CA HSCs, and identified eight core responsibilities of the LEMSA that include:^[37]

1. Personnel and Training
2. Communications
3. Transportation
4. Assessment of Hospitals and Critical Care Centers
5. System Organization and Management
6. Data Collection and Evaluation
7. Public Information
8. Disaster Medical Response

The following section provides a summary of interviews with EMS Office staff members regarding the strengths, challenges, opportunities, and threats (SCOT) of the current BSH system.

3.2.1 – County EMS Staff Interviews

PCG interviewed ten County EMS Office staff members both in person and virtually. County EMS provided PCG with its goals and objectives for the future of the base station hospital system in San Diego. These goals and objectives highlight their continued efforts to:

- ▶ Enhance EMS patient care in San Diego County by pursuing strategies and actions that improve processes, advance policies and procedures, support data collection, and streamline system logistics.
 - Optimize EMS system performance to reduce the impacts on the pre-hospital system.
- ▶ Collect, maintain, and evaluate high-quality, actionable data to optimize EMS system performance, encourage internal and external stakeholder participation, and enhance the quality of life in our community.
 - Support an EMS system of care that fosters equitable outcomes through the use of data-driven decision-making.
 - Support quality assurance data in all emergency medical services functions.
- ▶ Provide system monitoring with real-time situational awareness for County and other agency participants.
- ▶ Promote technology improvements and automation.
- ▶ Support efforts for access to real-time, actionable data and communications.

3.2.1.1 – Takeaways

County EMS believes the strength of the current base station hospital system is driven by strong collaboration and the expertise of dedicated medical professionals who provide real-time medical oversight, help identify potential issues, and offer clinical guidance to field providers. These strengths allow for multiple agencies and system components to work congruently during normal system stress levels, but the system can suffer from inefficiencies, such as long radio reports, lack of clear interoperability between multiple base hospital radio channels, and other issues during periods of high demand.

County staff acknowledges that some historical practices may contribute to periods of inefficiency and convey their willingness to modernize certain components that can improve the system and coordination within. They see this project as an opportunity to:

- ▶ Increase accessibility to expert medical direction,
- ▶ Enhance data accessibility and sharing throughout the County, and
- ▶ Explore the adoption of new technological advancement.

3.2.2 – County EMS SCOT Analysis

This section focuses on summarizing the strengths, challenges, opportunities, and threats gathered from the County EMS Office perspective.

3.2.2.1 – Strengths

1. Dedicated Medical Professionals:

- ▶ The EMS system benefits from the dedicated physicians and nurses who provide critical medical guidance to field providers.

- ▶ Highly competent EMS agency field providers from the public and private sectors

2. Efficient Data Handling:

- ▶ The County's data system offers useful features such as auto-populating base hospital records and facilitating the transfer of Patient Care Reports (PCRs) into the County's local EMS information system (LEMSIS) integrating prehospital and hospital data.

3. Collaboration and Expertise:

- ▶ Strong collaboration exists between hospitals within the system.
- ▶ There is a wealth of expertise and knowledge within the EMS Office and the broader EMS community.
- ▶ A physician advisory network supports the County EMS medical director in decision-making.

4. Effective Quality Assurance:

- ▶ The base hospital system works well under normal conditions and contributes to quality assurance and review processes.

5. Real-Time Oversight and Guidance:

- ▶ The base station hospital system provides real-time medical oversight and quality assurance, helping identify potential issues and guiding EMTs and paramedics.
- ▶ Hospital-based nurses bridge the gap between field perspectives and hospital protocols.

6. Historical Reliability:

- ▶ The base station hospital system has a long-standing history of providing quality assurance and medical direction.
- ▶ Some base hospitals highly value their role in offering medical direction and consultation to paramedics.

These strengths underscore the presence of dedicated medical professionals, efficient data management, collaboration, expertise, quality assurance, and historical reliability within the base station hospital system.

3.2.2.2 – Challenges

1. Outdated and Inefficient System:

- ▶ The system can suffer from inefficiencies, such as long radio reports, lack of clear interoperability between multiple base hospital radio channels, and other issues during periods of high demand.
- ▶ Some historical practices may contribute to periods of inefficiency.

2. Data and Quality Improvement Challenges:

- ▶ Many agencies do not consistently provide data to the LEMSAs local EMS information system (LEMSIS), hindering proper quality improvement efforts.
- ▶ The QA and QI process lacks a standardized approach, potentially impacting the consistency of quality improvement efforts.
- ▶ Delays in patient transport can occur due to lengthy radio reports.

3. Coordination and Trust Issues:

- ▶ Base hospitals do not always coordinate well, particularly during periods of extended system stress.
- ▶ Variability in base station medical direction and a lack of standardized training for base station physicians/directors contribute to coordination challenges.
- ▶ Trust issues exist between various stakeholders within the system, affecting collaboration and communication.
- ▶ Communication and patient handoffs between different parts of the system can be inefficient.

4. Control and Discretion:

- ▶ The current base station model is perceived as overly controlling of paramedics, potentially limiting their discretion in the field.

These weaknesses highlight issues related to outdated practices, data challenges, coordination difficulties, and concerns about control and discretion within the hospital base station system.

3.2.2.3 – Opportunities

1. Enhanced Data Sharing:

- ▶ Building bridges between vendor systems like World Advancement of Technology for EMS (WATER)'s Street EMS® and the County's LEMSIS could facilitate increased data sharing, which is legally required.

2. Technological Advancements:

- ▶ Implementing technology to improve communication and data collection within the system.
- ▶ Leveraging technology for patient load leveling and diversion practices.
- ▶ Improving technology, such as telehealth and a common data platform.

3. Improved ED Capacity Management:

- ▶ Providing base hospitals with real-time data on hospital capacity and status to enhance patient load balancing strategies and reduce ambulance patient offload times and ED overcrowding.

4. Streamlined System and Coordination:

- ▶ Establishing a unified command center to efficiently manage low-acuity calls and resource distribution.
- ▶ Consolidating base station nurses into a single unified command center to streamline the system and reduce radio report times.
- ▶ Exploring the possibility of having a single base station to enhance coordination, provide patient load-leveling, and provide consistent medical direction.

These opportunities focus on improving data sharing, embracing technology, optimizing capacity management, and streamlining coordination within the hospital base station system.

3.2.2.4 – Threats

1. Resistance to Change:

- ▶ Some stakeholders may resist changes regarding providing more data, hindering system improvements.

- ▶ Some EMS agencies have resisted switching from their preferred ePCR vendor systems to the County's system, complicating data collection goals.

2. Data Sharing and Transparency Issues:

- ▶ Lack of data sharing and transparency between entities can impede coordination and information flow.
- ▶ Legal concerns exist regarding data collection and the discoverability of quality assurance data, potentially limiting data utilization.

3. Competitiveness and Territorial Conflicts:

- ▶ Competitiveness and territorial issues between hospitals within the system can hinder collaboration and resource allocation.
- ▶ A culture of cooperation influenced by competition exists between hospital systems.

4. System Stress and Political Opposition:

- ▶ Extended periods of high system stress, possibly exacerbated by the pandemic impacts, could become the "new normal," straining the system.
- ▶ Political opposition from some EMS agencies presents challenges to obtaining complete and consistent EMS data reporting.

5. Non-compliance and Capacity Issues:

- ▶ Non-compliance with early contact of base stations may lead to inefficiencies.
- ▶ Capacity constraints at some hospital base stations pose challenges to patient management.
- ▶ The impact of lifting Title 42 on border patients is uncertain and may introduce additional challenges.

6. Entrenched Interests and Resource Constraints:

- ▶ Entrenched interests of various stakeholders, such as hospitals and MICNs, could impede necessary changes.
- ▶ Limited resources and funding constraints for implementing major system changes.
- ▶ Workforce shortages affecting different parts of the system may impact its overall functionality.

These threats encompass resistance to change, data-related issues, competitive dynamics, system stress, and resource limitations, which collectively pose challenges to the hospital base station system.

SECTION 4: CURRENT BASE STATION HOSPITAL SYSTEM

4.1 – Base Station Hospitals

The foundation of the hospital base station system was established in the late 1970s, serving as the primary framework for delivering real-time paramedic medical guidance, EMS education, and quality assurance. Since its inception, minimal alterations have been made to the designated base station hospitals and the process of securing online medical guidance. Adjustments have been introduced to EMS protocols, including a steady transition to more standing treatment orders, thereby decreasing the need for direct base station hospital consultation. Paramedics across the County are mandated to establish contact with a base station hospital for virtually every ambulance transport involving a paramedic, as well as any patient releases at an emergency scene. During the year 2022, a total of 266,649 calls were placed to base station hospitals by paramedics in San Diego County.

As the designated Local EMS Agency (LEMSA) for San Diego County by the Board of Supervisors, the San Diego County EMS Office supervises and maintains the oversight responsibility of the comprehensive Countywide EMS system, which encompasses the designation of base station hospitals and trauma centers. To achieve the status of a Paramedic base hospital in San Diego County (referred to as base station hospital), specific criteria outlined in County Protocol P-701 must be fulfilled. These prerequisites include:

- ▶ Adherence to the California Code of Regulations, Title 22, Division 9, Chapter 4.
- ▶ Establishment of a contractual agreement with the County of San Diego to function as a Base Hospital.
- ▶ Conformance to the terms laid out in the County of San Diego's Base Hospital Contract.

Each base station hospital enters into a memorandum of agreement (MOA) with the County. The MOA includes a Base Hospital Designation Statement of Work that delineates the base station hospital's responsibilities. The base station hospital also pays an annual fee to the County.

The current base station hospital system within San Diego County incorporates seven hospitals into a matrix of transport volume and geographically centric locations that allow transporting ambulance crews to seek online medical direction and provide for advanced life support (ALS) patient transport notification. Each base station hospital utilizes mobile intensive care nurses (MICNs) who are specifically trained in EMS protocol familiarization; local EMS resource transport navigation; familiarization with local hospital service line capabilities and capacities; and data entry elements specific to tracking base station hospital contacts. On-site physicians are also available within each base station hospital to provide direct medical direction for situations that require additional physician oversight. Within the County's EMS protocols, there are four different types of medical orders for EMS providers (which consist of EMTs and paramedics) to follow:

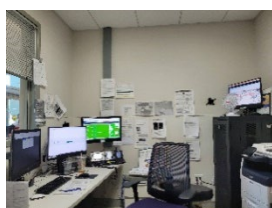
- ▶ Standing Orders – established, written medical directives outlined within the protocols.
- ▶ Base Hospital Orders –online, verbal directions provided by MICNs designed to improve clinical decision-making in uncommon patient presentations, as established in LEMSAs medical protocols.

- ▶ Base Hospital Physician Orders –online verbal directions provided by physicians designed to ensure sound clinical decision-making and thorough evaluation, particularly when treating rare presentations with higher-risk therapies.
- ▶ Base Hospital Physician Variation Orders—online verbal directions provided by physicians designed to authorize deviation from written protocols. Variation from written protocols allows for paramedics to administer or withhold treatments outlined in the existing scope of practice standards.

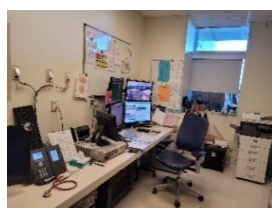
Below is an alphabetical listing of the seven base station hospitals in San Diego County:

- ▶ Palomar Medical Center (Palomar)
- ▶ Scripps Memorial Hospital-La Jolla (Scripps La Jolla)
- ▶ Scripps Mercy Hospital-San Diego (Scripps Mercy)
- ▶ Sharp Grossmont Hospital (Sharp Grossmont)
- ▶ Sharp Memorial Hospital (Sharp Memorial)
- ▶ Tri-City Medical Center (Tri-City)
- ▶ UCSD Medical Center-Hillcrest (UCSD Hillcrest)

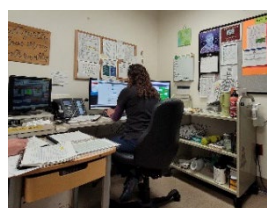
Base stations are located in or near the emergency department of each designated base hospital facility. The Base Station is most commonly staffed with only one MICN covering varying shifts during a 24/7 period and dedicated to base station tasks, not patient care. Some hospitals will staff their base stations with two MICNs during higher volume hours. Each base station hospital room maintains an office-like or “radio room” appearance, containing desk space, computer monitors, reference materials, and necessary communications equipment. Some base station hospital rooms also double as an EMS crew break room, allowing crews to enter freely upon transferring their patient to the emergency department staff. During our firm’s on-site visits to each of these base stations, it was also observed that the base station hospital rooms are viewed as a “place of information” by some of the on-duty nurses within the emergency department. This results in regular “visitor” traffic while radio communications are underway. The image collection below shows each hospital’s base station hospital room for visual reference (**Figure 4.1**).



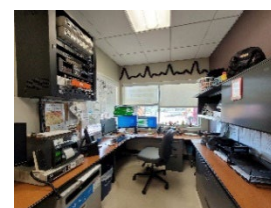
Palomar



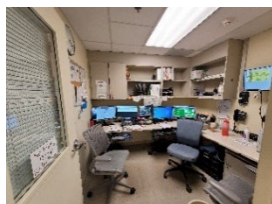
Scripps La Jolla



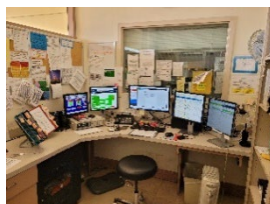
Scripps Mercy



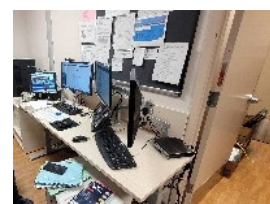
Sharp Grossmont



Sharp Memorial



Tri-City



UCSD Hillcrest

Figure 4.1: Image Collection of Base Station Hospital Radio Rooms

The process respective to call reception and facility notification by the MICNs follows a similar flow amongst all seven hospitals and is outlined in **Figure 4.2** below. In short, MICNs receive communications from transporting or on-scene EMS crews via radio communications on one of up to three radio systems:

- ▶ a countywide EMT (BLS) radio channel,
- ▶ a countywide paramedic (ALS) radio channel, and
- ▶ a City of San Diego radio channel.

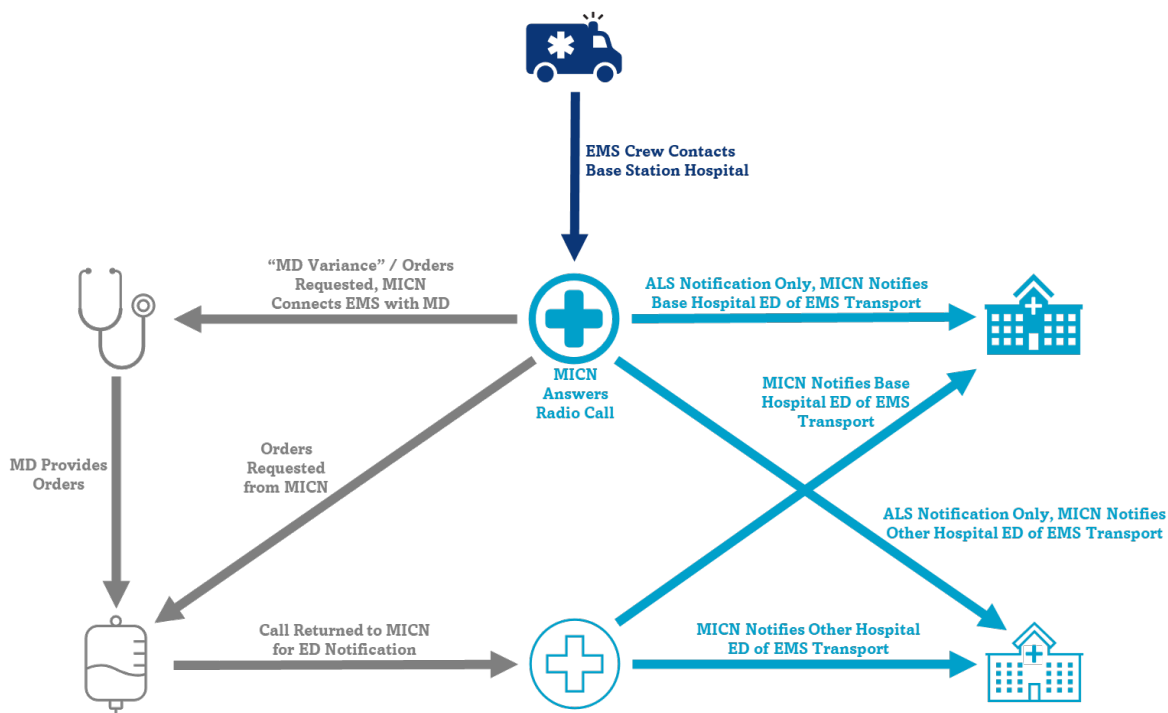


Figure 4.2: Flowchart of MICN Call-Taking, Medical Orders, and ED Notification Process

The countywide paramedic and EMT radios are maintained as part of the Regional Communication System (RCS). RCS is a robust communication network supporting fire, EMS, law enforcement, public works, and other services throughout San Diego and Imperial Counties. This highly interoperable system receives regular infrastructure upgrades, supporting new communication standards and software protocols. The practice of monitoring three radio channels – oftentimes by only one MICN – was both observed by our consulting team and shared directly by the MICNs during on-site visits as a limiting process. Instances arose where multiple EMS crews were attempting to contact the MICN on one channel, while another was trying to have a conversation on another channel. As a result, the MICN often had to listen to the crews on one channel, while switching to another channel to ask the calling EMS crews to hold which often resulted in radio silence for upwards of a few minutes. In practice, EMS units monitoring traffic on one channel have improved situational awareness, but only for communication conducted on that single channel and not the other two parallel talk groups. This challenge was observed as more of a process challenge, rather than a technological challenge.

Each radio communication is recorded and cataloged by the MICN electronically in the County's electronic base hospital record (eBHR) platform, which is often formally referred to as the County's LEMSIS, or Local Emergency Medical Services Information System.

In addition to electronic tracking, each base station hospital appears to maintain its past practice of retaining a paper tracking mechanism utilizing an in-house-created (i.e., hospital-created) tracking note sheet. MICNs then either notify the receiving hospital via phone by providing abbreviated highlights of the information that the EMS crews shared or notify their internal hospital's charge nurse of an incoming ambulance crew. Currently, non-base station hospitals do not have access to the County's eBHR software. These facilities therefore only receive the second-party information provided by the MICN to their hospital's receiving staff member. EMS providers that use LEMSIS as their ePCR platform are able to "post" their run information prior to arrival to all EDs in the County. The EMS crews do not notify the receiving hospital of their patient transport, as the MICN performs this action.

Ideally, the initiation of radio communications to a particular base station hospital is made by EMS crews based on their proximity to each base station. There are County base hospital assignments, but these assignments are often seen as antiquated or difficult to operationalize. Many paramedics will contact the nearest or otherwise preferred base hospital. Unlike the catchment areas designated for the trauma center system of care within the County, no formalized catchment areas exist for base stations.

It was commonly reported by many MICNs and observed by our firm during our on-site visits that, as an example, EMS crews from a southern area of the County would contact a base station hospital outside of their proximity even though they were transporting their patient to a non-base station hospital or base station hospital within a closer proximity. This practice was referred to by many MICNs as "base shopping." During some instances, the MICN at one base station hospital was handling too many concurrent calls to be able to manage the additional radio traffic of another EMS crew. Therefore, the crew was recommended to contact another base station hospital for orders and notifications. This radio congestion is freely heard by all EMS crews monitoring the radio traffic on the given base station's frequency. Since there are up to three distinct radio talk groups at each base station hospital (County paramedic, City paramedic, and County EMT), improved interoperability between radio systems may offer an opportunity for improvement.

In years past, EMS protocols contained significantly fewer standing medical orders compared to recent iterations. Several MICNs interviewed as part of this study noted that EMS crews historically would be required to contact a base hospital for many during time-sensitive, labor-intensive, and high-stress situations such as cardiac arrest resuscitation attempts. During such situations, protocols indicated that the delivery of medications on a repeating cycle was at minimum once every three to five minutes, or as often as once every two minutes for particular medication delivery. Radio communications during such events involved intensely regular conversations between the MICN and on-scene or transporting EMS crews, occurring as often as every few minutes, for the EMS crew to obtain permission to provide standard-practice medications to a patient actively receiving chest compressions and artificial ventilation. Over the last decade, and as the San Diego County EMS system has matured, the County has worked to transition many paramedic treatments to standing orders and the need for intense and ongoing base radio contact has decreased.

The roles and responsibilities of the MICN have dramatically shifted over the past few years, having become more data-entry-oriented. Considering the current practice of base station hospitals receiving all ALS-level calls within the County as well as all BLS-level calls that are transported to their facility, the typical daytime peak hours spent by each MICN during their shift are predominantly non-stop and multi-tasking in nature. By gross averaging alone, the lowest-volume base station hospital in terms of calls receives an average of 3.1 calls per hour, while the

busiest receives 5.1 calls per hour. Systemwide, the average is 4.3 calls per hour; however, the reality behind these statistics is that the highest call volumes occur during “peak” daytime hours, prompting one base hospital station to staff its radio room with two MICNs during this period. Two data elements were analyzed to highlight peak 12-hour and shorter 4-hour time periods for each base station hospital: computer-aided dispatch (CAD) data reflecting documented unit transport times and electronic base hospital report (eBHR) data reflecting MICN-documented call reception times (which includes both ambulance transports events and non-transport events). Overall, CAD data suggests the 12-hour peak time period is between the hours of 08:00-20:00, while eBHR data suggests a slightly later 09:00-21:00. Reflecting the eBHR data, this total volume of calls that occur during this 12-hour time period accounts for approximately 65% of each day’s experienced calls. Looking at a smaller window of time, the 4-hour peak time period is suggested as 10:00-14:00 via CAD data, and 11:00-15:00 via eBHR data. **Table 4.1** outlines the reported peak time periods for each base station hospital based on the eBHR data. During these peak time periods, the likelihood of concurrent calls occurring is statistically highest. In perspective, Palomar Medical Center experienced a high base hospital call volume in 2022, which equates to an approximate average of 7 calls per hour during their 12-hour peak time period.

Base Station Hospital	12-Hour Peak Hours	12-Hour % Allocation	4-Hour Peak Hours
Palomar	09:00-21:00	67%	11:00-15:00
Scripps La Jolla	09:00-21:00	65%	12:00-16:00
Scripps Mercy	09:00-21:00	62%	14:00-18:00
Sharp Grossmont	09:00-21:00	65%	11:00-15:00
Sharp Memorial	09:00-21:00	67%	12:00-16:00
Tri-City	09:00-21:00	67%	10:00-14:00
UCSD Hillcrest	10:00-22:00	62%	11:00-15:00
AVERAGE	09:00-21:00	65%	11:00-15:00

Table 4.1: Peak Call Volume Time Periods per Base Station Hospital (2022, eBHR Data)

While only a limited observation, each base station hospital experienced at least one instance of concurrent calls occurring while our firm was present during our on-site visits. This resulted in the need for the MICN to ask one calling EMS crew to “hold” while another call could be completed. Evaluating the statistical likelihood of this occurring during any given hour, the prominence of concurrent calls certainly remains possible, but is still very low in overall reality and over time. Such on-site visits did result in minimal conversational time available with each MICN because they were regularly transitioning from one incoming call to the next, then transposing their paper-tracked data into the County’s electronic data platform. **Table 4.2** outlines each base station’s staffing structure to provide 24/7 coverage.

Base Station Hospital	MICN Coverage & Shift	
	Type/Duration	Additional Notes
Palomar	1-MICN for 24-hour coverage, working 6- to 12-hour MICN shifts throughout their regular 12-hour ED RN shift schedule	----

Base Station Hospital	MICN Coverage & Shift Type/Duration	Additional Notes
Scripps La Jolla	1-MICN for 24-hour coverage, working variable MICN shifts throughout their regular 12-hour ED RN shift schedule	-----
Scripps Mercy	1-MICN for 24-hour coverage, working 4-hour MICN shifts throughout their regular 12-hour ED RN shift schedule	-----
Sharp Grossmont	1-MICN for 24-hour coverage, working dedicated 12-hour MICN shifts	-----
Sharp Memorial	1-MICN for 24-hour coverage, working variable 4-, 8-, or 12-hour shifts throughout their regular 12-hour ED RN shift schedule; additional 2 nd MICN coverage from 11:00-23:00	During time periods where 2-MICN are providing coverage, one MICN will operate the radio and manage the call, while the other will provide data entry support, as only one EMS radio is present in the MICN room
Tri-City	1-MICN for 24-hour coverage, working dedicated 12-hour MICN shifts	-----
UCSD Hillcrest	1-MICN for 24-hour coverage, working variable 4-, 6-, or 8-hour shifts throughout their regular 12-hour ED RN shift schedule	-----

Table 4.2: Summary of MICN Coverage and Shift Type/Duration

The data elements tracked via the County's eBHR platform are consistent throughout the entire system and are designed to serve as both a real-time tracking mechanism as well as a source of initial quality assurance. However, our firm's evaluation of the provided and reported data, when combined with the context provided by MICNs regarding their data-entry practices, depicts that selected data/drop-down elements within the platform's subset of options lead to potentially large inaccuracies. Specifically, the eBHR collects data based on the metric of how often and which types of incidents/calls provoke the need for "medical direction." Our firm determined that the data highlighting the instances where "medical direction" is provided is likely significantly lower than what is reported as this data field is intended to capture the instances where a physician provides such medical direction, not an MICN. As reported by multiple MICNs, the "yes" option is irregularly selected when they provide any variety of protocol-following or suggestive-action communications with various EMS crews. This indicates that they provided "medical direction," not a physician.

As an example, this was observed when an MICN selected the "yes" data element after suggesting that an EMS crew evaluate the patient's blood sugar level while transporting them to the hospital. This communication, however, did not involve a physician contact for medical orders and was a reminder to either follow a set of basic protocol considerations or to state this information to the MICN on such radio reports. Such an example did not include suggestions toward weight-based medication dosing or alternative medication options. Thus, the "yes" data element was selected when no objective orders were given or requested. As a result, the overall data becomes skewed to indicate that more instances of "medical direction" are provided than there are. This is not to say that there is any malintent in this action, only a lack of clarity.

When asking multiple MICNs from various base stations how often a physician was physically requested to provide medical orders to EMS crews, each MICN anecdotally answered with “once or twice every few days.” Data reporting documenting medical direction by the County’s database, therefore, may be inaccurate and overreporting by as much or as little as 1,400%. **Table 4.3** shares the reported total call volumes, which do not necessarily equate to transport volume, and call volumes involving documented medical direction into each base station hospital.

Base Station Hospital	2018 %	2019 %	2020 %	2021 %	2022 TCV	2022 VMD	2022 %
Palomar	7.2%	13.9%	13.8%	14.0%	45,068	6,488	14.4%
Scripps-La Jolla	8.0%	16.4%	13.4%	12.7%	37,069	4,200	11.3%
Scripps-Mercy	5.6%	13.0%	12.7%	13.3%	41,044	5,281	12.9%
Sharp-Grossmont	9.2%	16.3%	16.7%	17.3%	39,273	6,471	16.5%
Sharp-Memorial	9.1%	14.2%	13.7%	14.5%	37,106	4,954	13.4%
Tri-City	7.3%	12.9%	19.3%	19.9%	26,966	5,243	19.4%
UCSD-Hillcrest	3.8%	8.0%	9.0%	9.7%	40,123	3,606	9.0%
TOTALS (TCV, VMD, %)	236,531 16,678 7.1%	245,730 32,935 13.4%	229,613 31,451 13.7%	254,214 35,877 14.1%	266,649	36,243	13.6%

TCV = Total call volume
VMD = Call volume involving MICN-documented medical direction provided
% = Indicates % of VMD based on TCV

Table 4.3: Reported Base Station Hospital Call Volumes (Not Transport Volumes) and Instances Involving MICN-Documented Medical Direction Provided (2018-2022)

Further supporting the notion that current data tracking by base station hospitals is potentially inconsistent and inaccurate is the shared data by San Diego Fire-Rescue (SDFR). In 2022, SDFR reported at least 99,521 incidents where base station hospital contact was made, accounting for 37% of the entire, countywide EMS system’s contacts. Of these nearly 100,000 contacts, SDFR reports only 1,307 instances where medical orders of some form were received (**Table 4.4**). This creates a significant disproportion in the data, as it would mean that the remaining 67% of the system would have accounted for greater than 96% of the call volume involving documented medical direction. This is likely due to the inconsistent documentation practices regarding “medical direction” that exist within the system.

Medical Order Type	Amount
Base Hospital Order (for medications)	573
Base Hospital Order (for procedures)	157
Base Hospital Physician Order (for medications)	218
Base Hospital Physician Order (for procedures)	56
MD Variation (for medications)	255
MD Variation (for procedures)	48
TOTAL ORDERS/VARIATION RECEIVED	1,307
Total Base Station Contacts	99,521
Total EMS Calls by Agency	129,332

Table 4.4: Medical Order Requests Documented by San Diego Fire-Rescue Paramedics (2022)

Respective of the data reported by SDFR, this information is specific to their department's database and could not be directly compared to the eBHR dataset. SDFR, along with several other EMS services, does not submit ePCR data to the County. This San Diego City-specific information could only be received from the department, itself which highlights a clear gap in both the availability and accuracy of the data tracked versus the data shared within the County (by all involved parties).

An additional but infrequent function of the base station hospitals within the County is patient navigation during mass casualty incidents (MCIs). During such incidents, base station hospitals serve as a single contact point for multi-patient transport navigation. In the San Diego County Operational Area, the Emergency Operations plan's multi-casualty section describes response activity, which is also referred to as "Annex D activations." Separate from any of the countywide public safety answering points (PSAPs), base station hospitals focus on the transport and hospital resource activation phase of such multi-patient incidents, rather than the initial dispatch and field resource request phase of the incident. Patient navigation guidance during both MCI situations and normal operations is provided by direct hospital participation in the County's Resource Bridge platform, which serves as the primary source to track hospital bed availability, specialty service status (i.e., in-service or out-of-service), and overall emergency department (ED) diversion status. Additional limited live data is also available to MICNs through the County's provided FirstWatch™ platform, which links computer-aided dispatch (CAD) data with hospital destination selections, offload times, and any respective ambulance patient offload delays.

The use of multiple base station hospitals has been engrained in San Diego County's EMS system since its inception, while the role of its MICNs has dramatically changed over the course of these decades just as EMS protocols have evolved into more of a standing order approach, rather than an online (requesting) order approach. **Section 6** of this report will expand into how the County's current system compares to other systems in place throughout the rest of the nation.

4.2 – Ambulance Transport Data Review

This section highlights a two-year calendar review of transport data tracked through computer-aided dispatch (CAD) software utilized throughout the County. It provides insight into the ambulance transport volumes per agency, the overall ambulance transport destinations/receiving hospitals, and ambulance delays and offload challenges experienced within the countywide hospital system. Of note, full-year data was only available for CY 2021 and CY 2022, as this study occurred throughout CY 2023, thus, excluding CY 2023 data from full analysis.

Ambulance transport data provides relevance to this study to show the actual distribution of patients throughout the County when compared to the number of calls received by the base station hospitals, as calls received do not necessarily equate to patients received. It also sheds light on EMS-documented areas through their CAD system notes and data elements respective to patient offload challenges. This allows for potential correlations to be made between patient receiving volumes and the instances of transfer of care delays potentially based on volume overload or other hospital-specific factors.

Of note with the data analyzed, significant difficulty was experienced by our firm in determining which EMS agency responded with an ambulance to various incident locations throughout the County or transported via ambulance to a particular hospital. This is a direct reflection of the inconsistent data tracking practices in place by each of the five public safety answering points (PSAPs) and their respective five CAD systems. Especially exacerbating this finding is the inconsistent and irregular data reporting provided by EMS agencies to the County, as many do not provide direct ePCR access to the County for data management. This challenge presents an

opportunity for the County and its respective public safety answering points (PSAPs) and EMS agencies to remedy in the future related to its resource tracking and data management practices.

4.2.1 – Ambulance Transport Volumes per Agency

Given the breakdown of information presented in the CAD software, it is extremely difficult to outline the actual volume of EMS incidents that each agency responds to throughout the County, let alone within any one or particular municipality. At the most, the following information could be interpreted from compiled CAD data related to actual ambulance transports that occurred in designated Agency Operational Areas:

- ▶ The majority of ambulance transport incidents that occurred in both 2021 and 2022 originated in the Agency Operational Area designated as San Diego.
- ▶ In 2021, the top five Agency Operational Areas that experienced ambulance transport incidents included: San Diego, Chula Vista, Grossmont, El Cajon, and Oceanside (respectively, starting with the highest volume). Of note, the fourth largest category by documented volume was actually “Unidentified,” which may skew the results of any or all tracked data from the year.
- ▶ In 2022, the top five Agency Operational Areas that experienced ambulance transport incidents included: San Diego, Chula Vista, Grossmont, El Cajon, and Escondido (respectively, starting with the highest volume).

The variance and difficulty in extrapolating data in this fashion, as a result, poses a large challenge in reporting any geographic data based on agency coverage or response districts within the County. As a result, the County is reliant upon data reported and tracked directly by each EMS agency in order to generate reliable reporting statistics. In short, the CAD data available does not clearly outline how many EMS incidents San Diego Fire Department, Chula Vista Fire Department, Lakeside Fire Protection District, or any other fire/EMS agency responded to or transported patients to hospitals from given its currently shared format even though the CAD data is generated from the same PSAPs that dispatched the EMS units.

Table 4.5 below shows a data comparison of base-reported call data and CAD-reported ambulance transport volumes for each of the base station hospitals. This table only shows objective data shared and does not account for factors such as emergency department bed counts, total emergency department patient volumes, or in-hospital throughput processes which may all impact a hospital’s capacity to receive more/less ambulance transports.

Base Station Hospital	2021			2022		
	Base Station Calls	Ambulance Transports	% Transp.	Base Station Calls	Ambulance Transports	% Transp.
Palomar	35,801	14,880	41.6%	45,068	20,866	46.3%
Scripps La Jolla	37,323	13,566	36.3%	37,069	12,178	32.9%
Scripps Mercy	40,453	21,085	52.1%	41,044	15,737	38.3%
Sharp Grossmont	40,943	22,728	55.5%	39,273	21,259	54.1%
Sharp Memorial	34,895	19,097	54.7%	37,106	16,670	44.9%
Tri-City	24,472	9,188	37.5%	26,966	10,100	37.5%
UCSD Hillcrest	40,327	19,211	47.6%	40,123	13,336	33.2%
TOTAL	254,214	119,755	47.1%	266,649	110,146	41.3%

Table 4.5: Comparison of Base Station Hospital Calls and Ambulance Transports (2021-2022)

4.3 – Mobile Intensive Care Nurses

California statutes (Health & Safety Code § 1797.56)) define a mobile intensive care nurse (MICN) as “a registered nurse who is functioning pursuant to Section 2725 of the Business and Professional Code and who has been authorized by the medical director of the local EMS agency as qualified to provide prehospital advanced life support or to issue instructions to prehospital emergency medical care personnel within an EMS system according to standardized procedures developed by the local EMS agency consistent with statewide guidelines established by the authority.” ^[38]

In a more concise sense, MICNs are nurses who are authorized by the LEMSA medical director to act as an extension of said medical director. This privilege allows MICNs to provide limited medical “instructions,” as defined in the statute, to prehospital (EMS) providers. These instructions may be considered, or potentially misconstrued or misinterpreted, to be medical “orders” which may be a point requiring further system (i.e., LEMSA) clarification.

This type of statute and authority found in the State of California is uncommon in other states. In many other states, physicians are the only licensed medical professionals authorized to provide medical direction or instructions to EMS providers in the prehospital setting. However, many states have recently allowed nurses the ability to provide supervision and oversight of certified/licensed EMTs and paramedics who are employed by a healthcare facility or system. In these cases, this supervision and oversight can only occur during their operations or care provided within the facility setting and not outside of the facility such as inside of an ambulance while functioning as a regulated EMS provider. The authority, practice, and concept of MICNs are unique to and solely representative of California EMS and healthcare practices.

Locally, MICNs are credentialed by the County and are required to meet the following qualifications:

- ▶ hold a current license as a California RN,
- ▶ complete the required MICN training course and pass a written exam,
- ▶ complete three ambulance ride-alongs with a local EMS agency,
- ▶ function as the receiving nurse for ten paramedic radio call-ins (under MICN supervision), and
- ▶ maintain current advanced cardiovascular life support (ACLS) course certification.

The MICN training course focuses on the procedures and processes surrounding radio operations and call reception, data entry, and medical instructions provided to EMS providers based on County EMS protocols. Ongoing continued education related to prehospital topics is required for MICN credential renewal and is based on a two-year cycle. Within the base station hospitals, each facility employs multiple MICNs who typically function as emergency department (ED) registered nurses (RN), often maintaining an active roster of upwards of 50 active MICNs spanning daytime and overnight shifts.

4.4 – Online Medical Direction

Within the San Diego County EMS system are multiple layers of medical director and medical direction elements. At a macro level, the County employs the services of a countywide EMS Medical Director to be involved in system-level oversight, including EMS provider credentialing, protocol oversight, and system quality assurance. Within each EMS agency, additionally, an agency medical director also exists to serve as the direct medical oversight source for the agency’s internal needs which includes internal quality assurance, training, medication orders,

and medical response prioritization. A third layer of medical directorship also exists within each base station hospital, whereby working, on-duty emergency department physicians serve in an online medical direction capacity to provide active oversight for situations requiring “MD variance,” or other physician-level guidance. At all levels of medical directorship, the involved physicians are expected to be fully aware of, reliable in, and consistent with providing medical oversight and guidance for field EMS providers in either an active or passive manner of practice. Considering the volume of base station hospital facilities and associated emergency department physicians incorporated into such facilities, there are likely over 100 physicians involved in the medical direction component of the County’s EMS system.

Online medical direction from base station hospital physicians is guided by the established EMS protocols utilized by agencies throughout the County. However, anecdotal reports by some stakeholders within the system indicate that not all involved physicians seem consistent with their knowledge of County protocols or EMS practices. This reporting suggests that further evaluation and validation into physician familiarization with EMS protocols be examined by the County.

With respect to the four different types of medical orders that exist within the County (standing orders, base hospital orders, base hospital physician orders, and MD variances), two orders are atypical in practice with respect to EMS system operations and state-delegated rules throughout the rest of the nation: base hospital orders and MD variances. Regarding base hospital orders which are provided by a nurse (MICN), no other state in the nation allows nurses to provide orders, direction, or instruction to EMS crews to dictate or alter patient care beyond suggesting a transport destination. This practice is specific to California (and only to California, to our firm’s research and knowledge).

Regarding MD variances, other states allow similar practices, referring to them as “just-in-time” or “waiver” practices, but not with the same leniency as exemplified within the San Diego County system. In Wisconsin, for instance, “just in time” training used to be allowed for physicians to provide one-time situational training to EMS crews to administer medications or perform skills that were immediately necessary for patient care or transport. Such instances required 24-hour follow-up state reporting and were only allowed on a one-time basis, per agency. In Colorado, “waivers” allow EMS crews to provide medications or perform procedures that exceed the state’s identified scope of practice but such “waivers” must be applied for and approved before the EMS crews are allowed to incorporate them into their daily practice. MD variances, on the other hand, serve as a high-risk situation where EMS crews may (potentially regularly) work outside of their scope of practice by administering doses of medications that the crews might not be familiar with and may not receive regular training or quality assurance follow-up with. Without an extensive review process in place, the instances of MD variances have a high potential to create significant risks for both the EMS crews and ordering physicians. This is because of the loose parameters surrounding this practice, especially if MD variances become commonplace within the EMS crew’s patient care without the proper training or oversight to accompany it. Risk and liability can also be exacerbated if such MD variance situations/conversations are initiated by the EMS crew and not by the ordering physician.

4.5 – Patient Destination Guidance

The County’s Resource Bridge platform is a countywide tracking system that allows for real-time reporting by each hospital facility to indicate their activity status, including remaining hospital bed counts, ED diversion status, and any specialty service notifications. Based on this platform, MICNs utilize this insight to formulate EMS transport recommendations for ambulance crews as they indicate their destination hospital within their radio reports. Coupled with the MICN’s knowledge of each hospital facility’s capabilities, MICNs can agree with the transporting crew’s selected destination or otherwise navigate them toward another facility based on various factors.

For example, a patient originally intending to be transported to Hospital-A, a lower-acuity care hospital, may be directed to Hospital-B, a designated trauma center, based on the EMS provider's radio report as it reflects the patient's traumatic injuries and overall condition.

For situations where a BLS-level call is made directly to the receiving hospital, the answering facility can ask clarifying questions to the calling EMS crew to help validate whether or not their facility is the most appropriate for any particular patient. Such calls are often answered by designated charge nurses within the emergency department. When asked about this practice and format, many of the MICNs interviewed replied that charge nurses largely weren't aware of their facility's capabilities or various "alert" criteria (e.g., for "Code Stroke" or other "codes/alerts") and wouldn't be able to reliably make such destination determinations based on their current knowledge. Of note, there are no consistent and countywide criteria utilized by the hospitals in place for "alerts," "codes," or "activations" reflective of high-acuity stroke, trauma, cardiac, or sepsis patients. As expressed by many of these MICNs, a charge nurse from Hospital-A wouldn't know that their facility cannot handle a certain acuity level of trauma patients that were being transported via ambulance, but an MICN would. This sentiment was consistently made by multiple MICNs who were interviewed. The perception expressed by these MICNs, however, does not align with our consulting team's in-hospital experience and interaction with charge nurse roles and facility knowledge. The role of the charge nurse in many emergency department settings is to provide crew resource management and intra-department oversight over all non-physician staff within the department. This management includes coordinating continued and/or advanced care necessary by other hospital resources based on their capabilities. In a designated stroke center, for example, the charge nurse should be fully aware of the hospital's capabilities to provide care, the processes to activate such care, and the selection criteria utilized to identify such patients. Nevertheless, if this perception is a facility and role reality, it is one that can be overcome by intra-facility education.

MICNs have the authority to redirect patient transports from one hospital facility to another, including their own. A four-year analysis of base station hospital data indicates ambulance redirection toward the base station hospital that received the call, as opposed to another available hospital that was requested by the EMS crew, occurred on an average of 0.9%-1.8% of the time, but as high as 3.7% of the time for one base station hospital during one year. The extremely low prevalence of this occurring, as a result, does not raise active suspicion of any one base station hospital attempting to redirect ambulance traffic (i.e., patient transports) toward their facility over others. If anything, it validates an equal benchmark that all base station hospitals are representing when the recommended redirection occurs. Additionally, it also reflects that EMS crews are accurately selecting the hospital destination appropriately given the patient's acuity and condition, as well as their knowledge of each hospital facility's capabilities.

In context, in 2022 there were 126,401 documented instances where an EMS crew requested transport to a hospital other than the base station hospital that was called. Of those instances, only 1,084 redirections were made by MICNs to their own base station hospital. Again, as presented, this is an extremely low percentage of instances and does not indicate a systemwide or individual concern of inappropriate redirection; nor does it necessarily indicate that there is a tangible (or fringe) benefit of a hospital facility becoming designated as a base station hospital and, thereby, having the ability to manipulate more ambulance transports to their facility.

4.6 – MCI Patient Distribution

The 2022 version of Annex-D of the San Diego County Operational Area Emergency Operations Plan serves as the mass casualty incident (MCI) resource for base station hospitals and fire/EMS response agencies to reference during such events. ^[39] Within this document, base station hospitals are commonly referred to as "facilitating base hospitals" and serve as a centralized

source to coordinate medical communications between EMS crews and respective hospitals/bases for medical control, identify local hospital operational status, and account for updated bed counts/patient care availability throughout the system.

As a resource identified within this document, some of the pre-incident (preparatory) responsibilities of base station hospitals include incident/MCI planning, training, and exercising. During MCI events, the designated “facilitating base hospital” may route patients to various hospitals based on the incident’s location (and proximity to various hospitals), the patient’s acuity and care needs, and the bed availability of different hospitals throughout the county. Additional responsibilities during an MCI event include coordinating medical communications with others identified within the Annex-D document, the delivery of base hospital orders, and base hospital physician orders. This particularly happens if such orders acutely become standing orders during the specific timeframe of the incident, activating specialty surge plans for specialty needs patients, and assisting with the coordinated evacuation of medical facilities if necessary.

During an MCI event, these added roles and responsibilities create a significant personnel tax to the currently staffed single-MICN base station hospitals. As such, each MICN interviewed indicated that there were procedures in place for them to pull in additional working MICNs from within their emergency department to provide assistance, as needed. Thus, this practice also means that the additional MICN pulled from the ED creates a staffing loss for the ED during a time period where potentially higher ambulance transport and patient walk-in volumes may occur as a result of the MCI.

4.7 – EMS Education

In addition to their primary functions, the base station hospitals are intended to serve as centers for EMS education aimed at pre-hospital personnel. On a quarterly basis, they offer four hours of continuing education opportunities on various topics. These educational sessions encompass didactic presentations, practical skill training, and hands-on clinical experience. Periodically, they conduct case studies that illuminate key concepts and emerging trends.

To enhance the educational experience, these sessions incorporate insights from the local EMS quality improvement program, as well as pertinent data and research findings. Furthermore, the content of these educational sessions is shaped by recommendations from the base station hospital physician, the Prehospital Audit Committee (PAC), or the base hospital nurse coordinator.

4.8 – Quality Assurance

The County’s EMS Quality Improvement (QI) Plan is a blueprint to address and enhance specific system components. These components have been carefully chosen based on the stringent mandates of the California Code of Regulations, Title 22, Chapter 12, Section 100404. The CoSD LEMSA has taken proactive measures to recognize the importance of collective input and teamwork in emergency medical services. They actively collaborate with EMS community providers and various organizations. The purpose of this collaboration is not to just ensure compliance with regulations but rather to foster an avenue for formulating, innovating, and implementing QI activities. Such initiatives ensure that the community receives the highest standards of emergency medical care. The County EMS QI Plan targets specific system components as mandated by the California Code of Regulations, Title 22, Chapter 12, Section 100404. **Figure 4.3** outlines a step-by-step process representing the current workflow for Quality Assurance (QA) and Continuous Quality Improvement (CQI) in San Diego County’s Quality Assurance Plan dated 2021.

Process	Item	Procedure
 1	Issue Identification and Submission	▶ Cases or issues are identified within the healthcare system. ▶ These cases or issues are submitted to the base hospital for review and investigation.
 2	Initial Investigation by Base Hospital Nurses and Coordinators	▶ The responsibility for investigation falls on the Base Hospital Nurse Coordinator (BHNC), as per the agreement with the County. ▶ BHNC gathers all known facts about the case.
 3	Evaluation and System Performance Analysis	▶ BHNCs evaluate system performance using a problem-solving process. ▶ This process includes issue identification, analysis, and creation of an action plan. ▶ BHNCs implement the action plan and follow up on its execution. ▶ The case is then reevaluated to measure the effectiveness of the action plan.
 4	Primary Contact and Liaison	▶ BHNC acts as the primary contact and liaison between the base hospital and various stakeholders, including prehospital providers, agencies, receiving facilities, and training agencies.
 6	Information Gathering	▶ BHNC may interview prehospital crews to obtain additional information. ▶ In agencies with Quality Improvement (QI) staff, they conduct an initial investigation and provide the information to BHNC.
 6	Documentation and Audio Recording	▶ Information can include both documentation in the record and audio recordings of paramedic and base station hospital reports.
 7	Discussion and Case Selection	▶ Cases identified for system improvement are discussed within the BHNC group.
 8	Forwarding to pre-PAC	▶ The BHNC group forwards selected cases to the Prehospital Audit Committee (pre-PAC).
 9	Review by pre-PAC	▶ Pre-PAC members review information from the agency, BHNC, and other pertinent facts.
 10	Forward cases to full PAC	▶ Cases that have been fully vetted are forwarded by pre-PAC to the full Prehospital Advisory Committee (PAC) for a formal Quality Improvement (QI) review.
 11	Medical Group Review	▶ Cases approved by PAC are sent to one of the many advisory groups (MAC, SAC, etc.) for further review and recommendation.
 12	EMS Policy Committee Inclusion	▶ Cases that have received approval are then considered for inclusion into the policies and guidelines of the healthcare system.

Figure 4.3: Current County EMS Quality Assurance Process

The County's EMS quality improvement team continues progressing in its policy and procedure development, training delivery, and stakeholder outreach. Noted within the existing process is an opportunity for growth by executing complete improvement cycle exercises internally and with their EMS partners. As changes are examined, considered, and committed to the current EMS system, the County EMS quality improvement department can play a pivotal role in designing and

constructing a system that not only meets the community's immediate needs but anticipates future demands. By integrating feedback from EMS partners and capitalizing on continuous learning, the quality improvement department can ensure that the EMS system remains resilient and adaptive and consistently delivers top-tier care to those in need. This holistic approach will help to solidify the entire QA/CQI process and create an outcome-centered and feedback-supported system.

SECTION 5: INDUSTRY POSITION STATEMENTS AND ACCREDITATION STANDARDS

5.1 – Section Introduction

Section 5 of this report serves as a bridge between **Section 4** (looking at the current base station hospital system) and **Section 6** (examining other base station models utilized throughout the country). By examining current industry association position papers and existing accreditation body standards, greater context can be gleaned while comparing other system models to the one utilized within San Diego County.

5.2 – Position Statements

Currently, there are no direct national standards, regulations, or requirements reflective of base station hospitals or medical direction in existence within the nationwide EMS industry. However, there are various associations and accrediting sources that have internal positions or standards reflecting such practices. Noted in this section are professional association positions relevant to such practices, in addition to an overview of the two most common accreditation bodies within the fire and EMS industries.

While various associations and accreditation bodies are referenced in this section, PCG does not commercially endorse any particular group through this reference listing.

5.2.1 – California Nurses Association (CNA)/National Nurses United (NNU) Positions

The California Nurses Association (CNA), a member of National Nurses United (NNU) and its National Nurses Organizing Committee (NNOC), describes itself as both a professional organization and labor union comprised of registered nurses (RN) throughout California. Its membership exceeds 100,000 RNs within the state and the organization serves as the labor union within ten different hospital systems throughout, including some in San Diego County. ^[40, 41] As of October 1, 2023, the California Board of Registered Nursing indicates there are approximately 530,000 licensed registered nurses in the state. ^[42] The CNA/NNU, therefore, represents approximately 20% of the registered nursing workforce in the state.

As a professional organization, it has produced multiple documents and reports reflective of nursing care and its advocacy for the nursing profession. The association's website highlights at least three such reports that specifically reference paramedics and their stance on various legislative initiatives that have been cited in years past, or industry practices that directly impact the nursing profession. From these reports, the CNA appears to have an aversion toward EMS providers, viewing paramedics as "inferior" rather than allied healthcare professionals and recent prehospital care initiatives as "schemes" and "peddling programs" that should raise "alarming" concerns for nurses throughout the state. Direct quotes and examples of these references are made in the example reports produced by the CNA, below.

5.2.1.1 – Paramedics Cannot Provide Primary Care

A report (i.e., position article) produced by the executive director of the NNU referenced recent legislation aimed toward developing mobile integrated healthcare (MIH)/community paramedicine (CP) programs within the state, titled "Two California Bills Seek to Cut Costs by Diverting Uninsured, Medi-Cal Patients Away from Nurse Care. It's Not Okay." This report cites California

bills SB-944 and AM-1795, which were both introduced within the 2021-2022 legislative session and starts by prefacing that “Paramedics, whose training is in stabilizing patients, pre-hospital – simply do not have the same broad patient assessment skills” when compared to nursing. It expands to say that allowing the practice of paramedics providing more in-home care to patients, including potential diversion away from hospital emergency departments (ED) and toward other admitting or healthcare facilities, is “not about providing safe, quality care.”

The report further makes the following statements related to paramedics and prehospital care: ^[43]

- ▶ “Unfortunately, these bills are not about providing appropriate patient care to ALL patients; they are about cost savings for a variety of stakeholders. For example, some of the alternative destination sites will directly benefit for-profit companies, including [ambulance services].”
- ▶ One of the report’s headings is titled “Paramedic Misdiagnosis Happens at Significant Rates.”
- ▶ Under this heading, a referenced study from *Lifeline Magazine* (January 2017) examines “compared assessments by paramedics of patients transported to [a California hospital] between April and December 2015 from the [fire department] – with assessments of the same patients by licensed ED physicians. The study concluded that there was a significant difference between the paramedic and physician assessments: the paramedics under diagnosed the severity of a patient’s condition.”
- ▶ Another referenced editorial under this heading from the *Western Journal of Emergency Medicine* (February 2017) “cited 13 research studies that found a real danger in ‘under-triage’ ... The studies revealed under-triage rates as high as 32% in transport of patients to alternative destinations.”
- ▶ A second heading within this report is titled “Paramedics Cannot Provide Primary Care – And Simultaneously Be Paramedics.”
- ▶ Content under this heading starts with “Alarmingly, one of the bills, SB 944, would also allow paramedics to add primary care functions – like providing post-discharge follow-up care when a patient with a serious health condition is released from the hospital. In addition to lacking nurses’ and doctors’ extensive education, expertise, and experience in providing a clinical assessment of a patient’s condition, paramedics cannot accomplish their main responsibilities of stabilizing emergent patients in pre-hospital and inter-hospital transport, while simultaneously performing additional work.”
- ▶ It further references a quote stating that “This bill gives false hope to our communities that private ambulance companies and fire departments can provide both continuity of care and high-quality health services in addition to their traditional EMS roles.”

This position from the NNU, moreover, does not mention any reference to nursing assessment differences when compared to physicians. It does, however, clearly state that paramedics provide “false hope” to their communities through the expansion of their scope of practice or extension into a patient’s continuum of care and indicates that paramedics are not a reliable source for accurately assessing patient conditions.

5.2.1.2 – Peddling Programs to Treat Acute-Care Patients in their Residences (2022)

Another report (i.e., position article) produced by the CNA/NNU in their *National Nurse Magazine* expands upon the potential for paramedics providing more in-home care and alternative transport destination/navigation of patients, referring to such programs as “peddling programs” (as directly

stated in its title). It refers to such concepts as a “nightmarish scheme to care for patients needing acute hospital care in their own houses.” An ED nurse is quoted as saying “It is an insult to nurses, to the nursing and all medical professions, and even more worrisome, it is straight up dangerous for our patients.”

Such referenced programs may incorporate remote patient monitoring devices to track patient vital signs and utilize “care teams” that may consist of what is referred to as an “upskilled paramedic,” referencing an “MIH/CP,” and its tone derogatorily states, “which basically stands for a paramedic.”^[44]

5.2.1.3 – Paramedics Violating the RN Scope of Practice (2014)

A 2014 report (position article) produced by the CAN/NNU in their *National Nurse Magazine* indicates “Trouble on the Horizon” (as this starts the article’s title). The introduction and implementation of the Affordable Care Act (ACA) drove the premise behind this position article and starts by stating that the ACA’s “changes are redefining the meaning of ‘care’ that healthcare providers, like you [nurses], are expected to provide.” Referenced heavily in this article are paramedics, who are prefaced and referred to as “lesser-trained and skilled providers (cheaper labor).”

One of the “Top five things’ nurses must know about where healthcare is heading” (as stated in the article’s title), and expanding upon the prior points from within this position article, specifically references paramedics in the point titled “Everyone wants to violate your RN scope of practice” (with details from this section provided below):^[45]

- ▶ This key point within the position article begins by referencing “lower-skilled” staff to assume duties and practices that an RN performs, then directly referencing EMTs and paramedics as such examples.
- ▶ It references a 2013 white paper from the UC Davis Institute for Population Health Improvement and its recommendation for developing pilot programs that incorporate paramedics into providing in-home follow-up care for patients, post-hospital discharge. In the “Challenges” section of this white paper, the authors wrote that “patients may perceive there are tiers of care or lower levels of care being provided by the [community paramedic] if the patient is accustomed to receiving care from doctors or nurses.” The CNA/NNU directly addresses this by saying “They’re right to worry, because it’s true; this program does create inferior levels of care.”

5.2.2 – Emergency Nurses Association (ENA) Positions

The Emergency Nurses Association (ENA) is an advocacy organization whose mission is to “advance excellence in emergency nursing.”^[46] While direct positions related to the role of MICNs could not be found on their website, the ENA has expressed some support for various EMS initiatives and legislative activities, such as their support of standing orders for EMS providers and the administration of controlled substance medications, citing that “This is an important victory for the delivery of high-quality emergency care to patients who need it most.”^[47, 48] They have, however, stood with organizations like the California Nurses Association (CNA), the California Hospital Association, and the Emergency Medical Directors Association of California in opposition to a prior 2018 legislative bill, AB-3115, titled the “Community Paramedicine or Triage to Alternate Destination Act.” As a part of this legislative opposition, the California State Council of the ENA opposed this bill because it would have lessened the ENA’s role in the selection of members for the California Commission on Emergency Medical Services, citing that “maintaining the role of [emergency nurses] on the commission was crucial to ensuring their expertise would continue to have an impact on the shaping of EMS policy in the state.”^[49]

5.2.3 – American Nurses Association\California (ANA\California) Positions

The American Nurses Association/California (ANA\California) is a lobbying organization that advocates for and represents all registered nurses in the state of California. ^[50] Access to publicly available position statements, however, are not available on the association's website – and the association's stance on any items related to base station hospitals, MICNs, or the EMS profession could not be referenced for this report.

5.2.4 – National Association of EMS Physicians (NAEMSP) Positions

The National Association of EMS Physicians (NAEMSP) is a national organization of physicians and other professionals working to provide “leadership and fostering excellence in EMS.” They promote the subspecialty of EMS medicine and out-of-hospital care within the healthcare industry and focus on advances in medical care, research, and training as they relate to EMS. ^[51] Periodically, the NAEMSP publishes position statements related to various aspects of clinical care and medical oversight for EMS agencies and EMS providers. Outlined below are a few position statements relevant to this study.

5.2.4.1 – Repealed Stance on EMS Base Station Function and Design (2002, Repealing 1989 Position)

An original consensus document, *Prehospital and Disaster Medicine*, published in 1989 by the NAEMSP and written by Michael Callaham, MD, from the University of California-San Francisco, outlines the organization's position on “Base Station Operations.” One highlight of the document states: “All interventions delivered are the responsibility of the Medical Director of the specific prehospital emergency medical service. When not on-line, the Medical Director may delegate the authority for on-line medical direction of field activities to specific, designated physicians, nurses, or other personnel who are on duty in an emergency department or medical resource center.” ^[52]

In May 2002, this position was repealed by the NAEMSP, and subsequent positions related to EMS system, agency, and clinical medical oversight make no mention of the utilization of nurses for such medical direction activities. ^[51] While direct clarity could not be found indicating why this document was repealed, it can be presumed that its language related to nurses providing on-line medical direction played a role in this position change, as subsequent position statements provided by the NAEMSP make no reference to nurses being afforded this ability.

5.2.4.2 – Physician Oversight of Emergency Medical Services (2016)

This position statement cites a prior 2012 document titled “The Definition of EMS,” which was produced by the National Association of State EMS Officials (NASEMSO) and highlights the following: “EMS is the practice of medicine and as such, any of the activities that constitute EMS require oversight by a physician.” Within this 2016 position statement, it expounds that “The EMS medical director shall have the authority to appoint and delegate duties to one or more associate medical director(s),” who have been already defined as physicians. This position statement makes no reference to the use of nurses in any such capacity. ^[53]

5.2.4.3 – Transfer of Patient Care between EMS Providers and Receiving Facilities (2014)

Respective to the transfer of care process between EMS providers and receiving facilities, the NAEMSP believes that “clearly defined processes for the contemporaneous face-to-face

communication of key information from (EMS) providers to health-care providers in an emergency department (ED) are critical to improving patient safety, reducing medicolegal risk, and integrating EMS with the health-care system.” The following principles are outlined in this position statement:^[54]

- ▶ There may be potential for emergency medical services (EMS) providers to avert unnecessary emergency department visits by providing a medical assessment to determine whether patients can safely be managed without emergency transport to an acute care facility.
- ▶ While evidence supports determination of necessity of transport to acute care facilities by EMS providers in certain select situations, evidence is currently lacking to establish that EMS providers can universally make determinations about necessity of transport.
- ▶ Prior to adoption of EMS provider-initiated non-transport programs, there should be evidence in the peer-reviewed literature that demonstrates that EMS-initiated non-transport for the specific situation is a safe practice.
- ▶ A prerequisite to EMS provider decision to not transport requires, at a minimum, additional education for the providers, a quality improvement process, and stringent physician oversight.

5.2.5 – National Association of EMTs (NAEMT) Positions

The National Association of Emergency Medical Technicians (NAEMT) is a national association representing the professional interests of paramedics, advanced emergency medical technicians, emergency medical technicians, emergency medical responders, and other professionals providing prehospital and out-of-hospital patient care.^[55] In a 2010 position statement titled “Medical Direction of Emergency Medical Services,” the NAEMT expresses that “medical direction is an essential component of an effective EMS system in order to ensure that patient care is administered with appropriate clinical oversight using medically accepted standards. All EMS systems, regardless of their delivery model, should operate with medical direction and oversight from an EMS physician.”^[56] This document makes no reference to nurses being involved in this process but does highlight opportunities for other EMS practitioners to be involved in various research and quality assurance components within an EMS agency and system.

5.2.6 – National EMS Management Association (NEMSMA) Positions

The National EMS Management Association (NEMSMA) is a professional association of EMS leaders dedicated to the discovery, development, and promotion of leadership and management in EMS systems.^[57] A recent position statement produced by NEMSMA in 2020, published in the trade journal *Prehospital Emergency Care*, highlights the association’s position of “Process and Outcomes Data Sharing between EMS and Receiving Hospitals.” This statement document includes three primary statements reflecting the bidirectional sharing of data between EMS and hospital entities, outlined below.^[58]

- ▶ Ambulance services should provide a patient care report at the time of transfer to the receiving hospital. An abbreviated written report, electronic or physical, should be provided to the receiving hospital before the ambulance crew leaves the hospital. A full and completed report should be provided as soon as possible, never to exceed 24 hours from the time of patient transfer.

- ▶ Hospitals should routinely provide EMS providers with discharge summaries for patients transported to the emergency department or directly admitted to an acute specialty care or diagnostic area. These should be sent to EMS provider agencies at the same time that discharge summaries are sent to the physicians who consulted on the case.
- ▶ Hospitals should also provide results of pertinent diagnostic tests, including lab results, images, and critical time intervals for time-sensitive emergencies, whether field alerts were declared or not.

5.3 – Accreditation Standards

5.3.1 – CAAS Accreditation Standards

The Commission on the Accreditation of Ambulance Services (CAAS) is an independent credentialing organization that encourages and promotes quality patient care in EMS agencies throughout the country. The Commission has established a comprehensive series of standards for the ambulance service industry to adopt, striving to set a “gold standard” of qualifications that often exceed standards set by state or local regulations. Their goal is to increase operational efficiency and decrease risk and liability across the entire spectrum of an EMS agency’s organization.^[59]

Their most recent public document, dated as a 2022 draft document for public review, outlines their standards for clinical care, medical direction, clinical protocols, medical records, clinical improvement, and continued medical education.^[60] While this study did not include an in-depth assessment of each EMS agency’s adherence to such standards, it is presumed that a majority of (if not all) EMS agencies within the County meet or exceed such baseline standards. Further in-depth assessment would confirm this presumption. There are currently 23 CAAS Accredited agencies in California, one of which is in San Diego County.^[61]

5.3.2 – CFAI Accreditation Standards

The Commission on Fire Accreditation International (CFAI) is an accreditation arm of the Center for Public Safety Excellence (CPSE) that promotes its accreditation credential as a process of agency self-reflection. Traditionally, CFAI is an accreditation source utilized by fire departments and fire-based EMS agencies, not private or public EMS agencies. They express that accredited agencies are “often described as being community-focused, data-driven, outcome-focused, strategic-minded, well-organized, properly equipped, and properly staffed and trained.”^[62] Their accreditation process begins with an agency self-assessment, followed by adherence to various standards reflecting administration, planning, finances, community risk reduction, and other elements related to fire service agencies.^[62] The majority of these standards are not applicable to the focus of this study. There are currently 41 CFAI Accredited fire departments throughout California, five of which are in San Diego County.^[62]

SECTION 6: ALTERNATE BASE STATION SYSTEM MODELS

As part of this study, the consultants were asked to provide models for a base station system that could serve the San Diego County EMS system including models used in California and across the country. This section provides information regarding base station options for consideration.

6.1 – California Base Station Models

PCG conducted a survey of all 33 of the Local EMS Agencies (LEMSAs) in the state and received participation from 26 (79%). Of the participating 26 LEMSAs, the following information was gathered respective of their base station hospital systems:

- ▶ 25/26 utilized a base station hospital (BSH) system, while 1/26 did not. Of those that utilized base station hospitals, 12/25 had only one BSH.
- ▶ Related to receiving medical direction, 5/26 indicated they received medical direction from their single BSH, 9/26 indicated they received it directly from their LEMSAs or agency medical director, and 12/26 indicated there was not a single source to receive medical direction from (rather, there were multiple sources).
- ▶ Of the 26 responding LEMSAs, 8/26 indicated their system does not utilize MICNs, while 18/26 indicated that their system does utilize MICNs. LEMSAs/Counties that do not (8/26) utilize MICNs include Alameda County, Marin County, Monterey County, San Benito County, San Mateo County, Santa Barbara County, Tuolumne County, and Yolo County.
- ▶ Respective of contacting a BSH, only 1 of 20 responding LEMSAs indicated that they require EMS crews to contact a BSH for every call with a paramedic providing ALS care.
- ▶ Of 24 responding LEMSAs, 16 indicated that the EMS crews are aware of the receiving status of each of their local hospitals by some in-ambulance software or internal dispatch communication means. 9/24 are unaware of the receiving status of local hospitals and would have to contact a BSH to become aware of such status.

Below are summaries of various LEMSAs throughout the state and their operations respective to base stations, MICNs, and online medical orders (alphabetically listed).

- ▶ **Alameda County** – One hospital is utilized as a central base station resource, in addition to one point of contact for online medical orders. Within this system, MICNs are not utilized, and EMS crews only contact their base station hospital on an as-needed basis.
- ▶ **Central California** – Seven base station hospitals are in operation over the four-county LEMSAs and operate similarly to those in San Diego County, incorporating MICNs in the system for online medical orders.
- ▶ **Contra Costa County** – One hospital is utilized as a central base station resource which integrates MICNs into their online medical orders process.
- ▶ **Orange County** – Seven base station hospitals are utilized throughout the county that utilize MICNs as a part of the medical orders process.
- ▶ **San Benito County** – One base station hospital is utilized throughout the county and facilitates medical orders only through its emergency department physicians, with no MICNs incorporated into its system.

- **San Mateo County** – One base station hospital is utilized within their system to facilitate online medical orders, without the use of MICNs. Within this system, one contracted medical director also dedicates time weekly toward answering EMS crew calls for orders.

6.2 – Alternative Base Station Models

An assessment and comparison of multiple base station hospital models was conducted as a part of this study and included various factors related to the utilization of hospitals, non-hospital facilities, and/or internal resources as a base station, in addition to the general practices of notifying hospitals by the EMS crew for patient transport/receiving. Through this assessment, six primary systems for addressing the utilization of base station hospitals, or standalone base stations, for medical orders and the notification of receiving hospitals for patient transport situations were identified, as outlined in **Figure 6.1**.

	Notify Base for All Transports	Notify Receiving Hospital for All Transports
Multiple Bases for Orders	Multiple Bases for Orders Notify Base for All Transports (Model-A)	Multiple Bases for Orders Notify Receiving Hospital for All Transports (Model-B)
Single Base for Orders	Single Base for Orders Notify Base for All Transports (Model-C)	Single Base for Orders Notify Receiving Hospital for All Transports (Model-D)
Internal Base For Orders	-----	Internal Base for Orders Notify Receiving Hospital for All Transports (Model-E)
No Base for Orders	-----	No Base for Orders Notify Receiving Hospital for All Transports (Model-F)

Figure 6.1: Model Examples Incorporating Base Station and Hospital Notification Practices

While additional standalone models, or variations within each model, can be found, these six primary models appear to represent the significant majority of EMS/base/hospital systems present throughout the country. Of note, a potential extreme toward one end of the spectrum would be the existence of “no base” and “no notification,” whereby EMS crews transport patients to a hospital without providing any notification and having no options to seek medical orders, but the likelihood and practicality of such a system is incredibly low. That hypothetical model, moreover, is not included in this review as it is not a recommendation of our firm. The forthcoming subsection highlights the various components of each of the represented model examples and identifies active metropolitan systems that are currently in place throughout the country as a reference.

6.3 – Model Examples

Respective information within this section follows a consistent pattern or flow, first highlighting generalized details about the model represented, then showing a description and image example

of the communications process involved with an image key represented in **Figure 6.2**, below. This is followed by a summary paragraph of different elements represented in the model and then a Factors & Conditions figure (the example portrayed in **Figure 6.3**) that serves as a key for outlining various operational, oversight, and administrative elements within this represented model. Concluding each represented model is a “case example” of the model as it exists elsewhere in reputable EMS systems throughout the nation.

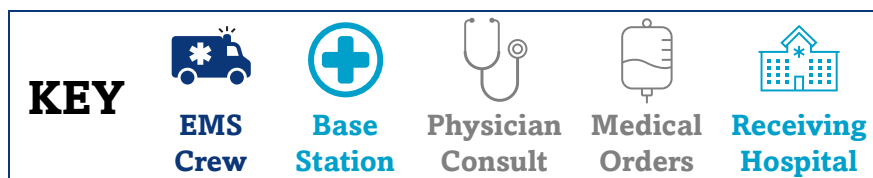


Figure 6.2: Key for Model Description and Image Examples

Represented Model Factors & Considerations		
OPERATIONAL	OVERSIGHT	ADMINISTRATIVE
IMPACTS: Addresses who will have the greatest operational impact with the model's implementation Call Process: Description, examples Technology: Description, examples Facility(ies): Description, examples Physician Access: Description, examples Hospital Status Tracking: Description, examples. Diversion Process: Description, examples MCI Process: Description, examples	RESPONSIBILITY: Addresses where oversight responsibility prevails Regulatory Compliance: Description, examples Medical Orders: Description, examples Data Tracking: Description, examples Quality Program: Description, examples Training Program: Description, examples	EXPECTATIONS: Addresses key elements administrators will need to account for Staff Qualifications: Description, examples Workforce Availability: Description, examples Base Funding: Description, examples

Figure 6.3: Example of Represented Model Factors & Considerations

6.3.1 – Model-A: Multiple Bases for Orders; Notify Base for All Transports

Model-A incorporates a “base-heavy” approach to the system whereby multiple base stations are located throughout a region and available for contact to provide both medical orders and to notify receiving hospitals of a patient’s transport. Base stations within this model are typically associated with a hospital facility or system and are not commonly standalone facilities or entities. Convenient for these systems, EMS crews only need to contact one entity for each patient transport, regardless of their transport destination, as the base station will complete the necessary hospital notification process (**Figure 6.4**). As a challenge of this model, multiple bases throughout a region

may create a “boundary issue” whereby questions may be drawn related to why a particular EMS crew contacted one base station over another. A focus of the system, however, is to promote some level of consistency over a large geographic, population, or call volume area.

Model	Description	Image Example
Model-A	Multiple Bases for Orders Notify Base for All Transports	

Figure 6.4: Model-A Description and Image Example

In a Model-A system, some form of oversight authority is commonly involved in approving “who” is eligible to qualify as a base station, in addition to what parameters or scope they should operate within. Additional responsibilities related to data tracking, patient navigation, and quality assurance may also be assigned to each base station. **Figure 6.5** highlights various factors and considerations related to such systems addressing operational, oversight, and administrative elements. This system is mostly found in California and is sparse throughout the rest of the country.

Model-A Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Highest operational impact is directed toward the base stations. Call Process: One call is made by EMS to a single entity. Technology: Phone or radio preferred. Facility(ies): Multiple bases equates to multiple infrastructure needs. Physician Access: Internal physician access available through base station. Hospital Status Tracking: Managed by the base stations. Diversion Process: Managed by the base stations. MCI Process: Managed by the base stations.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base stations. Medical Orders: Provided by base stations. Data Tracking: Often integrated into base station functions. Quality Program: Often integrated into base station functions. Training Program: Often integrated into base station functions.	EXPECTATIONS: Workforce involved in base station operations typically have ancillary responsibilities in addition to their base station role. Staff Qualifications: Typically EMT, Paramedic, or RN qualified for call handling; physician for medical orders. MICN in California. Workforce Availability: Requires dedicated or additional staffing to maintain base stations. Base Funding: Often supported by an oversight entity.

Figure 6.5: Model-A Factors & Considerations

6.3.1.1 – San Diego County (CA) Model

San Diego County's current system best reflects the Model-A system. As outlined in **Section 4** of this report, multiple base stations are utilized to serve as communication and navigation points for both medical orders and receiving hospital notifications. This is primarily evident within the County's ALS system but is occasionally reflected in the County's BLS system, as BLS ambulance crews are able to directly notify the receiving hospital of a patient transport if no medical orders or specific medical situations are necessary. Respective of San Diego County's ALS system, all ambulance units are required to contact a base station to report ALS care being provided even in situations where no online medical orders are necessary. San Diego County's system, as indicated earlier in this report, utilizes MICNs to serve as the workforce with each base station while having direct physician access nearby.

6.3.2 – Model-B: Multiple Bases for Orders; Notify Receiving Hospital for All Transports

Model-B promotes a separated system whereby EMS crews have multiple base station options to choose from to receive medical orders but must still notify the receiving hospital of their patient transport; the base station is not required to be contacted unless the base station is the receiving hospital, itself (**Figure 6.6**). In these models, it is common for base stations to be affiliated with a hospital facility or system and for more of an informal approach to be reflected in the physical presence and resource dedication to the actual base.



Figure 6.6: Model-B Description and Image Example

In a Model-B system, EMS agencies more commonly define and provide oversight respective to “who” is eligible to qualify as a base station, in addition to what parameters or scope they should operate within. The selection of base stations is often associated with an EMS agency's relationship with physician medical direction contracts and protocol oversight. This allows physicians involved in the system to focus their protocol knowledge on a smaller subset of EMS agencies, as they are not commonly recommended to be sought to provide medical orders to EMS agencies unaffiliated with their medical direction practice or contracts. Additional responsibilities related to data tracking, patient navigation, and quality assurance may also be

assigned to each base station. **Figure 6.7** highlights various factors and considerations related to such systems addressing operational, oversight, and administrative elements.

Model-B Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources, while base station operations are often integrated into a hospital setting. Call Process: Two calls are made by EMS to two entities (unless the receiving hospital is a base station; and if medical orders are necessary). Technology: Phone or radio preferred. Facility(ies): Multiple bases equates to multiple infrastructure needs. Physician Access: Internal physician access available through base station. Hospital Status Tracking: Often managed by the receiving hospitals. Diversion Process: Often managed by the receiving hospitals. MCI Process: Often managed by the receiving hospitals.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base stations. Medical Orders: Provided by base stations. Data Tracking: Often provided internally by the EMS agency but may incorporate base stations. Quality Program: Often provided internally by the EMS agency but may incorporate base stations. Training Program: Often provided internally by the EMS agency but may incorporate base stations.	EXPECTATIONS: Workforce involved in base station operations are typically integrated into their respective hospital system and have additional clinical role functions. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. Workforce Availability: Typically integrated into current workforce. Base Funding: Typically supported by the hospital facilities/base stations.

Figure 6.7: Model-B Factors & Considerations

6.3.2.1 – Denver Metro (CO) Model

The Denver Metro area is primarily comprised of five adjoining counties covering a catchment area of nearly three million residents. The region includes multiple parent hospital systems and over 20 medical facilities ranging from free-standing emergency departments to micro-hospitals and comprehensive hospital facilities. EMS agencies within the region follow a common set of protocols that are devised by a representative-based group of agency medical director physicians, hospital representatives, and EMS administrators who represent each of the nearly 60 EMS agencies in the collective region. Participation within the Denver Metro EMS Medical Directors group is voluntary for physicians and agencies but is largely a local standing practice. Each EMS agency within the representative group does have the ability to modify its agency's protocols to meet specific needs or medical care waivers, but the general sense of the protocols in place is largely universal throughout the entire system.

Within the Denver Metro system, a formalized base station designation does not exist, but EMS crews within the system typically operate in a way that prefers them to seek medical orders from a hospital facility affiliated with their medical director's practice and physician partnership group. As such, EMS crews with one medical director may contact any of the hospitals that the medical director designates or approves online orders to be received from, but this does not equate to any or all hospitals within the region as the medical directors within any one physician group typically share the same protocol nuances for their agencies as their colleagues' agencies do. As an example, South Metro Fire Rescue, one of the largest metro fire departments in the area, contracts its medical direction with a Centura Health physician. South Metro EMS crews, then, can contact any Centura Health hospital to receive medical orders, but cannot do the same with a HealthOne or other non-affiliated hospital system except for isolated, time-sensitive situations where patient transport is to another such facility and medical orders cannot be received in a timely fashion from a preferred hospital.

Respective of system operations, EMS crews directly notify each receiving hospital of an incoming patient transport, regardless of whether the call is BLS or ALS nature. Calls to such hospital facilities are performed over a recorded phone line with a radio backup option and are often answered by an emergency department nurse, charge nurse, paramedic, or physician. Medical orders from any and all facilities can only be provided by a physician.

All costs associated with the system, which primarily comprises phone equipment and information technology needs, are covered by each hospital facility. Quality assurance, data management, and other training needs are the responsibility of each EMS agency; however, many of the hospital systems incorporate these responsibilities into their systems or facilities by employing paramedics to function as EMS liaisons or EMS educators, providing patient care follow-up, direct crew engagement, and other data management and administrative components.

6.3.3 – Model-C: Single Base for Orders; Notify Base for All Transports

Model-C systems are similar to Model-A systems, with the exception that all bases are consolidated into one, centralized base. This single base serves as an “air traffic control” center (as a reference example) to navigate communications related to all medical orders and hospital notifications. Such physical systems or facilities may exist within a hospital or may be standalone in nature, much like a public safety answering point (PSAP) or 9-1-1 dispatch center. In some systems, this is the actual case: where the base station was co-located within a regional dispatch center, but with separately qualified employees (typically EMTs and paramedics). Access to physicians in non-hospital facilities is primarily accomplished via three-way calling between the EMS crew, the base station, and the online physician. Tracking of all patient transports, emergency department bed counts, and hospital diversion status are all typically performed within this single resource, often with real-time information availability through integrated dashboard platforms – such as those already available within the County. In all situations, the base station provides hospital notification of an incoming patient transport. Where systems like this are best exemplified is in their ability to effectively manage an entire system's transport operations and patient navigation, rather than focusing on any one facility first.

Model	Description	Image Example
Model-C	Single Base for Orders Notify Base for All Transports	

Figure 6.8: Model-C Description and Image Example

In a Model-C system, some form of oversight authority is typically involved in approving who is eligible to qualify as a base station, in addition to what parameters or scope they should operate within. Additional responsibilities related to data tracking, patient navigation, and quality assurance may also be assigned to the base station. **Figure 6.9** below highlights various factors and considerations related to such systems addressing operational, oversight, and administrative elements.

Model-C Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Significant impact is placed on the sole base station, which may be a standalone resource that is separate from any hospital facility or system. Call Process: One call is made by EMS to a single entity. Technology: Phone or radio are preferred, but app-based platforms may be integrated. Facility(ies): May be a hospital facility or another standalone facility with infrastructure needs. Physician Access: Typically available via on-call scheduling or in-hospital availability. Hospital Status Tracking: Managed by the base station. Diversion Process: Managed by the base station. MCI Process: Managed by the base station.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities; internal system oversight is often easiest achieved with this model. Regulatory Compliance: Oversight by a central source and maintained daily by the base station. Medical Orders: Provided by the base station. Data Tracking: Often integrated into base station functions. Quality Program: Often integrated into base station functions. Training Program: Often integrated into base station functions.	EXPECTATIONS: Workforce involved in base station operations are typically dedicated to their role in the medical oversight and hospital notification process. Staff Qualifications: Typically EMT, Paramedic, and/or RN qualified for call handling; physician for medical orders. Workforce Availability: Requires dedicated or additional staffing to maintain the base station. Base Funding: Often supported by an oversight entity.

Figure 6.9: Model-C Factors & Considerations

6.3.3.1 – Minneapolis-St. Paul Metro (MN) Model

While the Minneapolis-St. Paul base station system technically utilizes two base stations, each base station is geographically divided into an east/west catchment area, thus, directing each region's traffic toward only one base station facility overall. These single-regional base stations are locally referred to as Medical Resource Control Centers or MRCC. At a state level, no regulation or statute within Minnesota outlines the necessity or requirement for utilizing base stations; this remains a local decision.

The MRCC system was first developed in the 1970s, beginning in the West and followed by the creation of the East in the 1980s. The system serves as a single point of contact for ambulance transports into the Twin Cities metro region and each of its hospitals. Currently, the East MRCC is operated by Regions Hospital, while the West MRCC is operated by Hennepin County Medical Center. Initial funding for the system came from hospital entities in the east and west, respectively, but later funding was established at the state level to account for added statewide responsibilities that each MRCC facility would undertake. These responsibilities also extend beyond local hospital load-leveling and online medical direction orders.

Reflecting the collective MRCC system, ambulances are not required to contact their respective MRCC to provide patient transport notification or to receive medical orders, however, most local and out-of-state ambulance services do utilize the system for these functions, particularly the hospital notification function. Prior decades involved radio communications with EMS crews and the MRCC, however, recent years have transitioned this process to phone-based communications. In these facilities, call-takers, or dispatchers, are employed by each respective MRCC facility and tasked with navigating patient transport traffic throughout the system. This includes 9-1-1 ambulance transports and interfacility transfer (IFT) hospital notifications, medical orders, hospital availability and diversion tracking, MCI resource/transport navigation, and hospital "load-leveling" during peak or overflow situations. Dispatchers maintain a minimum credential of EMT, but some are also paramedics. Physicians are available via phone for medical orders, as needed.

Specific to the West MRCC, this facility also serves as the statewide resource for all chemical reaction situations where specific antidote therapies may be indicated for specific patients. This program is maintained in collaboration with their state's health department. Each MRCC facility also can incorporate radio "patch" communications with any hospital within the state via its upgraded radio system. This theoretically allows for any ambulance in the state to communicate with any hospital in the state to provide notification or direct communications with them through this one resource.

6.3.4 – Model-D: Single Base for Orders; Notify Receiving Hospital for All Transports

Addressing medical orders and hospital notification as separate functions, Model-D systems utilize a single, central base station that is typically not affiliated with a hospital system or facility but provides direct access to a physician for medical orders during instances where it is necessary. In such systems, the need to call for online medical orders is statistically extremely low, as such systems build into place robust protocols allowing for standing medical orders to be referenced. Related to hospital notification of a patient transport, EMS crews still contact the receiving hospital directly to relay patient information, only contacting the base station for medical orders. In context to one another, the volume of instances where medical orders are requested is significantly lower than the overall volume of patient transports. This allows for a more controlled environment both in terms of medical oversight delegation and workforce needs within the base station set-up.

Model	Description	Image Example
Model-D	Single Base for Orders Notify Receiving Hospital for All Transports	

Figure 6.10: Model-D Description and Image Example

In a Model-D system, some form of oversight authority is typically involved in approving “who” is eligible to qualify as a base station, in addition to what parameters or scope they should operate within. Additional responsibilities related to data tracking, patient navigation, and quality assurance may be assigned to the base station. **Figure 6.11** highlights factors and considerations related to such systems addressing operational, oversight, and administrative elements.

Model-D Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources, while base station operations are often integrated into a hospital setting. Call Process: Two calls are made by EMS to two entities (unless the receiving hospital is a base station; and if medical orders are necessary). Technology: Phone or radio preferred. Facility(ies): May be a hospital facility or another standalone facility with infrastructure needs. Physician Access: Typically available via on-call scheduling or in-hospital availability.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base station. Medical Orders: Provided by the base station. Data Tracking: Often provided internally by the EMS agency but may incorporate base stations. Quality Program: Often provided internally by the EMS agency but may incorporate the base station. Training Program: Often provided internally by the	EXPECTATIONS: Workforce involved in base station operations are typically integrated into their respective hospital system and have additional clinical role functions. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. Workforce Availability: Typically integrated into current workforce. Base Funding: Typically supported by the hospital facility/base station.

Model-D Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
Hospital Status Tracking: Often managed by the receiving hospitals. Diversion Process: Often managed by the receiving hospitals. MCI Process: Often managed by the receiving hospitals.	EMS agency but may incorporate base stations.	

Figure 6.11: Model-D Factors & Considerations

6.3.4.1 – Durham County (NC) Model

The model represented in Durham County, North Carolina, is a common model reflective of a separation between medical direction and hospital notification within a region encompassing multiple hospital systems. Much like what is represented in the Denver Metro model, Durham County's model aligns their medical orders with their contracted medical director physician group, which is coincidentally aligned with only one local hospital. This is similar to Denver's system, which has multiple sister hospitals affiliated with one physician group.

This model is extensively utilized throughout the country in a variety of small through large EMS/hospital systems, which isn't to say it doesn't exist within mega systems reflective of the one in San Diego County. In many small-to-large systems, such as in Durham County, the base station is affiliated with a hospital facility and the overall operational and financial impact is minimal to that facility. In systems reflecting the population and size of San Diego County, it is possible to incorporate a base station that is separate from a hospital facility. At this massive scale, a direct, internal option is often sought to provide medical direction on an agency-specific and agency-contracted basis, rather than utilizing a base station. Model-E better reflects such systems.

Specific to Durham County's single base station hospital, there is no tracking of calls performed by the base station beyond their need to incorporate patient follow-up or quality assurance. All data management aspects are the responsibility of the EMS agencies involved in the system. As a result, the overall cost impact to maintain the system is incredibly minimal; essentially, zero dollars are spent on additional resources as the only workload affiliated with being a base station hospital is the need to answer a few additional calls from EMS crews each day, as their system is highly efficient in maintaining primarily standing medical orders.

6.3.5 – Model-E: Internal Base for Orders; Notify Receiving Hospital for All Transports

Model-E represents a growing model example in major metropolitan areas and EMS agencies that may be perceived as progressive. In this system, an internal physician team is contracted directly by the EMS agency to provide medical orders to their crews as needed. In all other situations, EMS crews notify the receiving hospital directly related to patient transports. These systems often utilize their contracted physicians to fill multiple supplemental roles within the quality assurance and training/continued education spaces, in addition to providing on-call, scheduled medical direction.

Model	Description	Image Example
Model-E	Internal Base for Orders Notify Receiving Hospital for All Transports	

Figure 6.12: Model-E Description and Image Example

In a Model-E system, responsibility for medical orders rests solely with the EMS agency. The use of contracted physicians by the EMS agency as a part of their medical direction team is irrespective of any other local systems in place. **Figure 6.13** highlights various factors and considerations related to such systems addressing operational, oversight, and administrative elements.

Model-E Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: EMS agencies incur the largest impact as medical direction is sought through internal means. Call Process: Two calls are made by EMS to two entities if medical orders are necessary. Technology: Phone or radio are preferred, but app-based platforms may be integrated. Facility(ies): Infrastructure needs are incorporated into current EMS agency structures. Physician Access: Available via on-call scheduling directly with the EMS agency. Hospital Status Tracking: Managed by the receiving hospitals. Diversion Process: Managed by the receiving hospitals.	RESPONSIBILITY: EMS agencies function as the oversight body to ensure medical orders processes are in place. Regulatory Compliance: Oversight by the EMS agency. Medical Orders: Provided by EMS agency physician resources. Data Tracking: Provided by the EMS agency. Quality Program: Provided by the EMS agency. Training Program: Provided by the EMS agency.	EXPECTATIONS: Workforce needs are incorporated into EMS agency staffing related to physician medical direction services and ancillary call handling services. Staff Qualifications: Internally handled by EMTs and/or Paramedics. Workforce Availability: Internally coordinated by the EMS agency. Base Funding: All costs incurred by the EMS agency.

Model-E Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
MCI Process: Managed by the receiving hospitals.		

Figure 6.13: Model-E Factors & Considerations

6.3.5.1 – Phoenix (AZ) Model

The model represented by the Phoenix Fire Department is one that is a growing trend among major metropolitan agencies within the EMS industry. Similar in size to San Diego County's system, there are more than 25 emergency department facilities in the greater Phoenix area and the department responds to over 220,000 incidents per year. Within their EMS system, an internal base station model is utilized for the purpose of obtaining online medical direction. Phoenix EMS crews can call a single phone number (recorded line), which is connected to their dispatch center (public safety answering point) and links to one of their on-call contracted physician medical directors. In total, the Phoenix Fire Department contracts with a group of over a dozen physicians to function within various medical direction roles including providing quality assurance, training services, and online medical direction. Each of these physicians is intimately involved with the department's EMS program and is directly knowledgeable of the EMS protocols utilized as they are also the protocol authors. On-call physicians are assigned dedicated hours and are not actively working within a hospital facility during such time periods; they are dedicated to their online medical oversight role.

Related to the hospital notification process, transporting EMS crews are tasked with contacting the receiving hospital directly to provide a brief phone report of their patient's status. In the event that medical orders are needed, they are requested to contact their internal medical director unless time-sensitive situations dictate otherwise. Financially maintaining this system, therefore, is based upon their physician contracted rate for services and other expenses related to cellular phone access.

6.3.5.2 – Montgomery County Hospital District (TX) Model

Similar to the Phoenix system model is one employed by Montgomery County Hospital District (MCHD) near Houston, Texas. Within this system, a group of contracted physician medical directors serves as the sole source for obtaining online medical orders, but the route by which they communicate with their EMS crews is through a two-way communication smartphone/tablet app platform. Within this platform, a record of each communication is made for data management purposes and an option exists to utilize live video conferencing and telehealth communications with the medical director if more than a phone conversation is requested. Given this advancement, physician medical directors can view the patient on-scene and provide direct guidance to EMS crews in real time as well as throughout the entire duration of the call if needed.

Hospital notification is also continued within this app platform, as EMS crews can notify the receiving hospital of their transport, provide relevant patient information, synchronize with their cardiac monitor to provide updated vital sign records and ECG tracings, and maintain two-way communications with the hospital throughout their entire event on an as-needed basis. All communications via this platform are secured and HIPAA-compliant, and a record is maintained for either direct hospital follow-up or internal EMS agency quality assurance. This app comes at no cost to the EMS agency or receiving hospital for this basic service. While radio and phone communications remain as a system backup, nearly all communications between EMS crews and their medical directors or receiving hospitals are performed via this app platform.

6.3.6 – Model-F: No Base for Orders; Notify Receiving Hospital for All Transports

Model-F represents one of the most common models utilized throughout the country, especially outside of major metropolitan areas, whereby there are no base stations and EMS crews notify receiving hospitals directly for both patient transports and to receive any medical orders. One of the larger risks associated with this system is the overall inconsistency in receiving medical orders, as hospital physicians are not typically aware of the specifics of each EMS agency's medical protocols.

Model	Description	Image Example
Model-F	No Base for Orders Notify Receiving Hospital for All Transports	

Figure 6.14: Model-F Description and Image Example

In a Model-F system, responsibility rests with each EMS agency to manage any quality assurance, data management, or training needs. **Figure 6.15** highlights various factors and considerations related to such systems addressing operational, oversight, and administrative elements.

Model-F Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources. Call Process: One call is made by EMS to the receiving hospital only. Technology: Phone or radio are preferred. Facility(ies): No additional infrastructure needs. Physician Access: Internal physician access available through receiving hospital. Hospital Status Tracking: Managed by receiving hospitals. Diversion Process: Managed by receiving hospitals.	RESPONSIBILITY: Shared oversight is necessary between EMS agencies and receiving hospitals. Regulatory Compliance: There typically is no oversight entity. Medical Orders: Provided by receiving hospitals. Data Tracking: Often provided internally by the EMS agency but may incorporate receiving hospitals. Quality Program: Often provided internally by the EMS agency but may incorporate receiving hospitals.	EXPECTATIONS: Workforce involved in medical orders functions are typically integrated into the respective hospital system and share additional clinical roles. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. Workforce Availability: Typically integrated into current workforce. Base Funding: No base funding costs; any expenses typically supported by the hospital facilities.

Model-F Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
MCI Process: Managed by receiving hospitals.	Training Program: Often provided internally by the EMS agency but may incorporate receiving hospitals.	

Figure 6.15: Model-F Factors & Considerations

6.3.6.1 – Charlotte-Mecklenburg (NC) Model

Another common model represented throughout the country can be found in Charlotte and Mecklenburg County, North Carolina. This system emphasizes a “continuum of care” model where the receiving hospitals provide medical orders directly to transporting ambulance crews. Thus, any local hospital is equally capable and allowed to provide medical orders to transporting ambulance crews, presuming that the hospital is also the receiving hospital of the patients.

Specific to this system, over 15 emergency department facilities serve more than 1.1 million residents within the county, and any costs associated with maintaining this model are incurred at the hospital level, which is minimal overall. Recorded radio communications are the primary method for contacting each hospital, and quality assurance is managed directly by the EMS agency transporting the patient. Of note, there is only one 9-1-1-based ambulance service operating in all of Mecklenburg County.

6.4 – Summary

The design of any one particular base station model system is largely constructed upon local preferences before any other factors. Nationally, the aforementioned models summarize the high points surrounding such systems (e.g., obtaining medical orders and notifying receiving hospitals). However, no national regulations exist to outline the necessities or construction of such models, though various industry positions and accreditation standards do reference the elements surrounding medical oversight. Locally, as a result, many EMS systems focus their efforts on collaborating with stakeholders to design a system that is efficient for the field EMS crews, meets the needs of agency medical directors, and follows a workflow that is conducive to the hospitals involved.

For the County of San Diego’s current model, our firm observes this as being highly reflective of other California-based systems, but different from the practices of other metropolitan systems nationwide. Nurses are not usually involved in the medical orders process for EMS prehospital providers. In larger systems considered “progressive” throughout the country, the focus on agency-specific medical direction has gained traction and such practices are shifting toward contacting directly associated (i.e., contracted, on-call) physicians for medical orders, and not in any specific facility altogether. In such systems, direct attention toward internal quality assurance programs and supplemental continued education programs remains key in their overall processes, and medical direction physicians have become an integral part of the agency’s clinical operations.

Acknowledging the current challenges of the County’s outdated base station model, this study represents an important step forward for the County of San Diego to transform the EMS system into the “*finest system of emergency medical care through regional leadership, collaboration, and innovation*,” as outlined in the County’s 2023-2027 EMS Strategic Plan.

SECTION 7: STAKEHOLDER ENGAGEMENT

7.1 – Stakeholder Engagement

At the start of this project, County EMS emphasized the need for and importance of extensive stakeholder engagement with the EMS system participants and the public within San Diego County. A list of the minimum number of key stakeholders to interview was included in the project statement of work, see Appendix A. The EMS stakeholders included emergency response personnel from fire departments and ambulance service providers; hospital personnel consisting of medical staff members, MICN/RNs, physicians, and hospital administrators; County EMS staff members, and others with past or present ties to the County EMS system. In addition to the EMS stakeholders, the County included opportunities for the public stakeholders to provide input through listening sessions held in each County Supervisor District and two digital input tools, see Appendices B and C, hosted on the County's website.

There were several avenues over the course of this project for EMS stakeholders to provide input. These opportunities included in-person and virtual interviews, in-person and virtual listening sessions, virtual focus groups, and EMS stakeholder/public input survey instruments. A strengths, challenges, opportunities, and threats (SCOT) analysis approach was taken for the interviews, listening sessions, and the EMS stakeholder survey. Open-ended questions were also included based on the response from EMS stakeholders. **Table 7.1** shows the number of individuals that participated in each engagement opportunity. It should be noted that an individual could participate in multiple engagement opportunities and that the total number of individuals does not represent the distinct number of participants.

Engagement Method	Total Stakeholders	Prehospital Stakeholders	Hospital Stakeholders	Other Stakeholders
In-Person Interviews	15	3	4	8
Virtual Interviews	102	32	68	2
In-Person Listening Sessions	29	4	24	1
Virtual Listening Sessions	75	24	51	-
EMS Stakeholder Surveys	367	294	61	12
Public Input Surveys	30	-	-	-
Totals	618	357	208	19

Table 7.1: Count of Stakeholders Involved in this Project

Despite the multiple public engagement efforts conducted for this study, public participation was low. Although the public has a general understanding of the County EMS system, knowledge of the base hospital system is probably not part of that understanding. There was one member of the public who provided comments at one of the in-person listening sessions and there were 30 public input surveys submitted through the County website and JotForm, an online survey tool.

7.1.1 – Onsite Activities

Five members of the PCG consulting team were onsite in San Diego County for the first time on March 16th and 17th 2023. The purpose of this visit was to meet with County EMS officials to confirm the statement of work, the work plan, project milestones, and timelines. In addition, discussions concerning the logistics of the five in-person listening sessions were held with EMS Office administrators. While onsite the PCG team conducted face-to-face interviews with key EMS stakeholders identified in the statement of work.

Six members of the PCG consulting team returned to San Diego County May 23 – 25, 2023, to conduct five in-person listening sessions for EMS stakeholders and the public at large. Over the three days, in between listening sessions, PCG EMS subject matter experts (SME) participated in ride-along observations with the Oceanside Fire Department, San Diego Fire-Rescue Department, and Falck Ambulance Service. PCG SMEs also observed the base station hospital system operations and mobile intensive care nurses (MICN) in action at Sharp Grossmont, Scripps Mercy, UCSD Medical Center Hillcrest, and Sharp Memorial.

Two members of the PCG team returned to San Diego County on June 27 – 29, 2023, to conduct additional base station hospital/MICN observations and additional ride-along observations with EMS provider agencies. Over the three days, all base station hospitals were visited and MICN and paramedic interactions were observed. More than 20 hours of ambulance ride-along observations were completed with both AMR and Falck resulting in over 60 EMS providers providing feedback through informal individual discussions and group listening sessions. In addition to these activities, the PCG team met with the San Diego Fire Department administrative staff, including the medical director, to learn more about their operations and to provide input into this study. The team also attended the North County EMS Prehospital EMS meeting on June 28th.

On August 7, 2023, one member of the PCG team returned to San Diego County to provide an in-person status report and project update to San Diego County Fire Department senior leadership. In addition to the status briefing, PCG visited the San Diego County Fire Dispatch Center and the City of San Diego Fire Emergency Command and Data Center (ECDCC) on August 7th and 8th, 2023. Observation of the dispatch operations and informal interviews with the managers of both Centers were conducted.

The PCG team returned to San Diego County on November 7 – 9, 2023, to conduct five in-person listening sessions to provide preliminary base hospital system findings, an overview of recommendations, and to receive feedback from the public and EMS stakeholders.

7.1.1.1 – Summary of Onsite Activities

In total, the PCG team was onsite for multiple days on five separate occasions to conduct in-person interviews, in-person listening sessions, MICN observations at all base hospitals, and ride-along observations with Oceanside Fire Department, San Diego Fire-Rescue Department, AMR, and Falck ambulance services. In addition to these activities, onsite visits and observations of the San Diego County and San Diego (City) Fire-Rescue emergency communication centers were completed. A separate trip was made, along with County EMS staff, to the Los Angeles County LEMSA's Medical Alert Center (MAC). Interviews with LA County LEMSA staff were conducted as well as a tour and demonstration of the MAC's operations.

7.2 – Stakeholder Interviews

The first in-person interviews were conducted at the County EMS office on March 16 – 17, 2023. Additional in-person unscheduled interviews were conducted onsite May 23 – 25 and June 27 –

29 during Base Station observations and EMS ride-along observations. The format for conducting EMS stakeholder interviews consisted of using a strengths, challenges, opportunities, and threats (SCOT) analysis approach so that key themes could be grouped into these four categories and summarized in this report. Additional open-ended questioning was conducted based on the participant's role in the San Diego County EMS system as well as the answers provided through the SCOT analysis interview. The initial in-person interviews included the following key EMS stakeholders as identified in the project statement of work.

- ▶ Chair of the County Paramedic Agencies Committee (CPAC)
- ▶ Chair of the Base Station Physicians Committee
- ▶ Director of County Fire
- ▶ Deputy Director of County Fire
- ▶ Chair of the Medical Audit Committee (MAC)
- ▶ Vice Chair of the Medical Audit Committee (MAC)
- ▶ Representative of the San Diego County Fire Chiefs Association
- ▶ County EMS Administrator
- ▶ County EMS Program Coordinator
- ▶ Vice Chair of the Emergency Medical Care Committee (EMCC)
- ▶ Chair of the Prehospital Audit Committee

The first virtual stakeholder interview took place on March 20th and the last virtual interview was on September 14, 2023. There were two distinct EMS stakeholder groups – those representing prehospital providers and those representing hospital providers. Within each group, EMS stakeholders either represented clinicians or represented management and leadership from the two disciplines. There was a total of 113 individuals that were interviewed, 35 representing prehospital personnel, 72 representing hospital personnel, and 10 County EMS staff members.

7.2.1 – Pre-Hospital Provider Interviews

There were only 35 prehospital providers who were formally interviewed by the PCG team, and most of the interviews were conducted virtually. There were additional informal interviews with more than 70 prehospital providers who provided feedback during the fire department and ambulance service ride-along observations. Prehospital representatives included EMS field providers and EMS managers, both from the private and public sectors. The strengths, challenges, opportunities, and threats (SCOT) mentioned most often were categorized and included the following:

7.2.1.1 – Strengths

The strengths of the County EMS base station hospital system can be summarized as follows:

1. Effective Communication and Notification:

- ▶ The County RCS (Radio Communication System) is effective and reliable for basic notification and communication needs.
- ▶ The RCS system facilitates efficient communication and notifications between EMS providers and base hospitals.

2. Knowledgeable and Supportive Nurses:

- ▶ Mobile intensive care nurses (MICNs) at the base hospitals are generally well-trained and provide a depth of medical knowledge and support.
- ▶ Having base station nurses who work in the ER is valuable for prehospital providers as they can offer medical expertise and assistance.

3. Medical Control and Consultation:

- ▶ The system of obtaining orders for online medical control is seen as positive, allowing paramedics to consult with physicians when needed.
- ▶ Paramedics appreciate the ability to speak directly with a physician for consultation, fostering collaboration and timely decision-making.

4. Accurate Triage and Patient Routing:

- ▶ The system effectively triages STEMI, stroke, and trauma patients to appropriate facilities, ensuring that patients receive the necessary specialized care.
- ▶ Good collaboration between medics and MICNs contributes to accurate patient routing.

5. Collaboration and Relationships:

- ▶ There is a good working relationship between medics and MICNs, enhancing teamwork and patient care.
- ▶ Base stations collaborate well with each other and maintain positive relations with EMS providers within their respective jurisdictions.

6. Paramedic Experience and Willingness to Improve:

- ▶ Paramedics in the system have significant experience and knowledge of its strengths and weaknesses.
- ▶ There is a willingness to make changes and improvements to enhance patient care and system efficiency.

7. Potential for Innovation:

- ▶ There are opportunities to leverage technology for better data sharing and hospital status updates, enhancing communication and patient care.

8. Quality Assurance and Expertise:

- ▶ Base hospitals provide a quality assurance process, ensuring ongoing improvement in patient care.

In summary, these strengths highlight effective communication, collaborative relationships, expertise, and a commitment to continuous improvement in the County EMS base station hospital system, contributing to efficient and high-quality patient care.

7.2.1.2 – Challenges

Challenges faced by paramedics in the San Diego EMS base station hospital system can be summarized as follows:

1. Communication and Technology Challenges:

- ▶ Inefficient radio reporting system.
- ▶ The current base station system is not keeping up with technology.

- ▶ Limited bandwidth in the radio system causes communication difficulties.
- ▶ Difficulty contacting base stations, especially during busy times.

2. Provider Involvement and Trust Issues:

- ▶ Lack of EMS provider input in decision-making committees.
- ▶ Lack of transparency about hospital wait times.
- ▶ Lack of trust between EMS providers and the County EMS agency.
- ▶ Trust issues between some base stations and paramedics.

3. Protocols and Consistency Concerns:

- ▶ Lengthy radio reports prioritizing data collection over patient care.
- ▶ Inconsistency between base hospitals in call handling.
- ▶ Disconnect between paramedic protocols and base station physician knowledge.
- ▶ Outdated EMS system and protocols based on models from the 1980s.

4. Base Hospital System Issues:

- ▶ The base hospital system relies on antiquated technology.
- ▶ Delays in obtaining base station physician orders.
- ▶ Challenges in accessing base stations when needed.

5. Relationship and Command Challenges:

- ▶ Weakened relationships between base stations and some paramedic agencies.
- ▶ Lack of countywide command and control of EMS resources and hospital ED bed availability.
- ▶ Issues with base hospital contact are perceived as an obstacle to patient care by EMS providers.

6. Order Inconsistencies:

- ▶ Inconsistency in orders from different base stations and base hospital physicians.
- ▶ Physicians are sometimes not trained for EMS, leading to orders not aligned with EMS protocols.

7. Streamlining and Efficiency Needs:

- ▶ Long radio reports consuming valuable time.
- ▶ Lack of technology to streamline processes.
- ▶ Heavy radio traffic is causing delays in communication.

In summary, these challenges encompass communication inefficiencies, trust issues, protocol inconsistencies, outdated systems, and the need for improved technology and streamlined processes in the San Diego EMS base station hospital system. Addressing these weaknesses can enhance the overall effectiveness and responsiveness of the EMS system.

7.2.1.3 – Opportunities

Opportunities for the San Diego County base station hospital system can be organized and summarized as follows:

1. Efficiency Improvement:

- ▶ Reducing radio traffic and contacting base hospitals only for essential medical direction needs.
- ▶ Expanding standing orders to reduce the need for base station calls.
- ▶ Utilizing technology to automate hospital notifications and streamline communication.

2. Enhancing Information Exchange and Relationships:

- ▶ Improving information exchange and relationships between base and satellite hospitals through technology.
- ▶ Providing EMS agencies with outcome data for validation and quality improvement activities.
- ▶ Allowing EMS agencies access to radio report transcripts for training and quality improvement.
- ▶ Focusing base coordinators on education and outreach with EMS agencies.

3. Telemedicine Integration:

- ▶ Seamlessly integrating telemedicine solutions for complex cases, enabling real-time consultations and informed decisions.
- ▶ Providing paramedics with advanced technology for instant communication of vital scene information to trauma centers.

4. Centralization and Real-Time Updates:

- ▶ Implementing a central base hospital for real-time hospital status information.
- ▶ Centralizing base station functions to provide consistent orders and patient destination guidance.
- ▶ Using technology to provide real-time hospital status updates and scene information.

5. Protocol Streamlining:

- ▶ Converting more protocols to standing orders to reduce the need for base station contact.
- ▶ Streamlining medical direction and radio reporting to reduce delays in patient transport.

6. Technology Adoption:

- ▶ Leveraging technology like apps for data transmission and real-time hospital status updates.
- ▶ Implementing technology to track hospital availability and diversion/bypass status.
- ▶ Evaluating alternative base station models or centralization options.

7. Community Paramedicine and Data Sharing:

- ▶ Integrating telemedicine and community paramedicine programs.
- ▶ Improving data sharing policies to increase provider participation in data systems.
- ▶ These opportunities aim to enhance the effectiveness, efficiency, and coordination of the San Diego County base station hospital system while leveraging technology and streamlining protocols to improve patient care and reduce delays.

7.2.1.4 – Threats

Threats to the San Diego County base station hospital system from the perspective of EMS providers can be organized and summarized as follows:

1. Resistance to Change:

- ▶ Established base hospitals may resist changes that reduce their role or redirect patients, potentially hindering system improvements.

2. Funding and Coordination Challenges:

- ▶ Lack of funding and County control over programs may impede the implementation of initiatives.
- ▶ Lack of coordination between County and local agencies on initiatives can lead to inefficiencies and challenges.

3. Conflict of Interest and Data Collection Focus:

- ▶ The perception that base hospitals may direct more patients to themselves due to a perceived conflict of interest.
- ▶ Physicians becoming detached from the system due to lengthy, low-acuity reports, potentially sacrificing patient care for data collection goals.

4. Hospital Prioritization and Offload Delays:

- ▶ Hospitals may prioritize their interests over the regional EMS system when giving transport directions.
- ▶ Offload delays continue to be a significant issue impacting EMS response times.

5. Political and Organizational Resistance:

- ▶ Political issues and financial incentives for hospitals may make it difficult to implement significant changes.
- ▶ Resistance from the County EMS office and MICNs to changes that reduce their role and oversight.

6. Paramedic Experience and Trust Issues:

- ▶ The current system is designed for the lowest-level paramedic and does not account for experienced paramedics' capabilities.
- ▶ A lack of trust between base stations and paramedic agencies may impede effective communication and collaboration.

7. Data Sharing and Use Challenges:

- ▶ Issues with data sharing and data utilization between the County and EMS agencies can hinder information exchange and coordination.

8. Staffing Shortages and Drive Time Considerations:

- ▶ Staffing shortages at hospitals may pose difficulties in expanding base station functions.
- ▶ The current trauma catchment areas do not consider actual drive times, potentially delaying patient care.

9. Workload and Communication Issues:

- ▶ High workload and call volume at base stations may make it difficult for MICNs to answer radio calls promptly.
- ▶ Lack of consistency between base stations in how they communicate with paramedics can lead to confusion.

10. Anxiety and Trust Concerns:

- ▶ Any major system changes could cause anxiety for base station hospitals and staff accustomed to the current system.
- ▶ The perception that MICNs do not trust paramedics may hinder effective collaboration.

11. Order Variation and Confusion:

- ▶ Variations in orders from base hospitals, base hospital physician orders, and variation orders can create confusion in patient care decisions.

These threats highlight the multifaceted challenges faced by EMS providers in the San Diego County base station hospital system, encompassing issues related to funding, communication, trust, protocols, external factors, and resistance to change. Addressing these challenges is essential for improving the system's effectiveness and patient care outcomes.

7.2.2 – Hospital Provider Interviews

72 hospital providers participated in interviews with the PCG team, most were virtual interviews. Hospital representatives included executives, administrators, ED nurses, and MICNs. A significant number of these interviews were with MICNs, many of them involved with the County EMS system for decades. The PCG team conducted additional in-person interviews with MICNs during base station hospital observations.

7.2.2.1 – Strengths

Strengths of the San Diego County base station hospital system, from the perspective of hospital providers, include:

1. Enhanced Decision-Making:

- ▶ Concentration of knowledge and expertise at base stations results in more astute decision-making.

2. Open Communication and Collaboration:

- ▶ Hospital staff engage in open and honest discussions about issues with the current base hospital system.
- ▶ A positive working relationship exists between hospitals and EMS agencies.

3. Collaboration and Redundancy:

- ▶ Collaboration and effective teamwork are strengths of the system.
- ▶ Redundancy in the system ensures reliability and backup support.

4. Highly Trained Paramedics and EMTs:

- ▶ Paramedics and EMTs possess a high level of training and expertise.
- ▶ EMS agencies maintain robust quality assurance and improvement programs.
- ▶ Paramedics have a wealth of experience and knowledge about the current system and its challenges.

5. Effective Communication:

- ▶ Good communication and working relationships exist between base hospital nurses and prehospital providers.
- ▶ A willingness to provide follow-up and feedback to agencies on cases improves patient care.
- ▶ Tracking of trends and issues contributes to continuous improvement in patient care.

6. Knowledge of Regional Hospital Resources:

- ▶ Base stations have knowledge of hospital resources and bed availability, aiding in patient placement and care coordination.
- ▶ Having base stations located in the regions they serve fosters relationships with local EMS providers and an understanding of unique regional needs.

7. Decentralized Base Station Model:

- ▶ Frequent meetings among base station managers improve communication and coordination.
- ▶ Base stations provide education and feedback to pre-hospital teams, contributing to enhanced care.
- ▶ The MICN role is attractive to nurses and aids in retention.

8. Data Capture and Accessibility:

- ▶ The base hospital system captures valuable data that is important to the County.
- ▶ Medics have access to base hospital nurses for guidance on challenging calls.

9. Mature Healthcare Delivery System:

- ▶ San Diego benefits from a mature healthcare delivery system with established protocols, contributing to efficient and effective care.

10. Collaboration and Improvement Focus:

- ▶ Collaboration between hospitals, EMS agencies, and medical directors fosters a culture of continuous improvement.
- ▶ There is a genuine interest in improving the system to enhance patient care.

11. Building Rapport and Relationships:

- ▶ Assigned base hospitals allow paramedics to build rapport and relationships, facilitating smoother communication and cooperation in requesting orders.

These strengths highlight the effectiveness, collaboration, expertise, and dedication to continuous improvement within the San Diego County Hospital Base Station System, ultimately benefiting patient care and system functionality.

7.2.2.2 – Challenges

Challenges to the San Diego County base station hospital system, from the perspective of hospital providers, include:

1. Communication Challenges:

- ▶ Multiple radio channels monitored by MICNs can lead to communication delays.

- ▶ Lack of real-time visibility for Base Hospitals into hospital capacity across the system.

2. Collaboration Issues:

- ▶ Disintegrating collaboration between some groups and a fragmented base station system.
- ▶ Variability between base stations and physicians, contributing to inconsistency.
- ▶ Lack of streamlined reporting processes.

3. Operational Inefficiencies:

- ▶ Outdated base station hospital systems.
- ▶ Capacity constraints at certain hospitals.
- ▶ Inefficient radio reporting requirements for all ALS calls.
- ▶ Lack of real-time data on hospital wait times.

4. System Overload:

- ▶ Increasing patient volumes straining the EMS system.
- ▶ Limited data available to fully understand system issues.

5. Equity Concerns:

- ▶ Concerns about fairness in call distribution between base stations.
- ▶ Perceived lack of transparency in patient data and base station system operations.
- ▶ Concerns about equity and "cherry-picking" in the current base station model.

6. Operational Complexities:

- ▶ The labor-intensive nature of the current base hospital system.
- ▶ Lack of trust between paramedics and base hospital staff.
- ▶ Limited interaction between base hospital physicians and paramedics.

7. Technology and Data Issues:

- ▶ Outdated and clunky technology used by base stations.
- ▶ Lack of standardized data collection and transparency.
- ▶ Issues with hospital diversion policies and communication.
- ▶ Limited radio capacity at base stations.
- ▶ Lack of access to electronic patient records.

8. Resource Allocation and Coverage Gaps:

- ▶ Challenges in regional load leveling.
- ▶ Resource limitations in the South County due to the absence of a base station.
- ▶ Gaps in coverage due to changes in population and geography.

9. Variability and Trust:

- ▶ Variability in knowledge and skills of base station physicians.
- ▶ Lack of financial incentives for hospitals to be base stations.
- ▶ Limited trust between various stakeholders in the system.

10. Protocols and Procedures:

- ▶ Variation in protocols and procedures between base stations.
- ▶ Limited input from field medics in decision-making processes.

These challenges collectively impact the efficiency, consistency, and trust within the base station hospital system, highlighting the need for improvements in communication, collaboration, technology, and operational processes.

7.2.2.3 – Opportunities

Opportunities for the San Diego County base station hospital system, from the perspective of hospital providers, include:

1. Technological Advancements:

- ▶ Utilizing technology for real-time hospital status updates and data sharing.
- ▶ Implementing new technologies like Pulsara™, Twiage™, for improved data capture and communications. Utilizing electronic patient care reports and data platforms to reduce radio traffic.
- ▶ Utilizing electronic patient care reports and data platforms to reduce radio traffic and enhance information exchange.
- ▶ Leveraging technology for real-time hospital status updates.
- ▶ Streamlining reporting processes through technology.

2. Centralization and Streamlining:

- ▶ Establishing a centralized base station or command center for regional responsiveness during emergencies.
- ▶ Moving towards a centralized medical direction system to enhance efficiency and consistency.
- ▶ Simplifying radio reports for stable patients and streamlining the reporting process.
- ▶ Increasing transparency and direct communication between medics and receiving hospitals.
- ▶ Implementing a system that provides hospital capacity and quick offload times.
- ▶ Enhancing load leveling between hospitals and exploring alternative destinations and transport options.
- ▶ Standardizing policies and protocols for better system-wide consistency.

3. Community Paramedicine and Telehealth:

- ▶ Expanding community paramedicine and telehealth programs to alleviate strain on the system.
- ▶ Exploring alternative destinations and transport options.
- ▶ Piloting changes to evaluate effectiveness.

4. Operational Improvements:

- ▶ Utilizing experienced paramedics as base station radio operators.
- ▶ Strengthening the countywide QA program with focused monthly targets.

- ▶ Establishing an iterative quality improvement system for EMS system reassessment.
- ▶ Simplifying radio reports for stable patients.
- ▶ Recognizing good performance through kudos reports.
- ▶ Increasing paramedic involvement in committees and decision-making.

5. Enhanced Communication:

- ▶ Facilitating more transparent communication.
- ▶ Direct contact between medics and receiving hospitals.
- ▶ Standardizing policies, protocols, and load leveling.

6. Collaboration and Data Sharing:

- ▶ Better utilization of data to understand diversion times and patient loads.
- ▶ Improving system-wide data sharing and transparency.
- ▶ Leveraging bidirectional information exchange for enhanced collaboration including participation with the San Diego Health Connect health information exchange (SAFR)
- ▶ Enhancing collaboration between hospitals, EMS agencies, and medical directors.

7. System Expansion:

- ▶ Expanding or adding base station coverage in growing areas.

These opportunities aim to address various aspects of the base station hospital system, including technology integration, operational efficiency, communication, load balancing, collaboration, and system expansion. Implementing these opportunities can lead to a more effective and responsive EMS system.

7.2.2.4 – Threats

Threats to the San Diego County base station hospital system, from the perspective of hospital providers, include:

1. Resistance to Change:

- ▶ Politically driven environment that may resist recommendations for system improvements.
- ▶ Fear of losing autonomy and influence, leading to resistance to change.
- ▶ Resistance from nurse unions and some stakeholders to proposed changes.

2. Engagement and Communication:

- ▶ Limited time for discussion during committee meetings.
- ▶ Difficulty engaging all agencies and stakeholders in improvement efforts.
- ▶ Distrust and compartmentalization of information within the system.
- ▶ Lack of incentives for agencies to participate and share data.
- ▶ Perceived inequities and resistance related to base station shopping.

3. Base Station Redundancy:

- ▶ Relying on a single base station could compromise the redundancy and resilience of the system.

- ▶ Smaller hospitals may struggle to maintain the same level of base station functions and expertise as larger centers.

4. Paramedic Trust and Influence:

- ▶ Lack of trust between paramedics and the County EMS office.
- ▶ System geared towards the lowest level paramedic and lacking paramedic discretion.

5. Collaboration and Transparency:

- ▶ Distrust between different parts of the system.
- ▶ Concerns about loss of quality oversight if the base hospital system is changed.
- ▶ Compliance issues with data reporting requirements.

6. Resource and Sustainability Challenges:

- ▶ Staffing shortages for both hospitals and EMS providers.
- ▶ Potential for multiple disasters occurring simultaneously in San Diego County.

7. Political and Dominance Concerns:

- ▶ Complications related to politics and stakeholder resistance in implementing changes.
- ▶ Concerns about a single entity becoming the dominant base station.

These threats encompass challenges related to resistance to change, collaboration issues, resource constraints, and political and financial influences on the system. Addressing these threats is crucial for ensuring the effectiveness and resilience of the base station hospital system.

7.3 – Stakeholder Listening Sessions: Phase One

The PCG team facilitated eleven combined EMS and public stakeholder listening sessions – five in-person sessions and six virtual sessions. Each session was scheduled for 90 minutes. The purpose of these listening sessions was to allow both members of the public and County EMS stakeholders an opportunity to provide input for this study regarding base station hospitals and trauma center catchment area designations. The PCG consulting team facilitated the listening sessions including a PowerPoint presentation (see Appendix D) that was designed to elicit input from the public as well as the EMS stakeholders. A SCOT analysis approach was used to categorize feedback.

The PCG team conducted an in-person listening session in each of the five County Supervisor Districts. To publicize the in-person listening sessions, the County EMS Office emailed an informational flyer (see Appendix E) to approximately 10,000 EMS stakeholders announcing the dates and locations. The County conducted public outreach efforts to publicize the in-person listening sessions including information posted on the County engagement website. **Table 7.2** shows dates and locations for the in-person listening sessions.

In-Person Listening Sessions – May 2023	
District #2: Tuesday, May 23rd, 1pm Location: Lakeside County Library 12428 Woodside Ave, Lakeside, CA 92040 (619) 443-1811	District # 5: Wednesday, May 24th, 10am Location: North Inland Live Well Center 649 W Mission Ave #1, Escondido, CA 92025 (760) 740-3001

In-Person Listening Sessions – May 2023	
District #1: Wednesday, May 24th, 2pm Location: National City Live Well Center 401 Mile of Cars, National City, CA 91950 (619) 731-3321	District #4: Thursday, May 25th, 10am Location: The Salvation Army Kroc Center 6611 University Ave, San Diego, CA 92115 (619) 269-1472
District #3: Thursday, May 25th, 7pm Location: Encinitas Community Center 1140 Oakcrest Park Dr, Encinitas, CA 92024 (619) 943-2260	

Table 7.2: The Spring In-Person Listening Session Schedule

The five virtual stakeholder listening sessions were scheduled for specific stakeholder groups that comprise the San Diego County EMS system. The same SCOT analysis approach was used for the virtual listening sessions. To publicize the virtual listening sessions, the County EMS Office emailed an informational flyer (See Appendix F) to approximately 10,000 EMS stakeholders announcing the dates and locations. The specific stakeholder groups and the dates for the virtual listening sessions are listed below. A sixth virtual listening session was held for the members of the Hospital Association of San Diego and Imperial Counties on May 31, 2023.

Virtual Listening Sessions – June 2023	
Monday, June 12th, 1:30pm PDT <i>Listening Session #1</i> Stakeholder Group: ED RNs & MICNs	Thursday June 15th, 1:00pm PDT <i>Listening Session #2</i> Stakeholder Group: Trauma Directors & Managers
Friday, June 16th, 9:00am PDT <i>Listening Session #3</i> Stakeholder Group: Prehospital EMS Providers	Friday, June 16th, 1:00pm PDT <i>Listening Session #4</i> Stakeholder Group: Ambulance Association of San Diego County
Tuesday, June 20th, 2:30pm PDT <i>Listening Session #5</i> Stakeholder Group: San Diego County Fire Chiefs Association & SDCFCA EMS Section Members	

Table 7.3: The Spring Virtual Listening Session Schedule

7.3.1 – In-Person Listening Sessions

Combined, 29 EMS stakeholders attended the five in-person listening sessions. Overall, the in-person stakeholder listening sessions were poorly attended and mostly attended by hospital providers (24), especially MICNs. There were no members of the public providing input at the in-person listening sessions. There were only four prehospital providers that attended these sessions. A few of the MICNs attended all five listening sessions.

The strengths, challenges, opportunities, and threats from each of the in-person listening sessions were combined and are listed below.

7.3.1.1 – Strengths

The top strengths of the base station hospital (BSH) system can be summarized as follows:

1. **Effective Collaboration:** BSHs foster good collaboration within the BSH system, building strong relationships with paramedics and MICNs, and enhancing communication and teamwork.
2. **Quality Assurance Focus:** BSHs prioritize quality assurance (QA) with a high percentage of QA activities compared to other components. They conduct education visits, offer teaching services, and work with specific agencies, contributing to better patient care.
3. **Issue Resolution:** BSHs demonstrate a proactive approach to issue resolution, trying to resolve problems at the lowest level before escalating to higher authorities like pre-PAC and PAC.
4. **Community Expertise:** BSHs possess in-depth knowledge of their communities, including geographical locations, enabling them to work effectively with smaller agencies and address unique service area needs.
5. **Effective Communication:** BSHs maintain trust between medics and MICNs, ensuring open lines of communication. They use the ImageTrend resource bridge and other strategies to stay informed and provide patient destination guidance.
6. **Physician Availability:** BSHs have access to physicians, enhancing real-time medical direction, communication, and protocol development, ultimately benefiting patient care.
7. **Community-Building:** BSHs function as a tight-knit community themselves, knowing each other well, conducting QA and audits, and fostering strong relationships among BSH hospitals and satellite hospitals.
8. **Education and Feedback:** BSHs provide valuable educational resources, feedback on outcomes, and opportunities for improvement, serving as a bridge between pre-hospital providers and hospitals.

These strengths highlight the critical role of BSHs in healthcare systems, emphasizing collaboration, quality assurance, patient advocacy, and community expertise, all of which contribute to better patient care and outcomes.

7.3.1.2 – Challenges

The top challenges faced by the base station hospital (BSH) system:

1. **Communication Issues:** Radio failures and delays in radio contact can lead to life-threatening delays in patient care. Ensuring efficient communication during emergencies is crucial.
2. **Fragmented Data Management:** Challenges related to data collection and management with the County not receiving 100% of ePCR data. Additionally, the current system lacks flexibility for data updates from all ePCR platforms.
3. **Medical Direction Availability:** Difficulty in getting ahold of physicians for online medical direction, impacting real-time decision-making during patient care.

4. **Inventory Inconsistencies:** Discrepancies in medical inventory, including medications, among agencies can create confusion and affect patient care, especially in critical patient care situations.
5. **Quality Assurance and Quality Improvement:** Varied responsiveness among agencies to quality assurance and quality improvement initiatives, making standardization and consistent improvements challenging.
6. **Educational Gaps:** Limited opportunities for communal education and cross-training, impacting the ability to improve patient care and stay updated with best practices.
7. **Paramedic Accountability:** An increase in the number of paramedics without a corresponding increase in accountability, potentially affecting the quality of patient care.
8. **Resource Shortages:** Staffing shortages, particularly in light of population growth in certain areas and border calls, can strain the BSH system's capacity.

These challenges highlight the need for improvements in data management, communication, medical direction availability, and quality assurance processes, among other areas, to enhance the effectiveness of the BSH system and provide better patient care.

7.3.1.3 – Opportunities

There were several opportunities mentioned for improvement in the base station hospital system:

1. **Adding More Base Hospitals (BSHs):** While it may be costly, adding more BSHs could help distribute the call volume, reducing the burden on any single facility. This would also improve MICN radio response times.
2. **Streamlined Communication:** Eliminate the requirement for all paramedic calls to contact a BSH. Reduce reliance on radio reports through technological advancements. Provide hospital status to field providers.
3. **Technological Advancements:** Invest in technological advancements to reduce reliance on radio reports and explore more efficient communication methods.
4. **Medical Direction Optimization:** Review the necessity of real-time medical direction and consider reducing it for calls that don't require it. Explore the idea of putting a physician in the field for certain cases.
5. **Trust and Collaboration:** Build trust between first responders and hospital staff. Resolve opposing opinions through better communication.
6. **Consider Rady as a BSH:** Evaluate the possibility of adding Rady as a Base Hospital to increase the capacity of the system and enhance pediatric care.

In summary, the opportunities for improvement in the base station hospital system include upgrading technology, improving communication, standardizing procedures, and enhancing coordination between different healthcare entities. These improvements can lead to more efficient and effective patient care.

7.3.1.4 – Threats

There were several potential threats to the current BSHS, including:

1. **Physician Groups' Lack of Understanding:** Physician groups that don't understand the EMS system or system protocols can hinder effective communication and collaboration.
2. **Staff Training and Policy Knowledge:** Insufficiently trained staff who do not fully understand the system's policies may lead to errors and miscommunication.

3. **Eliminating Successful Practices:** Removing what already works well within the system can disrupt efficiency and effectiveness.
4. **Loss of Base Station Hospitals (BSHs):** Removing BSHs may result in the loss of quality assurance (QA) and collaboration, impacting patient care.
5. **Preparedness for Future Pandemics:** Rapid changes in response to future pandemics can strain the system's adaptability and communication processes.
6. **Lack of Trust and Collaboration:** Insufficient trust and collaboration between stakeholders can hinder effective communication and coordination.
7. **Patient Redistribution:** The competition among hospitals for patients may lead to the redistribution of patients, potentially affecting the system's balance.
8. **Pediatric Care Challenges:** Limiting pediatric patients to only one destination may not meet the specialized needs of pediatric cases adequately.

These threats highlight potential areas of concern that can impact the functioning and effectiveness of the hospital base station system. Addressing these threats is crucial to maintaining a reliable and efficient system for patient care and emergency response.

7.3.2 – Virtual Listening Sessions

The six virtual listening sessions were intended to receive input from specific EMS system disciplines and included the following focus groups:

- ▶ Hospital Association of San Diego and Imperial Counties
- ▶ Ambulance Association of San Diego County
- ▶ Emergency Department RNs & mobile intensive care nurses (MICNs)
- ▶ San Diego County Fire Chiefs Association (SDCFCA) & EMS Section Members
- ▶ Prehospital EMS Providers
- ▶ Trauma Directors & Managers

Since each focus group had different perspectives of the EMS system and the hospital base station system, the strengths, challenges, opportunities, and threats (SCOT) have been summarized for each virtual listening session. The SCOT responses have been consolidated into the five main components for each session.

7.3.2.1 – Hospital Association of San Diego and Imperial Counties (6 participants)

7.3.2.1.1 – Strengths:

1. **Collaboration and Relationships:** The base station hospital system fosters collaboration and strong relationships between base hospitals and EMS providers.
2. **Pulse of the System:** Base station hospitals understand what's happening in the EMS system.
3. **Objective and Clear Geographical Locations:** The system relies on objective and well-defined geographical catchment areas, making it clear which hospital is responsible for paramedic radio reports in each region.

4. **Online Medical Direction:** Online medical direction provided by base station hospitals ensures that EMS providers receive real-time guidance from experienced medical professionals.
5. **Positive Hospital Provider Perspective:** Many hospital providers view the current system positively, which indicates that it is generally working well from their perspective. This includes the collaboration, relationships, and coordination between hospitals and EMS providers.

7.3.2.1.2 – Challenges:

1. **Communication Issues:** Concerns about communication failures or challenges within the system have been raised.
2. **Delays in Physician Orders:** Participants are concerned about potential delays in obtaining base station physician orders when needed.
3. **Patient Distribution Challenges:** There is a challenge in patient distribution across the County. Hospitals may not always have real-time information about the capacity of other facilities, leading to uneven patient loads and potential resource imbalances.
4. **Handoff Reports:** The handoff report process from the base station to receiving or satellite hospitals can be challenging in some cases.
5. **Regional Variations and Underserved Communities:** Each base station tends to focus on its specific region, making it challenging to level load resources regionally. Underserved communities, like South County, face limited access to base stations, leading to paramedics having to contact distant base stations that may not be familiar with the local population.

7.3.2.1.3 – Opportunities:

1. **Enhanced Technology Use:** Leveraging technology to improve various aspects of the base station system, such as data collection and communication, presents a significant opportunity. Implementing technology can streamline processes, reduce workload, and enhance efficiency.
2. **Consolidation and Economy of Scale:** Exploring the possibility of consolidating the base station system could lead to cost savings and increased efficiency. A consolidated system could provide additional services like load leveling and optimizing resource allocation.
3. **Direct Hospital Contact:** Establishing direct communication channels between EMS providers and receiving hospitals, bypassing the need for a base station intermediary, can streamline decision-making and communication, especially for routine patient transfers.
4. **Collaboration:** San Diego County hospitals already have a strong culture of collaboration. There's an opportunity to further enhance collaboration within a restructured or consolidated system, with clear guidelines and boundaries established for improved coordination.
5. **Equitable Patient Distribution:** Addressing the challenge of patient distribution across the County is a key opportunity. Improving the distribution of patients can ensure equitable access to healthcare resources, reducing disparities in care provision and resource utilization.

7.3.2.1.4 – Threats:

1. **System Restructuring:** The idea of restructuring the system, such as reducing the number of base hospitals or moving towards a single base station, could be perceived as a threat by some stakeholders. The specifics of such a restructuring would need careful consideration.
2. **Reducing Demand for Emergency Services:** Efforts to reduce demand for emergency services, such as diverting low-acuity cases to primary care, urgent care, or telehealth services, might be seen as a threat to hospitals' revenue and busy emergency departments.
3. **Volume and Resource Allocation:** Changes in patient volume distribution and resource allocation could be seen as a threat. Hospitals may worry about their ability to handle increased patient volume or a shift in the distribution of patients.
4. **Impact on Revenue:** Any changes that reduce patient admissions, such as unnecessary cases being diverted away from the emergency department, could potentially impact hospitals' revenue, which might be perceived as a threat.

7.3.2.2 – Emergency Department RNs & MICNs (24 participants)

7.3.2.2.1 – Strengths:

1. **Collaboration with Other Base Stations:** The system promotes collaboration between base station hospitals, allowing for knowledge sharing and mutual support.
2. **Teach-Back at the Bedside:** It enables real-time feedback and interaction between base station hospitals, paramedics, EMTs, and firefighters to improve emergency response practices.
3. **Online Medical Control:** Base station hospitals can provide medical direction and protocol adherence, enhancing patient care.
4. **Supplementing Education and Quality Assurance:** The system helps supplement EMS provider education and quality assurance, addressing variations in expertise among agencies.
5. **System Awareness and Resource Management:** Base station hospitals have a comprehensive view of the EMS system, including bed availability and patient flow, aiding in resource allocation and patient care coordination.

7.3.2.2.2 – Challenges:

1. **Excessive Radio Traffic:** Lengthy reports on simple and stable patients were seen as a challenge, potentially leading to unnecessary radio traffic and time wasted.
2. **Requirement for Base Station Contact on ALS Calls:** The requirement that all ALS calls require base station contact can be challenging due to the high volume of calls and limited MICN availability.
3. **Base Station Shopping:** Some medics may switch base stations frequently instead of waiting in line, potentially affecting coordination and prioritization of calls.
4. **Variability in Provider Agency Quality:** The expertise and adherence to protocols among EMS providers from different agencies vary, creating challenges in delivering consistent care.

5. **Limited Collaboration with Satellite Providers:** While there is a collaboration with base stations, the relationship with satellite hospitals was seen as less robust, partly due to their limited involvement and knowledge of the entire EMS system.

7.3.2.2.3 – Opportunities:

1. **Streamlining Communication:** Participants suggested the need to streamline communication for simple and stable cases to reduce radio traffic.
2. **Abbreviated Radio Reports:** Encouraging the use of abbreviated radio reports for cases where extensive information is unnecessary can save time and improve communication.
3. **Utilizing Technology:** Exploring the use of technology to improve data sharing, communication, and coordination among EMS agencies and hospitals.
4. **Enhanced Data Collection:** Uploading patient information could streamline the reporting process, making radio reports more concise and improving data accuracy.
5. **Strengthening Collaboration with Satellite Providers:** Exploring ways to improve collaboration and knowledge-sharing with satellite hospitals to enhance overall system performance.

7.3.2.2.4 – Threats:

1. **Repatriation and Patient Flow:** The threat of EMS providers self-regulating and transporting patients to different hospitals based on offload delays can disrupt patient flow and lead to repatriation issues.
2. **Loss of Regional Coordination:** Transitioning to a single base station system might lead to a loss of regional coordination and face-to-face interactions among EMS providers, potentially affecting clinical competence and familiarity.
3. **Reduced Frontline Interaction:** Consolidating to a single base station may reduce the opportunity for frontline EMS providers to interact with nurses and physicians at different hospitals, potentially impacting the quality of care.
4. **Overwhelming Call Volumes:** Increasing call volumes to a single base station could overwhelm the system and lead to delays in medical direction and communication.
5. **Variability in Perspective:** The use of paramedics for online medical control with physician access may provide a different perspective than that of nurses, potentially affecting the quality of care and decision-making during patient transport.

7.3.2.3 – Trauma Directors and Managers (11 participants)

7.3.2.3.1 – Strengths:

1. **Effective Collaboration:** The trauma catchment areas encourage strong collaboration among trauma centers, fostering a cooperative approach to patient care and resource sharing.
2. **Well-defined Boundaries:** Clear and well-defined catchment area boundaries make it easy for prehospital providers to determine where to transport patients, ensuring efficient access to trauma centers.
3. **Resource Allocation:** Catchment areas enable fair distribution of trauma patients based on hospital resources and capabilities, preventing any single center from becoming overwhelmed.

4. **Streamlined Process:** The system offers a streamlined process for transferring patients between trauma centers when necessary, minimizing delays in care.
5. **Consistency in Care:** Regardless of the trauma center, patients receive consistent, high-quality care, eliminating disparities and ensuring equal treatment for all.

7.3.2.3.2 – Challenges:

1. **EMS Decision-Making:** EMS providers may prioritize transporting patients to the closest facility, which may not always be the most appropriate trauma center. This challenge can affect the patient's access to higher-level trauma care.
2. **Inexperienced Prehospital Providers:** There is a perception that a decreasing experience level of prehospital providers exists.
3. **Patient Flow and Offloading:** The influx of trauma patients, particularly from specific areas like the border, can strain trauma centers' resources and affect patient flow.
4. **Border Wall Patients:** The influx of trauma patients from the border wall area has created a significant strain on trauma centers, particularly those near the border. Distributing these patients evenly across trauma centers has been a challenge, but it's essential to maintain the quality of care and resources available to them.
5. **Resource Allocation:** Distributing trauma patients evenly across trauma centers is challenging, especially when one center faces a significantly higher volume due to geographical factors like the border. Deciding how to distribute cases fairly can be complex.

7.3.2.3.3 – Opportunities:

1. **Technology Integration:** Embrace technology to enhance communication and data sharing between EMS providers, trauma centers, and other stakeholders. Implement tools like GPS tracking for ambulances, telemedicine for remote consultations, and electronic patient care data transmission to improve efficiency and decision-making.
2. **Financial Support:** Seek increased financial support, possibly through taxation or government funding, to sustain trauma centers, especially in regions with high caseloads. This support can help maintain resources and staff to provide quality care.
3. **Training and Education Enhancement:** Invest in continuous training and education programs for EMS providers to improve their skills and decision-making abilities. Ensure that medics are up to date with the latest advancements in trauma care.
4. **Data Analysis and Research:** Promote research and data analysis to identify trends, best practices, and areas for improvement within the trauma care system. Evidence-based decision-making can lead to better patient outcomes.
5. **Interagency Collaboration and Community Engagement:** Strengthen collaboration between different agencies involved in trauma care and engage with the local community. Coordinated efforts and public awareness initiatives, including injury prevention and CPR training, can enhance the overall trauma care system.

7.3.2.3.4 – Threats:

1. **Disruption of Trauma Care Balance:** Adding or removing trauma centers within the catchment area can disrupt the balance of trauma care. It can lead to an overburdening of existing centers or a lack of accessibility for patients, potentially negatively impacting patient care.

2. **Additional Trauma Centers:** The addition of trauma centers can pose a threat, especially if for-profit hospitals or institutions with inadequate trauma care capabilities are allowed to establish trauma centers without proper oversight. This can dilute the quality of trauma care and patient outcomes.
3. **Specialty Shortages:** There is a risk of shortages in specialized trauma care areas, such as high-end plastic surgery or carpal bone injuries. Maintaining a balance of trauma centers helps ensure that specialized care remains available to patients in need.
4. **Resource Strain:** Sudden changes in the trauma center configuration can strain available resources, including healthcare staff, equipment, and facilities. This strain can impact the ability to provide timely and quality trauma care.
5. **Patient Care Suffering:** Ultimately, the biggest threat is to patient care. Disruptions in the trauma care system, whether through the addition or removal of centers, can lead to delays in care, increased patient divert status, and negative impacts on patient outcomes.

7.3.2.4 – Prehospital EMS Providers (10 participants)

7.3.2.4.1 – Strengths:

1. **Reliable Radio System:** The base station hospital system utilizes a reliable radio system (RCS) that is effective and has demonstrated reliability. It works well for transmitting information, especially in areas with limited data connectivity.
2. **Experienced and Skilled Staff:** The MICN staff at base station hospitals are well-trained and experienced. They provide valuable guidance to field providers and support field operations effectively.
3. **Support for Field Operations:** Base station hospitals provide valuable support for field operations, ensuring that paramedics and EMS teams have the necessary guidance when needed.
4. **Community Engagement:** Base station hospitals actively engage with the diverse communities in San Diego County, allowing for a better understanding of local healthcare needs and fostering a strong connection.
5. **Longstanding Familiarity:** Many participants in the system have been using it for an extended period (over 20 years). This longevity suggests a level of trust and familiarity with the system.

7.3.2.4.2 – Challenges:

1. **Radio System Bandwidth:** The system's bandwidth is inadequate to handle the volume of calls in San Diego County, affecting the ability to provide necessary support.
2. **Communication Failures:** Protocols invoked when nobody answers the radio or when providers must shop around for an available base station can lead to delays.
3. **Data Collection:** Over-reliance on the base hospital record for data collection, with only 30% of EPCR data reaching the County, has implications for data reporting and resource allocation.
4. **Patient Destination Guidance:** The evolving specialization and specialty designations of hospitals make it challenging for field providers to make optimal destination decisions.

5. **Real-time Hospital Activity Monitoring:** Field providers lack real-time awareness of hospital activity and patient volume, potentially leading to suboptimal patient care decisions.

7.3.2.4.3 – Opportunities:

1. **Centralized Base Station System:** Implementing a centralized base station that acts as a countywide traffic controller for ambulances. This system can balance patient loads, manage resources efficiently, and potentially offer telemedicine services.
2. **Technology Integration:** Embracing technology to enhance base station operations, including online medical direction, data control, and automation to streamline processes, reducing the need for manual documentation.
3. **Telehealth and Nurse Triage:** Exploring the centralization of telehealth services and nurse triage to provide economies of scale and consistent patient care across dispatch centers.
4. **Efficient Call Routing:** Implementing systems to route Paramedic level calls directly to receiving facilities when no medical direction is required, reducing unnecessary interactions with the base station.
5. **Data Sharing:** Developing bidirectional information exchange systems between provider agencies, base stations, and receiving facilities to streamline communication, reduce phone calls, and facilitate outcome reporting for Quality Assurance (QA) processes.

7.3.2.4.4 – Threats:

1. **Staffing Shortages:** Increasing the number of base stations may exacerbate staffing shortages in hospitals. The need for more personnel to manage additional stations could strain the existing healthcare workforce.
2. **Dependency on Medical Direction:** Some stakeholders believe that the presence of base stations and MICNs is essential for appropriate patient care and removing them may lead to inadequate or inappropriate care.
3. **Regulatory and Protocol Changes:** Evolving regulations, protocols, and trends in healthcare may pose a threat if the EMS agencies and hospital base station system don't adapt accordingly.
4. **Operational Inefficiencies:** The base stations can sometimes introduce operational inefficiencies, such as delays in obtaining medical direction or treatment protocols.
5. **Resource Allocation Challenges:** Balancing resources among various base stations and coordinating patient transfers efficiently can be challenging.

7.3.2.5 – Ambulance Association of San Diego County (11 participants)

7.3.2.5.1 – Strengths:

1. **Strong Relationships with First Responders:** The base stations have developed strong relationships with first responders and paramedics in their service areas. This trust and familiarity contribute to effective communication and collaboration between the hospital and field providers.

2. **Access to Medical Consultation:** Paramedics appreciate the ability to speak with a physician or receive consultations from MICN professionals when needed. This access to medical expertise is seen as a strength of the system.
3. **Quality Control and Assurance:** The system appears to have components in place for quality control and quality assurance.
4. **Geographical Coordination:** The base station system has effective geographical coordination, ensuring that hospitals are strategically located across San Diego County to provide timely medical care to patients in different areas.
5. **Online Medical Direction:** The system offers online medical direction, which allows paramedics to receive real-time guidance and instructions from medical professionals, enhancing patient care in emergency situations.

7.3.2.5.2 – Challenges:

1. **Lengthy Radio Reports:** Paramedics feel that the radio reports required by the base stations are often too lengthy and detailed, diverting their attention from patient care. They believe that some of the information requested is unnecessary and delays patient transport.
2. **Disparity in Scope of Practice:** Paramedics are required to seek permission for basic paramedic skills and treatments that are considered standard practices in other regions. This disparity in the scope of practice can lead to delays in providing necessary care.
3. **Communication Delays:** Waiting for approval or instructions from the base station can lead to communication delays between paramedics in the field and the hospital. These delays can impact patient care, especially in critical situations.
4. **Inefficiency in Protocols:** Some protocols may require paramedics to seek base station orders for procedures that could be handled as standing orders or under less restrictive guidelines. This inefficiency can hinder timely patient care.
5. **Overly Detailed Data Collection:** Paramedics find that some of the information required in radio reports is overly detailed and not directly relevant to patient care. This excessive data collection can lead to inefficiencies, distractions, and delays in providing immediate medical attention to patients in need.

7.3.2.5.3 – Opportunities:

1. **Improved Communication Technology:** Implement advanced communication tools or apps that allow field personnel to have access to real-time hospital information such as availability, specialties, and divert status. This would help streamline patient transfers and reduce delays.
2. **Integration of Resource Dashboards:** Extend access to resource dashboards like Image Trend Resource Bridge to ALS and BLS personnel so they can better assess hospital capabilities and divert situations, enabling more informed decisions during patient transport.
3. **Enhanced Data Sharing:** Explore partnerships with existing systems like First Watch and Resource Bridge for sharing information about patient conditions, allowing for quicker and more accurate communication between field personnel and hospitals.
4. **Smartphone-Based Data Transmission:** Investigate technologies like Pulsara™ and Twiage™ that enable paramedics to transmit patient data directly to hospitals via smartphones, facilitating quicker assessment and treatment decisions.

5. **Technology for Resource Management:** Develop or integrate technology to help base stations manage multiple calls and prioritize them effectively, preventing delays and missed communications. This could include expanding the capacity for handling multiple calls simultaneously.

7.3.2.5.4 – Threats:

1. **Delayed Communication with Hospitals:** Delays in getting through to base stations or hospitals can lead to treatment delays and affect patient care.
2. **Inefficiency in Reporting:** The process of providing detailed reports for all patients, even those with minor complaints, results in inefficient use of time and resources. This inefficiency can hinder patient care and lead to delays in patient transport.
3. **Inefficient Communication Channels:** The use of multiple radio channels, potential delays in hospital responses, and the need for multiple attempts to establish communication can lead to inefficiencies in the system. This can result in delayed patient care and transport, which may negatively impact patient outcomes.
4. **Lack of Clarity on Hospital Status:** Paramedics often face difficulties in determining whether a hospital is open and accepting patients. This lack of clarity can cause further delays in patient transport and treatment.
5. **Trust Issues with Specific Hospitals:** Trust issues between paramedics and specific hospitals, where some hospitals are perceived to be overly critical or uncooperative, can impact patient care and communication.

7.3.2.6 – San Diego County Fire Chiefs Association & EMS Section Members (13) participants)

7.3.2.6.1 – Strengths:

1. **Strong Working Relationships and Collaboration:** The system has fostered strong working relationships between paramedics, ambulance crews, and base hospitals. This trust and collaboration enhance effective teamwork and communication, contributing to better patient care.
2. **Patient-Centric Focus:** The system prioritizes patient care, ensuring that patients receive appropriate treatment and transportation to suitable facilities. This patient-centric approach underscores the commitment to delivering high-quality care.
3. **Quality Assurance and Continuous Improvement:** The system demonstrates a commitment to quality assurance through field care audits and quality improvement programs. This dedication to maintaining and enhancing care quality contributes to ongoing improvement efforts.
4. **Access to Medical Expertise:** Paramedics have access to medical consultation and can communicate with physicians or MICNs when needed. This access to medical expertise is an asset, enhancing the system's ability to provide advanced care.
5. **Online Medical Control and Direction:** The availability of online medical control and real-time guidance from medical professionals is a notable strength. This feature facilitates prompt decision-making and communication, ultimately improving patient outcomes in emergency situations.

7.3.2.6.2 – Challenges:

1. **Radio Reports and Communication Efficiency:** Providing comprehensive and efficient radio reports for all paramedic-level calls is a significant challenge. Improving the radio report process is essential to ensure clear and timely communication between paramedics, ambulance crews, and base hospitals.
2. **Inconsistent Medical Direction:** Concerns arise due to variations in medical direction provided by different base stations. Inconsistent orders and guidance from MICNs and physicians can create confusion and impact patient care.
3. **Saturated System and Capacity:** The base hospital system can become highly saturated, especially during peak times, leading to difficulties in managing the increasing call volume. The system struggles to handle the load without a corresponding increase in the number of base hospitals or eliminating the need to contact a base station for all paramedic responses.
4. **Difficulty in Contacting Base Stations:** Contacting base stations can be challenging, resulting in delays in communication. Persistent issues with reaching base stations can hinder the efficient coordination of patient care.
5. **Lack of Centralization and Prioritization:** The current lack of centralization in the base station system poses challenges, particularly in efficiently handling critical patients. Additionally, the absence of a clear prioritization system for calls with multiple waiting patients complicates the decision-making process.

7.3.2.6.3 – Opportunities:

1. **System Improvement and Communication Streamlining:** There is a significant opportunity for system improvement, especially in streamlining communication between paramedics and base hospitals. This includes refining radio reporting protocols and addressing issues related to contacting base stations.
2. **Data Analysis for Informed Decision-Making:** The base station data offers an opportunity for analysis to identify trends and patterns. Utilizing data analysis can lead to more informed decisions and system improvements.
3. **Feedback Integration from Field Providers:** Field providers, such as medics, offer valuable feedback that can lead to system enhancements. Addressing their concerns and suggestions provides an opportunity for positive changes in the base station system.
4. **Enhanced Technology Integration:** The introduction of more advanced technology into the system presents an opportunity for improved communication, streamlined data sharing, and better overall coordination among stakeholders.
5. **Quality Assurance and Process Strengthening:** Opportunities exist to strengthen quality assurance efforts, including field audits and training programs. Enhancing the quality assurance process can lead to improved patient care and system efficiency.

7.3.2.6.4 – Threats:

1. **Continued Saturation and Overcrowding:** The ongoing increase in call volume without a corresponding increase in base hospitals poses a significant threat to system efficiency. Overcrowding may lead to delays and challenges in providing timely care.

2. **Patient Safety Concerns:** Inconsistent medical direction and communication delays have the potential to impact patient safety adversely. Ensuring timely and appropriate care is essential to mitigate this threat.
3. **Resource Allocation Challenges:** The limited availability of base stations and difficulties in contacting them may affect resource allocation during emergencies, potentially leading to inefficiencies in patient care.
4. **Provider Frustration:** Frustration among healthcare providers, including ambulance crews, MICNs, and physicians, could undermine the overall effectiveness of the system, affecting patient outcomes.
5. **Resistance to Change:** Implementing changes to prioritize critical patients and improve communication may face resistance from stakeholders accustomed to existing practices. Resistance to change poses a challenge to system improvement efforts.

7.4 – Stakeholder Listening Sessions: Phase Two

7.4.1 In-Person Listening Sessions

Five in-person listening sessions were conducted by the PCG team November 7 – 9, 2023 for EMS stakeholders and the public in each of the County Supervisor Districts, see **Table 7.4** below. Two members of the PCG team presented preliminary base station hospital system study findings and recommendations, as well as solicited feedback from EMS stakeholders regarding the findings and recommendations, see **Appendix G**.

Stakeholder Feedback Phase In-Person Listening Sessions – November 2023	
District #3: Tuesday, November 7, 7pm Location: Encinitas Community Center 1140 Oakcrest Park Dr, Encinitas, CA 92024 (619) 943-2260	District #1: Wednesday, November 8, 10am Location: National City Live Well Center 401 Mile of Cars, National City, CA 91950 (619) 731-3321
District #2: Wednesday, November 8, 3pm Location: Lakeside County Library 12428 Woodside Ave, Lakeside, CA 92040 (619) 443-1811	District #5: Thursday, November 9, 10am Location: North Inland Live Well Center 649 W Mission Ave #1, Escondido, CA 92025 (760) 740-3001
District #4: Thursday, November 9, 3pm Location: The Salvation Army Kroc Center 6845 University Ave, San Diego, CA 92115 (619) 269-1472	

Table 7.4 The Fall Stakeholder Listening Session Schedule

52 EMS stakeholders representing prehospital and hospital providers attended one of the in-person listening sessions. There was a good representation of both prehospital and hospital stakeholders in attendance. PCG's preliminary findings and recommendations, as well as the six models showcased in this report, were presented to the stakeholders in a PowerPoint presentation and included the following:

7.4.1.1 – Base Station Hospital System Preliminary Findings

- ▶ The identified Strengths, Challenges, Opportunities, and Threats differed based on the EMS system affiliation: Prehospital vs. Hospital & Administration vs. Provider
- ▶ BSHS has worked in the past but is now stressed with a 13% increase in BSH calls since 2018 (266,649 BSHS calls in 2022)
- ▶ BSHS provided medical direction for approximately 14% (36,243) of all BSHS calls in 2022
- ▶ MICN documentation of calls for “medical direction provided” is inconsistent
- ▶ BSHs rerouted less than approximately 1% (0.9%) of transports to their BSH when another receiving hospital was initially requested
- ▶ Paramedics “base shop” because of delays with contacting a BSH
- ▶ Paramedics & MICNs expressed that radio reports are too long
- ▶ Effective communication and collaboration exists between BSHs
- ▶ Paramedics value the collaboration with MICNs on critical incidents
- ▶ Lack of technology relying on the current radio system
- ▶ MICNs can only handle one call at a time
- ▶ The MICN process is labor intensive (paper log; eBHR entry)
- ▶ Less attendance at hospital education/training sessions
- ▶ Some stakeholders perceive the Pre-PAC/PAC/PEARLS process as punitive
- ▶ Concerns with BSHs investigating themselves regarding prehospital complaints
- ▶ Perception by paramedics that they are not represented in committees and decision-making

7.4.1.2 – Base Station Hospital System Preliminary Recommendations

7.4.1.2.1 – General Recommendations

- ▶ Increase collaboration & transparent communication with/between all stakeholders
- ▶ Limit Base Station radio reports to only incidents that require medical direction/orders
- ▶ Provide brief alert/notification reports directly to receiving hospitals for all transports
- ▶ BSHs should coordinate education/training with EMS provider agencies
- ▶ Include EMS field providers in committees and decision-making
- ▶ County EMS should ensure stakeholders understand the decision-making process regarding protocols and other directives
- ▶ All hospitals to designate an EMS Liaison for communications and coordination with County EMS and EMS provider agencies
- ▶ Provide real-time hospital status to EMS field personnel
- ▶ Consider County EMS to provide patient load leveling

7.4.1.2.2 – Medical Direction Recommendations

- ▶ Consider a Pediatric facility for primary medical direction for pediatric patients

- ▶ Develop a core group of emergency medical physicians to provide medical direction to paramedics
- ▶ Review existing requirements for medical direction and where appropriate, implement standing orders in place of BSH contact
- ▶ Consider the use of emergency medical fellows at UCSD for medical direction to paramedics

7.4.1.2.3 – Quality Assurance/Improvement

- ▶ Actively engage EMS Agency QA/QI staff with County QA/QI staff to develop QA/QI metrics and routine reporting
- ▶ Request and review EMS Agencies QI plans (S-004) and incorporate them into the County QA/QI program
- ▶ Ensure EMS agencies understand Waiver 1157 and the protection from discovery it provides
- ▶ Continue BSH QA/QI activities and expand to receiving hospital participation
- ▶ Define the structure and process of the Pre-PAC
- ▶ Consider changing the name of PAC to EMS QA committee
- ▶ BSHs to provide transcript/recording of paramedic calls to the agency QA staff for agency QA purposes

7.4.1.2.4 – Technology Recommendations

- ▶ Transition from radio contact to telephone contact, use radios as a backup
- ▶ Implementation of app-based communication tools, (e.g., Pulsara™ or Twiage™) ^{5, 6]}
- ▶ Initiate discussions with San Diego Health Connect regarding expanding the SAFR EMS Hub for real-time data transmission
- ▶ Encourage Emergency Communication Centers to consider implementing dispatch triage in conjunction with technology such as Good Sam, MD Ally, or another system. ^[8, 9]
- ▶ Consider other technologies such as Tele911 ^[10]
- ▶ Initiate discussion with San Diego 211 regarding available services and resources
- ▶ Consider establishing a technology committee/advisory group.

7.4.1.2.5 – Data Collection Recommendations

- ▶ Require EMS agencies to provide the minimum ePCR data necessary to meet the San Diego LEMSIS reporting compliance requirements
- ▶ Require EMS agencies to provide QA data on a routine basis
- ▶ Include location information in trauma registry data, prefer lat/long correlation
- ▶ Include air ambulance transport information in trauma registry data

7.4.1.2.6 – Transition to a Single Standalone Emergency Medical Command & Control Center (EMCCC)

This recommendation is contingent upon County EMS receiving 100% of prehospital ePCR data, 100% trauma, STEMI, stroke center data, EMS agency QA data and reports, and hospital ED data.

- ▶ Establish an EMS stakeholder group to develop a 3-year transition plan to a single EMCCC for medical direction, MCI patient distribution, patient load leveling, patient destination guidance, and other services to enhance the delivery of EMS throughout San Diego County.
- ▶ Explore funding options including state and federal grants, service fees, and other revenue options.

7.4.1.3 – Presentation Feedback

In general, the stakeholders validated the study findings by acknowledging that the findings did represent the opinions of the EMS system stakeholders. There was very little feedback on the preliminary recommendations and various base station alternatives presented. Most of the preliminary recommendations were met with acceptance by most of the participants. There were a few comments provided regarding the findings and recommendations related to the County EMS quality assurance/improvement program (QA/QI) findings. One of the participants felt that the number of QA/QI activities conducted by base hospitals was underestimated and that some base hospitals perform QA/QI activities that are not tracked by the County through the Pre-PAC or PAC process. Additional comments were made by prehospital representatives on the importance of the EMS agencies receiving patient outcome data on patients that are transported to area hospitals for internal agency QA/QI purposes. A few comments were made regarding the impact of trauma center patient volumes from a financial and competency maintenance perspective.

7.4.2 – Virtual EMS Stakeholder Association Briefing Sessions

Three briefing sessions were conducted for EMS stakeholder groups represented by:

- ▶ Hospital Association of San Diego and Imperial Counties (HASD&IC) – November 2, 2023
- ▶ San Diego County Fire Chiefs Association – November 3, 2023
- ▶ Ambulance Association of San Diego County – December 11, 2023

Overall, the three associations expressed agreement with the preliminary findings and recommendations as presented with very little feedback provided to the consultants. Most questions were related to the next steps of the study and report availability.

7.5 – Summary

There were several stakeholder engagement opportunities available over the study period for participation by prehospital and hospital providers representing several leaders of various organizations, administrators, and healthcare providers. 687 stakeholders participated in one or more of the engagement opportunities, see **Table 7.1**. There were more hospital personnel (147), mostly MICNs, that participated in interviews, in-person, and virtual listening sessions while prehospital providers (294) participated mostly by responding to the electronic survey. The strengths, challenges, opportunities, and threats (SCOT) mentioned were aligned by provider agency and varied between agencies – hospital versus prehospital.

Hospital stakeholders and prehospital stakeholders provided different perspectives but there were some commonalities. All stakeholders emphasized the desire to provide quality patient-centric care. The perceived value of the BSH system by hospital representatives is higher than the perceived value by prehospital representatives. Many BSH and satellite hospital executives participated in group virtual interviews or virtual listening sessions that provided input regarding the BSH system and their support of it. They mentioned a collaborative relationship among the County hospitals, but that they were also competitive. There is a perception by some that BSHs have an advantage over non-BSHs regarding receiving more ambulance patients. The issue of trust and the need for transparent communications was mentioned frequently by all stakeholder groups. All the stakeholder groups emphasized that the current ALS radio report requirement is a major challenge and mentioned the need for introducing new communication technology. The need for improved data collection was mentioned by all stakeholders although required by law, many of the prehospital provider agencies are not providing ePCR data to the County's LEMSIS and the Trauma Centers are not providing complete data to the County Trauma Registry. There is a reliance on the Base Hospital Record (eBHR) for EMS system data collection because of the lack of EMS provider participation with the LEMSIS.

SECTION 8: PUBLIC AND COUNTY EMS STAKEHOLDER SURVEYS

8.1 – Overview of Surveys

To ensure that all EMS stakeholders, including the public, were able to provide input for this study, PCG conducted three separate surveys: an online digital public input survey, a telephone survey of California's Local Emergency Medical Services Agencies (LEMSAs) which was discussed in **Section 6**, and a County EMS-distributed stakeholder survey for EMS and hospital participants. The public input survey allowed the public of San Diego County to share their feedback on the County's EMS system, the County EMS stakeholder survey allowed these stakeholders to do the same, and the LEMSAs survey identified differences in how LEMSAs in the state of California operate compared to the San Diego County EMS system.

8.2 – Public Input Survey

The anonymous public input survey was released on two platforms: through JotForm by PCG, and through the County of San Diego's engagement website. In total, the survey received 30 responses from residents of the County. The survey included questions regarding demographics, experience with San Diego County's EMS system, and access to care in an emergency. All questions were optional, therefore some questions received less than 30 responses.

8.2.1 – Demographics

Participants ranged from all over the County, with 30% of participants stating they live in District 2, and 33% stating they live in District 4. **Figure 8.1** below shows which district each participant chose on the left, along with the zip code they provided pinpointed on the map to the right.

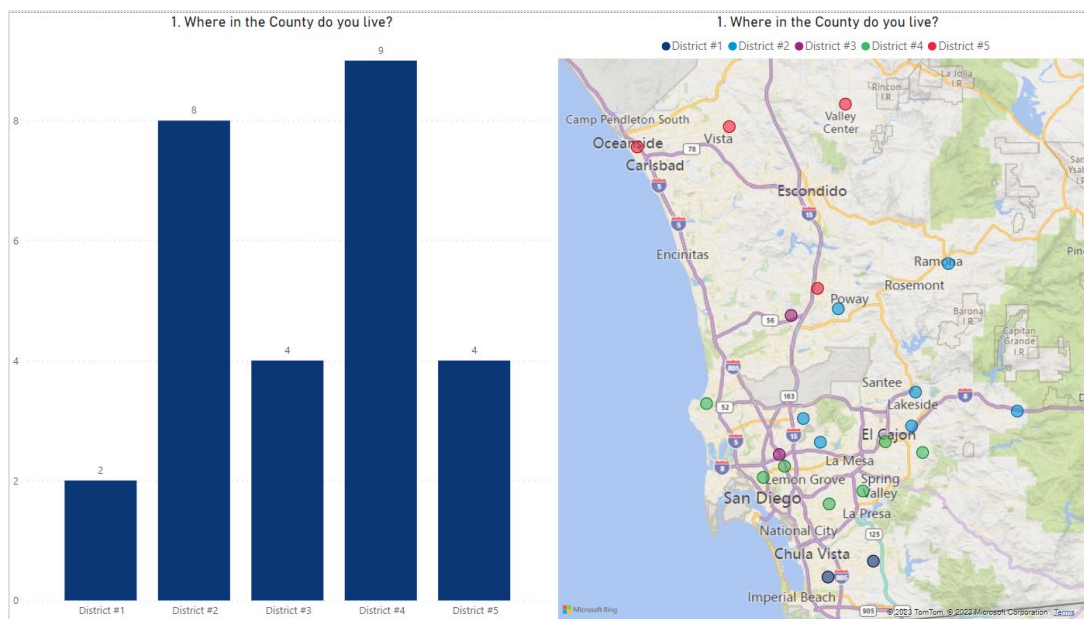


Figure 8.1: What District do you Live in?/District and Zip Code Comparison

Twenty-four (80%) of survey participants stated they have lived in the County for over 10 years. Out of the responses received, 20 participants identified as White or Caucasian, six preferred not to say, one identified as Asian, one identified as Black or African American, one identified as Native Hawaiian or Other Pacific Islander, and one identified as Other/Multiple Race. Eighteen identified as Not Hispanic or Latino, six identified as Hispanic or Latino, and six preferred not to say.

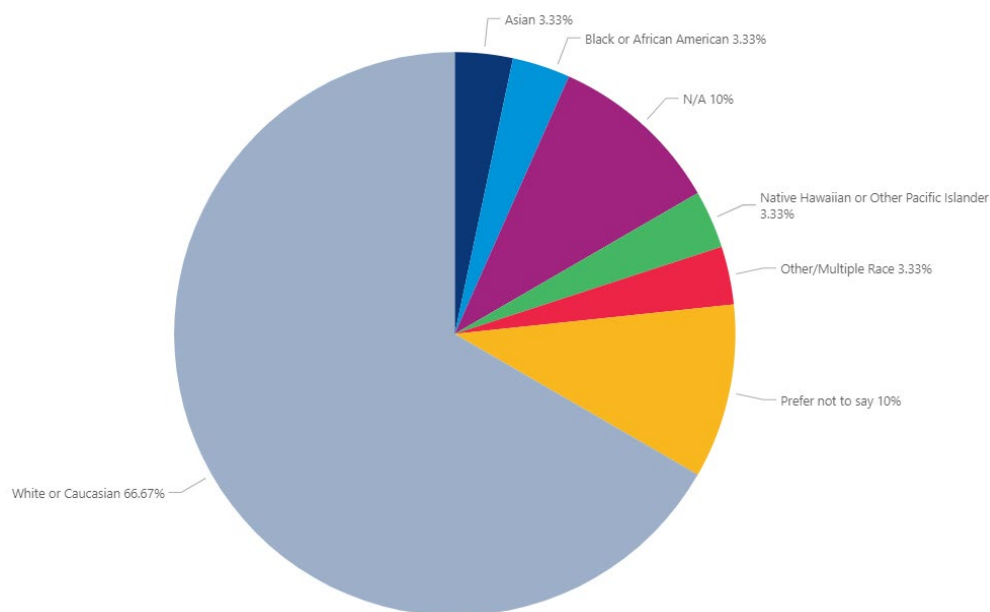


Figure 8.2: Public Stakeholder Race

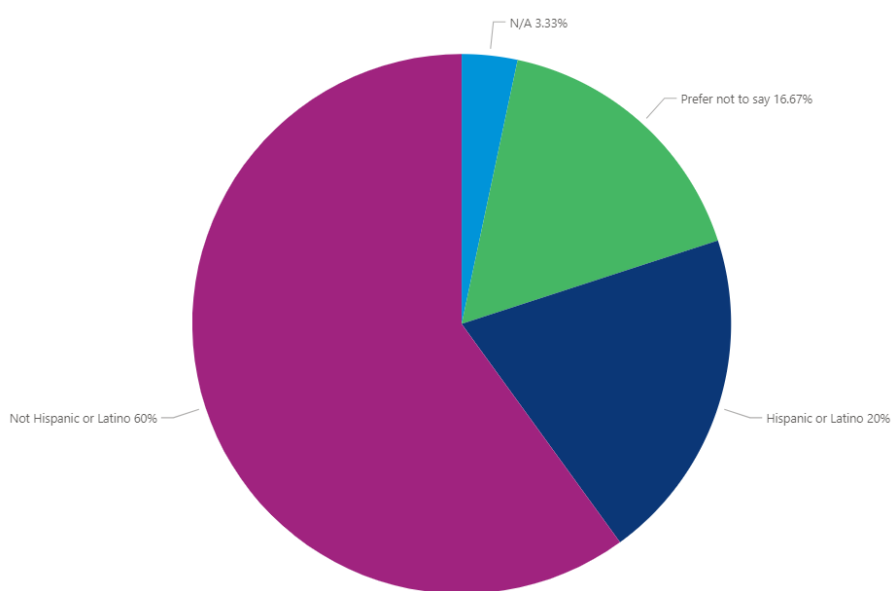


Figure 8.3: Public Stakeholder Ethnicity

8.2.2 – Questions to Evaluate Public Experience with the County’s EMS System

When asked if respondents have ever contacted 9-1-1 to request an ambulance for themselves or someone else in San Diego County, 19 out of 30 participants answered “yes.” **Figure 8.4** below shows each participant’s location and their response to this question.

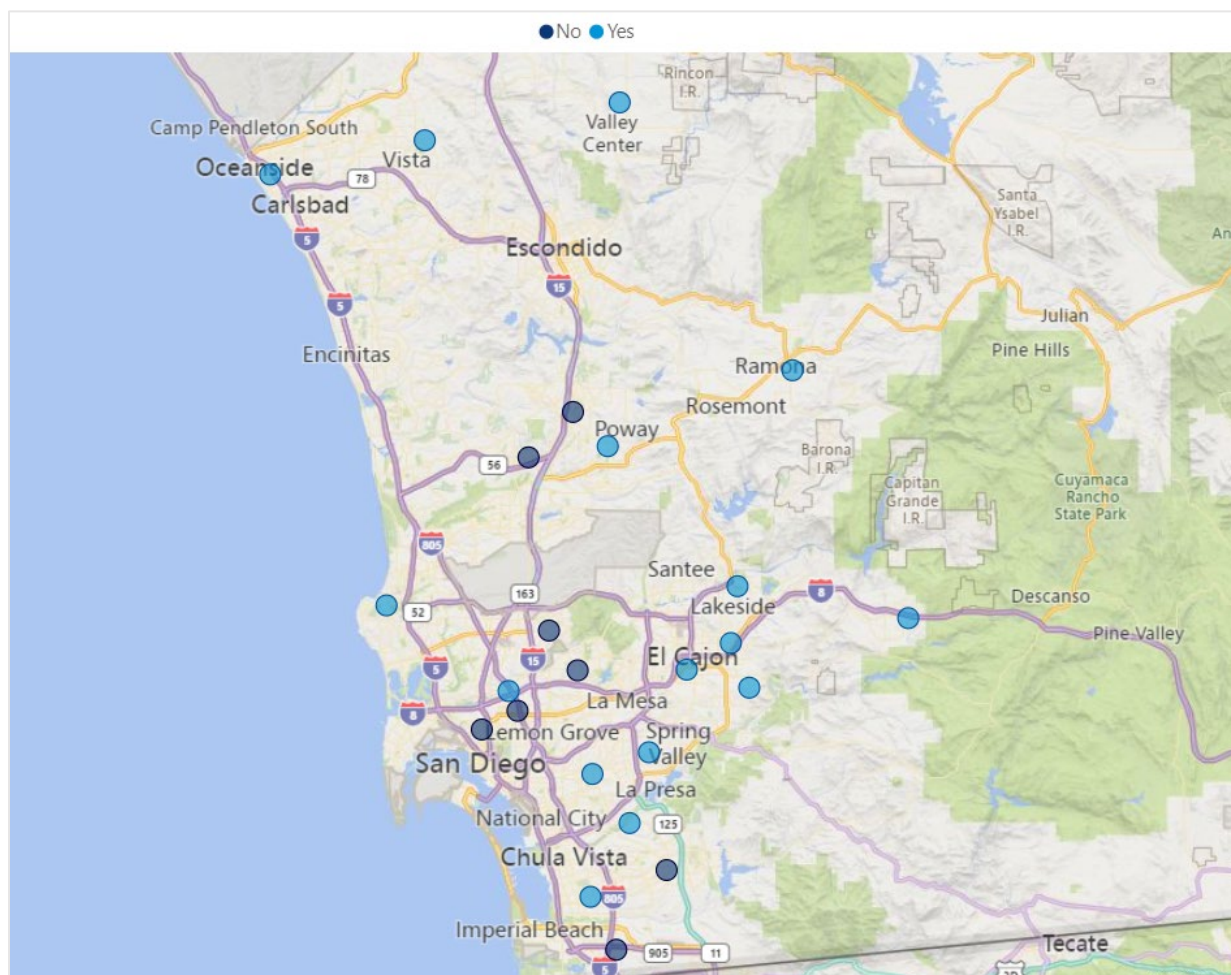


Figure 8.4: Have you ever called 9-1-1 for an ambulance in San Diego County?

Participants were asked if they expect an ambulance to respond with lights and sirens every time they are requested; 22 answered with “only when the situation is possibly life-threatening or critical,” six chose, “yes, always and regardless of the situation,” and one chose, “no, they probably do not need to use lights and sirens very often.”

Participants were asked to share how they access medical care for an unexpected condition and were asked to select multiple options if applicable. **Figure 8.5** shows each response by rank (1-4, with one being their top choice). 23 participants stated they would first seek care from their primary doctor, while five would first seek care from an urgent care clinic, and one would first seek care from a hospital emergency department.

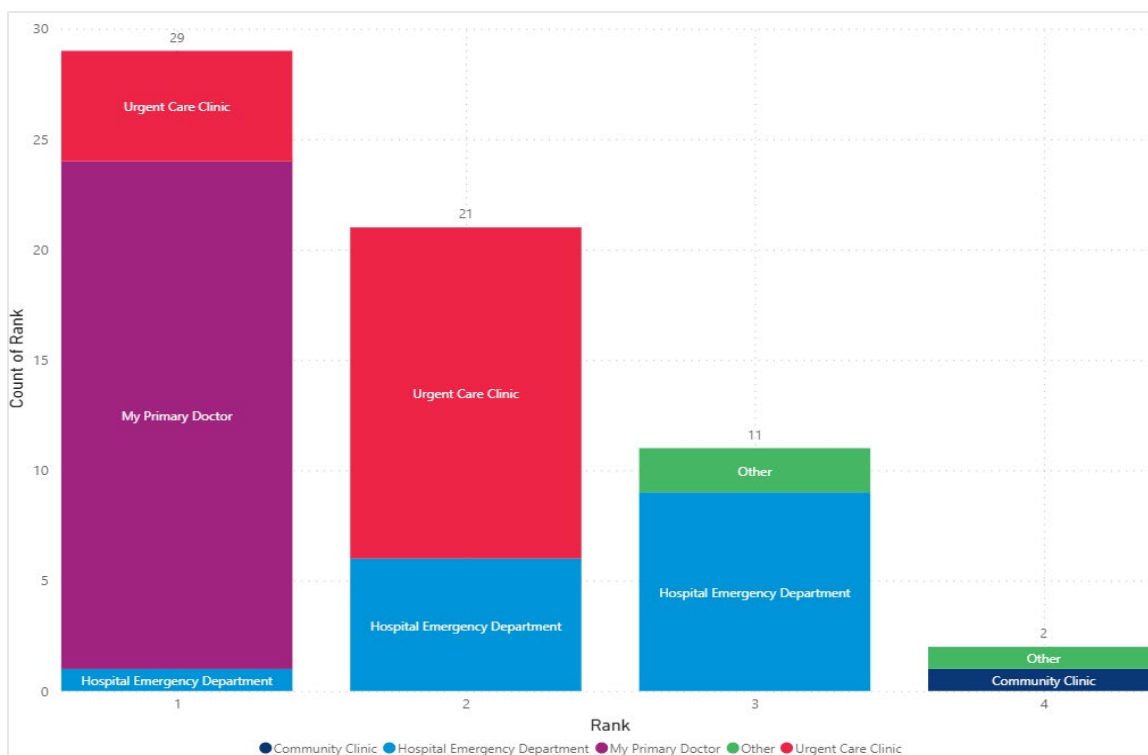


Figure 8.5: Where do you access medical care for an unexpected condition?

Participants were then asked, “If you need urgent medical care, how do you get there?” Twenty-three out of 30 participants stated they take their own car, five stated they are taken by their friends or family, and two stated they take public transportation. **Figure 8.6** below outlines the responses.



Figure 8.6: If you need urgent medical care, how do you get there?

The survey also asked participants what level of service would be acceptable after calling 9-1-1 and determining their situation was not life-threatening. Participants could select more than one answer, and responses were ranked from 1-4, with one being their top choice. Twenty-two out of the 28 responses received for this question chose “assessment of my medical situation and advice or referral for further care” as their first choice, three chose “treatment at a hospital emergency room,” two chose “treatment on-site (no transport to the hospital),” and one chose “alternative treatment center (urgent care, clinic).” **Figure 8.7** below outlines the results.

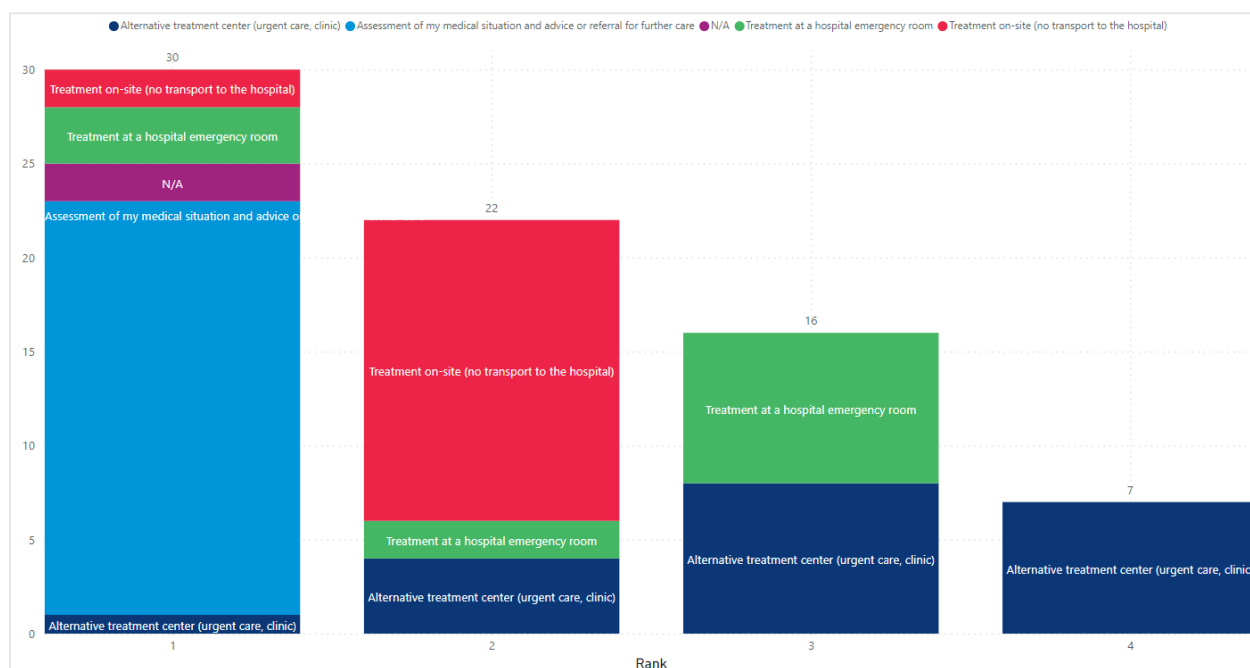


Figure 8.7: What level of non-life-threatening service is acceptable to you after calling 9-1-1?

8.2.3 – Summary

The participation from public stakeholders is invaluable in determining what San Diego County’s EMS system is doing well and what can be improved. The County has a population of over three million people, so the results of this survey, while helpful, do not represent all public stakeholders within this County. However, the feedback received does provide insight into how the County can address using lights and sirens, ambulance response times, and further education for both the community and EMS stakeholders to better serve the public.

8.3 – County EMS Stakeholder Survey Introduction and Disclaimer

To ensure as many stakeholder voices as possible were heard regarding the base station hospital system of San Diego County, PCG developed a County EMS Stakeholder Survey. This survey was sent out to Prehospital and Hospital stakeholders, which includes Paramedics, EMTs, MICNs, physicians, and more. This anonymous survey consisted of three sections: Demographics, base station hospital system (BSHS), and the trauma center catchment area designations (TCCAD). All participants were required to fill out the Demographics section and then were able to choose whether they answered questions regarding BSHS, TCCAD, or both.

The purpose of the survey was to seek the perception and opinions of stakeholders actively involved in the County EMS system on how well the BSHS works, as well as the appropriateness of the current TCCADs. The survey included open-ended questions, Likert scales, rating systems, and Strengths, Challenges, Opportunities, and Threats (SCOT) analysis for both the BSHS and TCCAD. A copy of the survey questions is in **Appendix H**. While the EMS stakeholder survey collected data on both BSHS and TCCAD, this section focuses on survey analysis and findings related to respondent demographics and data collected regarding the BSHS. Analysis and findings for the TCCAD portion of the EMS stakeholder survey are provided in a separate report, *Comprehensive Evaluation of the Trauma Center Catchment Area Designations Report*.

8.3.1 – Disclaimer

This survey was released to over 10,000 EMS stakeholders across San Diego County and was available from May 19 – June 30, 2023, with our team receiving a total of 367 responses. Due to this sample size, the PCG team anticipates there are many opinions that have not been voiced, therefore the survey results may not represent every stakeholder affiliation as accurately as possible. The survey results have been analyzed according to the data presented, and the following information is based solely on the responses received.

8.3.2 – Demographics

Of the 367 participants, 294 (80%) are affiliated with Prehospital roles such as Paramedics, EMTs, Fire Medics/Firefighters, and more. Sixty-one (61) or 17% are affiliated with Hospital roles such as MICNs and/or RNs, Directors, Administrative roles, and more. Finally, 12 (3%) participants are affiliated with “Other” roles, representing EMT/Paramedics in training and not affiliated with a hospital or provider agency, law enforcement, helicopter ambulance, and fire non-medical personnel. There were 159 (43%) participants that have worked within the County EMS/Hospital System for over 15 years, with 55 (15%) participants employed for 10-15 years, 65 (18%) participants employed for 5-10 years, with the remaining 88 (24%) participants employed from 0-5 years. **Figures 8.8 and 8.9** below outline the responses.

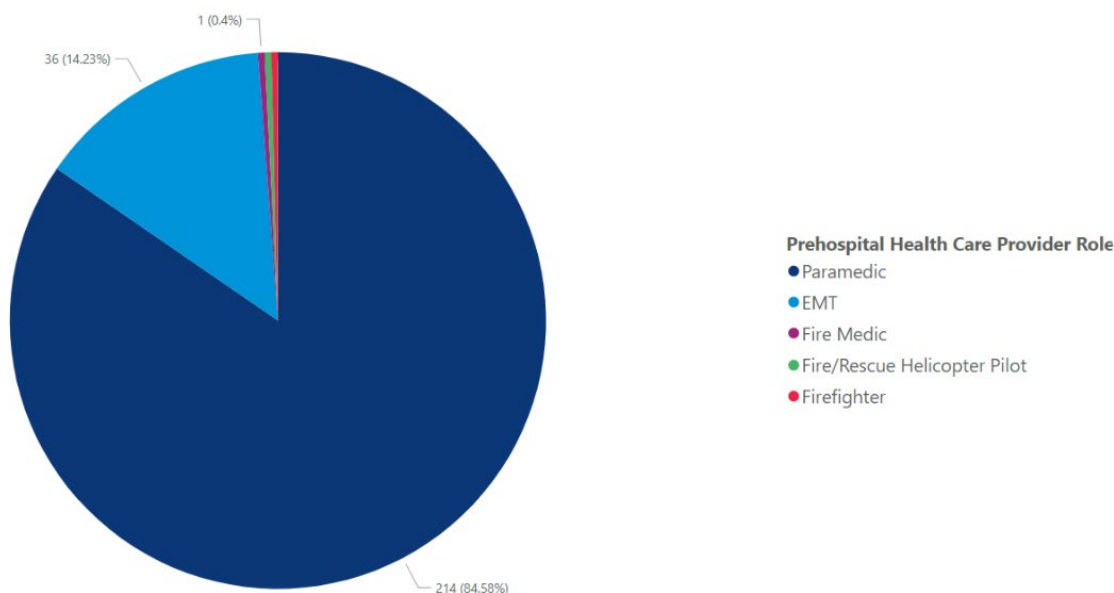


Figure 8.8: Prehospital Healthcare Provider Roles

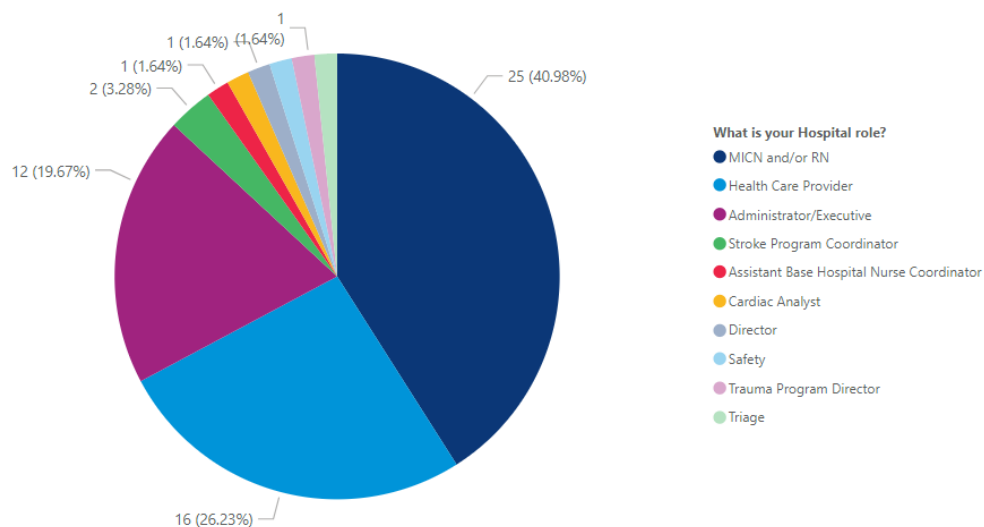


Figure 8.9: Hospital Healthcare Provider Roles

8.3.3 – Base Station Hospital System Effectiveness

Stakeholders were asked to rate the BSHS effectiveness on a scale of one (1) to five (5), with one being “Very Ineffective” and five being “Very Effective.” As shown in the graphic below, results were scattered evenly except for the ratings describing the system as “Very Effective.” Interestingly, the ratings vary significantly depending on affiliation, with 14 out of 282 (4.9%) **Prehospital/Other stakeholders** rating the system as “Very Effective,” and 24 out of 54 (44.5%) **Hospital stakeholders** rating the system as “Very Effective.” It is important to note that the number of survey participants represents roughly 4% of all available County EMS/Hospital stakeholders, therefore the ratings and opinions shared may not accurately represent each group.

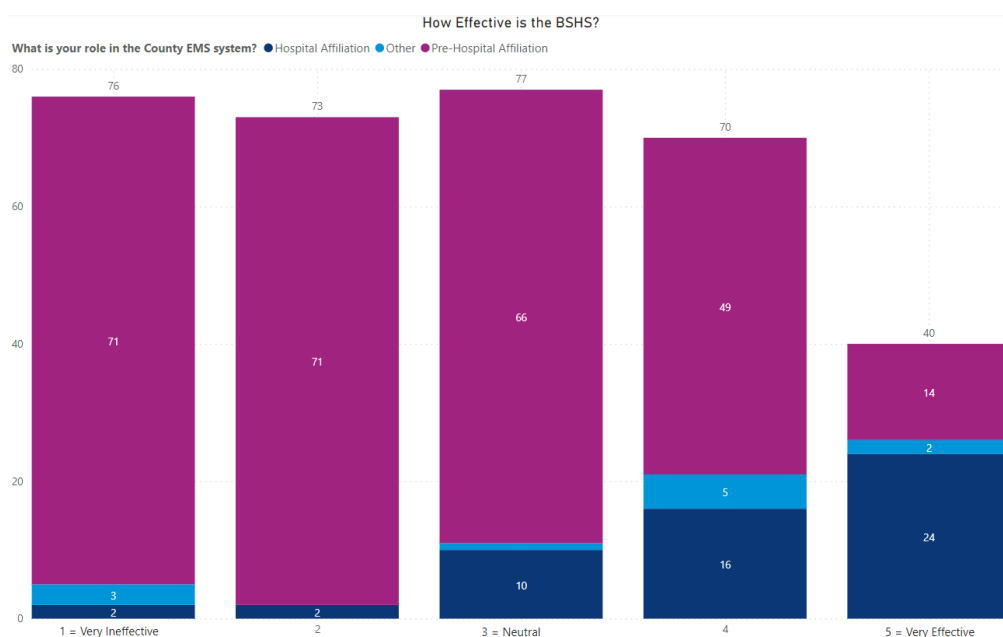


Figure 8.10: Rating of the Effectiveness of the Base Station Hospital System

8.3.3.1 – Common Themes

In addition to rating the BSHS effectiveness, participants were asked to explain their rating. Common themes are listed by stakeholder affiliation below.

8.3.3.1.1 – Prehospital/Other Stakeholder Feedback

Five common themes amongst **Prehospital/Other stakeholders** were as follows:

1. Inefficiency and Delay in Communication:

- ▶ Many Prehospital/Other stakeholders expressed frustration with the time-consuming process of contacting and communicating with base hospitals. They mentioned difficulty getting through on the radio, which could lead to delays in patient care and transport.

2. Unnecessary Detail in Radio Reports:

- ▶ Several stakeholders felt the radio reports required by the County to base hospitals are overly detailed, especially for stable or low-acuity patients. Participants suggested that shorter, more concise reports could be sufficient for most cases. It should be noted that the County has specific radio report protocols, which are detailed in **Section 8.3.4**.

3. Need for Streamlining and Modernization:

- ▶ Several stakeholders proposed streamlining communication processes, reducing unnecessary radio traffic, and implementing more efficient methods, such as using online systems or phone-based communication.

4. Variability in MICN Response and Training:

- ▶ There is a perceived inconsistency in the quality and responsiveness of MICNs across different base hospitals. Some participants highlighted issues with MICN knowledge of protocols, their ability to provide helpful guidance to field providers, and training issues such as a difference in when or if MICNs are going to give orders depending on which Base Hospital is called, and a difference in how MICNs take radio reports.

5. Provider Burnout:

- ▶ The emotional toll on EMS providers due to the frustrations and inefficiencies of the current system is mentioned, with some participants feeling unsupported and burnt out.

8.3.3.1.2 – Hospital Stakeholder Feedback

Five common themes amongst **Hospital stakeholders** were as follows:

1. Efficiency and Effectiveness of Base Hospital System:

- ▶ Many responses discussed the effectiveness of the current BSHS in providing medical direction, oversight, and coordination for EMS teams. Some stakeholders believe the system works well, ensuring patients are transported to the appropriate facilities and receive the required care. However, there are also concerns about the system's effectiveness in handling high call volumes and whether the current system benefits patient outcomes.

2. Communication and Coordination:

- ▶ The stakeholders highlighted the importance of effective communication and coordination between EMS teams, base hospitals, and other medical facilities. Some stakeholders point out challenges in relaying reports and receiving medical direction promptly, with concerns about lengthy radio reports. Additionally, there are suggestions for better

collaboration between agencies and hospitals to improve patient care, streamline processes, and enhance coordination.

3. Autonomy of Medics and MICNs:

- ▶ A recurring theme is the discussion regarding the level of autonomy for medics and MICNs within the system. Some participants felt that the current system with MICNs might limit medics' ability to make decisions on scene, potentially affecting their adaptability and effectiveness. Several advocated for more autonomy for medics, while others emphasized the value of MICNs in providing comprehensive medical oversight.

4. Patient Care and Outcome Focus:

- ▶ The central focus on patient care and outcomes is evident in several comments. Participants emphasized the importance of making decisions that lead to optimal patient outcomes, including routing patients to appropriate facilities and following specific medical protocols for conditions such as STEMIs, strokes, and traumas.

5. System Improvement and Adaptation:

- ▶ Many comments acknowledged that while the current system is effective to some extent, there is room for improvement. Stakeholders mentioned the need to address challenges such as high call volumes, resource allocation, pediatric expertise, real-time tracking of system status, and communication efficiency.

8.3.4 – Radio Reports

8.3.4.1 – The Value of Certain Aspects of A Radio Report

County EMS has explicit protocols regarding base hospital radio reports, which can be found in Policy S-415 from the County EMS Office. A copy of this policy is located in **Appendix I**. A radio report is defined as “a verbal report given to the Base Hospital MICN when there are data fields that do not electronically transfer upon download in real-time to the Base Hospital.” This can include a Local Emergency Services Information System (LEMSIS) radio report and a standard radio report format. It is worth noting that the shortened LEMSIS Radio Report format leverages real-time data transmission from paramedics and EMTs who use the LEMSIS Elite ECPR platform.

- ▶ LEMSIS Radio Report: A modified verbal report given to the Base Hospital mobile intensive care nurse (MICN) when connectivity allows data to be electronically transferred in real-time to the Base Hospital. Required report information includes:
 - Computer Aided Dispatch (CAD) incident number
 - Age
 - Gender
 - Estimated weight (if pertinent)
 - Patient complaint(s), including duration of complaint
 - Anticipated destination facility and reason for destination
 - Estimated time of arrival
 - Any information that would affect hospital bed/triage assignment (infectious disease, spinal motion restriction, any anticoagulant use)

- Any time that a LEMSIS user does not have connectivity, the provider must provide a Standard Radio Report to the Base Hospital MICN
- ▶ **Standard Radio Report:** A problem-oriented verbal communication which includes:
 - CAD incident number
 - Age
 - Gender
 - Estimated weight (if pertinent)
 - Initial acuity
 - Patient complaint(s), including duration of complaint
 - Mechanism and cause of injury (if pertinent)
 - Pertinent history, allergies, medications, including all anticoagulants
 - Vital signs
 - Field treatment and response
 - Anticipated destination facility and reason for destination
 - Any information that would affect hospital bed/triage assignment (infectious disease, spinal motion restriction, and anticoagulant use)
 - Estimated time of arrival

Policy S-415 contains even further detail on policies relating to when hospital contact is required, what type of radio report is needed, and exceptions to standards if a patient meets certain criteria such as death, minor injuries, patients who do not meet Base Hospital contact criteria, and more.

The topic of radio reports was brought up several times throughout this project, with mixed opinions provided on various aspects of these reports. In the survey, stakeholders were asked to rate the value of the following aspects of a radio report: data collection, destination guidance, medical direction, patient care guidance from MICNs, and quality assurance. A rating of one (1) indicates the aspect is “Not Valuable,” and a rating of five (5) indicates the aspect is “Very Valuable.” The visuals below capture each stakeholder group’s percentage of responses for each radio report aspect. Within each affiliation, the ratings for each aspect varied:

8.3.4.2 – Data Collection

- ▶ **80% of Hospital stakeholders** rated the data collection aspect as valuable, while **15%** rated it as not valuable.
- ▶ **24% of Prehospital/Other stakeholders** rated the data collection aspect as valuable, while **49%** rated it as not valuable.

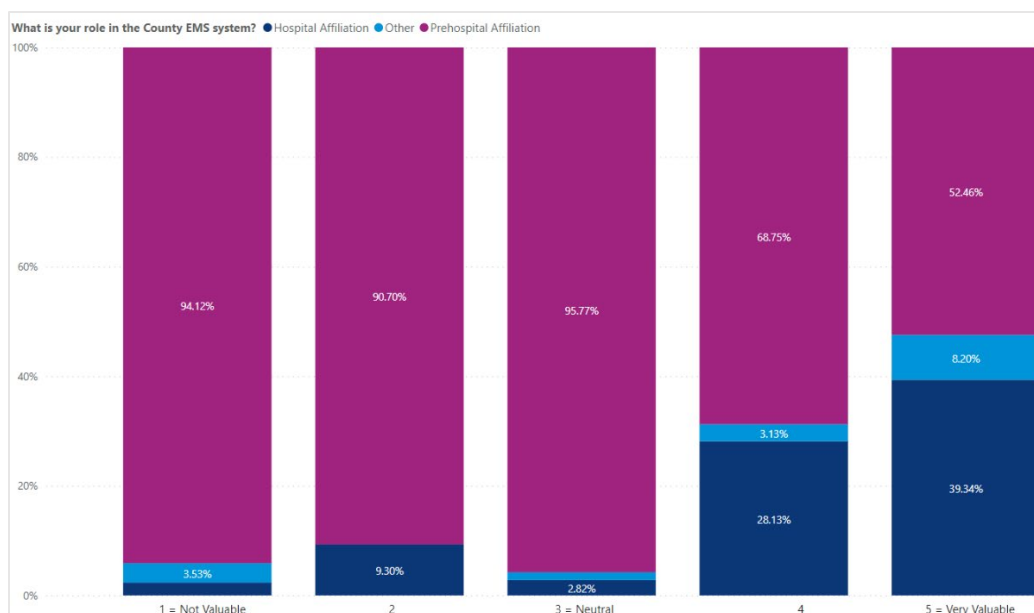


Figure 8.11: The Rated Value of Radio Report Data Collection

8.3.4.3 – Destination Guidance

- ▶ **75% of Hospital stakeholders** rated the destination guidance aspect as valuable, while **17%** rated it as not valuable.
- ▶ **39% of Prehospital/Other stakeholders** rated the destination guidance aspect as valuable, while **38%** rated it as not valuable.

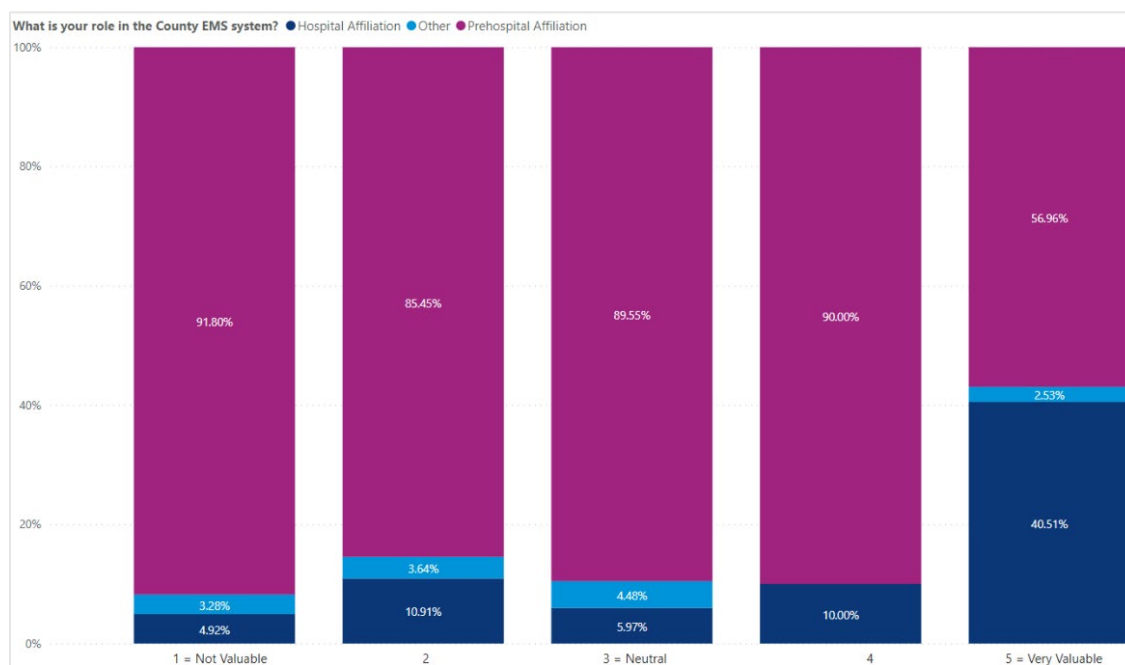


Figure 8.12: The Rated Value of Radio Report Destination Guidance

8.3.4.4 – Medical Direction

- ▶ **88% of Hospital stakeholders** rated the medical direction aspect as valuable, while **6%** rated it as not valuable.
- ▶ **49% of Prehospital/Other stakeholders** rated the medical direction aspect as valuable, while **30%** rated it as not valuable.

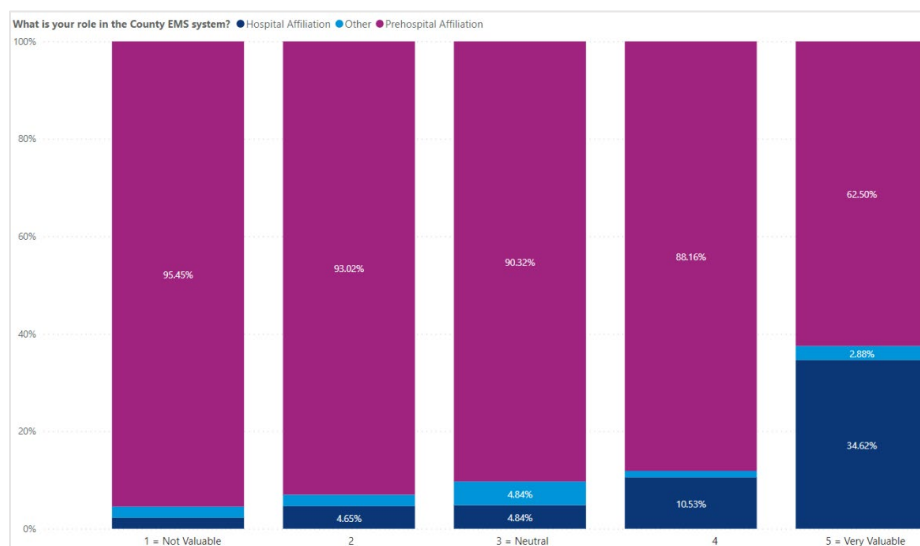


Figure 8.13: The Rated Value of Radio Report Medical Direction

8.3.4.5 – Patient Care Guidance from an MICN

- ▶ **77% of Hospital stakeholders** rated the patient care guidance from an MICN aspect as valuable, while **12%** rated it as not valuable.
- ▶ **24% of Prehospital/Other stakeholders** rated the patient care guidance from an MICN aspect as valuable, while **51%** rated it as not valuable.

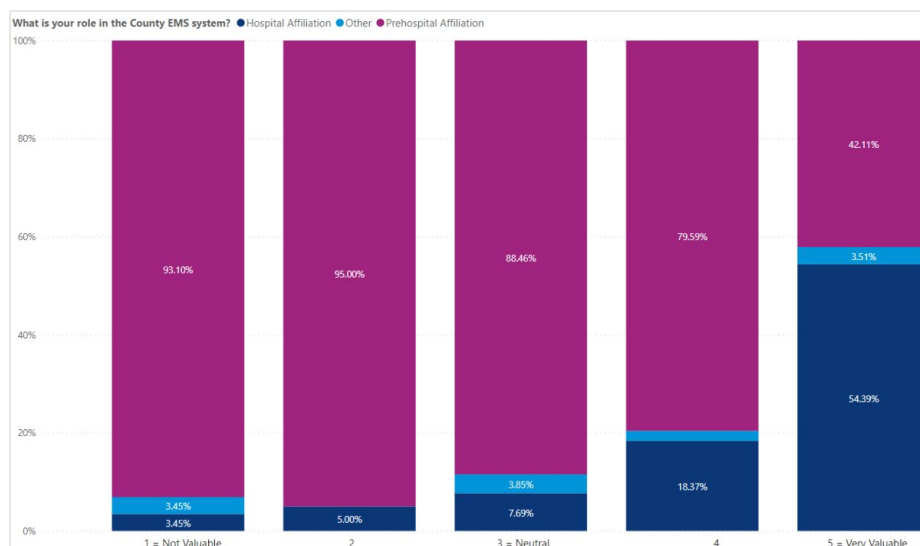


Figure 8.14: The Rated Value of Radio Report Patient Care Guidance from MICNs

8.3.4.6 – Quality Assurance

- ▶ **85% of Hospital stakeholders** rated the quality assurance from the Base Stations as valuable, while **15%** rated it as not valuable.
- ▶ **30% of Prehospital/Other stakeholders** rated the quality assurance from the Base Stations as valuable, while **44%** rated it as not valuable.

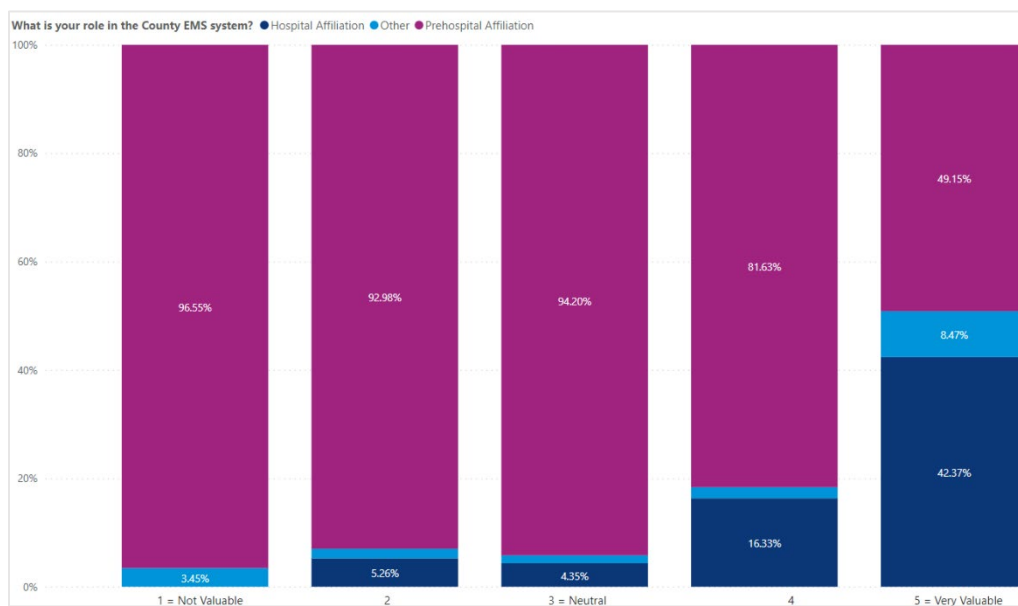


Figure 8.15: The Rated Value of Radio Report Quality Assurance

8.3.4.7 – Further Analysis

When asked to explain their rating, many stakeholders brought up the same common issues regarding radio reports as a whole: communication, technology, and patient acuity.

8.3.4.7.1 – Communication

Stakeholders frequently mentioned the need for streamlined communication methods to reduce the amount of unnecessary information exchanged, as this adds more time to the call when trying to transport a patient. They proposed various methods such as phone calls, simple radio contacts, abbreviated reports, and electronic patient care reports (ePCRs) to facilitate avoiding unnecessary delays and to quickly convey essential information. Very few stakeholders recommended getting rid of radio reports entirely, as many stated the value of direct human interaction in communication when needed. Another communication delay mentioned was when Prehospital stakeholders try to connect with MICNs; these stakeholders mentioned wait times while calling in can be long, especially for critical situations where immediate feedback and clarification are crucial. The PCG team had several opportunities to sit with MICNs and witnessed simultaneous radio calls. All but two Base Stations had only a single MICN available to take calls one at a time.

8.3.4.7.2 – Technology

There was a recurring theme throughout the comments of integrating technology into communication processes, tying back to the issue of communication. Many stakeholders

suggested using ePCRs, online hospital status access, apps to show available facilities, and similar technology-driven solutions to enhance communication efficiency. A few participants expressed concerns about the reliability of technology, particularly in areas with poor Wi-Fi connectivity or signal strength, which could affect the ability to contact a Base Station.

8.3.4.7.3 – Patient Acuity

Another crucial topic brought up regarding radio reports was patient acuity. Many stakeholders suggested that the use of electronic reports should be tailored to the acuity and type of patient. For higher acuity cases, many proposed using electronic reports in combination with radio reports. For lower acuity cases, it was suggested that electronic reports would be sufficient.

8.3.5 – The Value of the Mobile Intensive Care Nurse (MICN) Role

8.3.5.1 – The Value of the MICN Role

Stakeholders were asked to rate the value of the mobile intensive care nurse (MICN), the graphic below shows all ratings by County EMS System role. Thirty-seven out of forty-seven (79%) of **Hospital stakeholders** rated the value of the MICN role as “Very Valuable.” Meanwhile, **Prehospital/Other stakeholders** had mixed and evenly scattered ratings regarding the value of the MICN role.

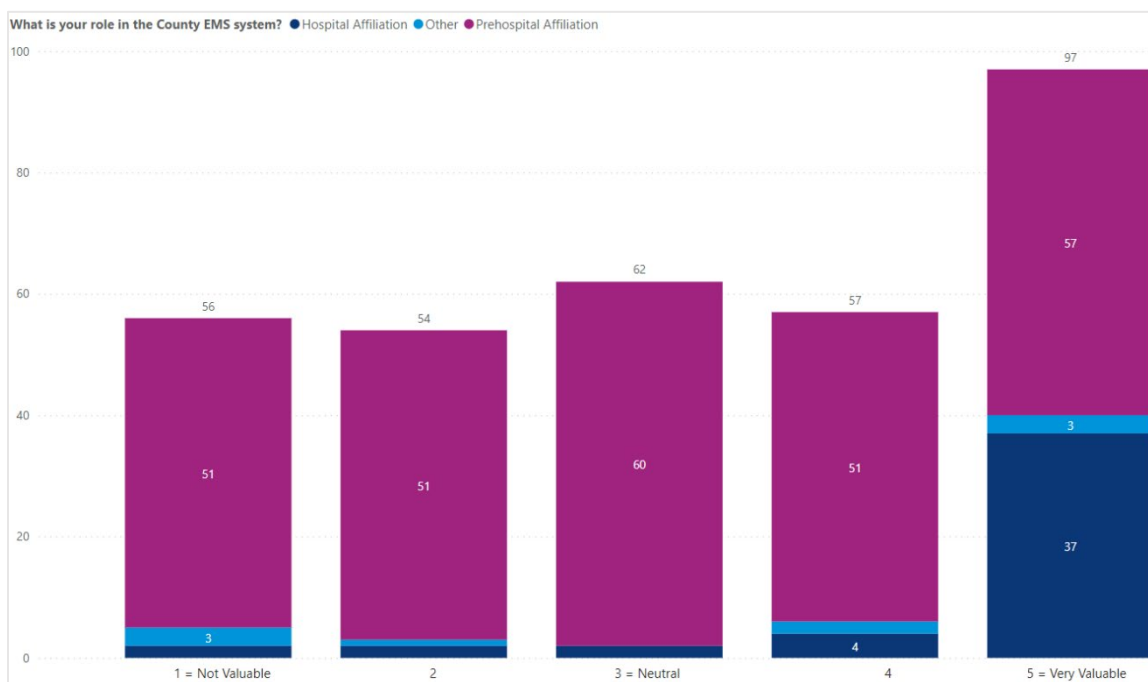


Figure 8.16: All Responses in Rating the Value of the MICN Role

8.3.5.1.1 – Hospital Stakeholder Feedback

Hospital stakeholders were asked to explain their rating, with the top three common themes identified below:

1. MICN Communication:

- ▶ Many stakeholders found the MICN role valuable for seeking guidance, medical direction, or second opinions on patient care decisions. There were a few stakeholders who felt communicating with field providers is more effective in determining patient care, with some stating there is no value in the MICN role.
- ▶ They emphasized that the need for communication with MICNs is limited. Paramedics often rely on established protocols and their own training to make patient care decisions. The general sentiment is that most calls do not require contact with MICNs and that the focus should be on acute cases or situations requiring specialized guidance.
- ▶ Several stakeholders expressed concerns about overuse and redundancy in communication with MICNs. Paramedics often feel that they are giving unnecessary information during radio reports, which could be streamlined. Some suggest that the role of MICNs should be more focused on critical calls rather than routine cases.

2. Delay in Patient Care:

- ▶ Some participants mention that contacting MICNs can lead to delays in patient care, especially in critical situations. They highlight the challenges of balancing patient care activities with radio communication, which may involve answering questions and providing detailed reports to MICNs.

3. Desire for Physician Consult:

- ▶ Many participants express a preference for direct communication with physicians rather than nurses. They believe that physician consultation for complex cases is more appropriate and valuable. Some feel that nurses may lack the clinical expertise to provide optimal guidance in certain situations.

8.3.5.1.2 – Prehospital/Other Stakeholder Feedback

Prehospital/Other stakeholders were asked to explain their rating, with the following top four themes:

1. Delay in Patient Care:

- ▶ Many stakeholders stated that communication with MICNs can at times be slow, leading to delays in patient care. They highlight the challenges of balancing patient care activities with radio communication, which may involve answering questions and providing detailed reports to MICNs.

2. Value in Complex Cases:

- ▶ Stakeholders recognized the value of MICN communication in complex cases where medical direction or guidance is necessary, such as for borderline cases, acute conditions, or trauma situations.

3. Redundancy and Unnecessary Contact:

- ▶ Many stakeholders felt that contacting the MICNs for routine cases is unnecessary and redundant, leading to time wastage. They argued that certain calls can be handled through standing orders without the need for direct communication.

4. Varied Quality of MICN Interaction:

- ▶ Participants express mixed experiences with MICN interaction. Some feel that MICNs may not always be familiar with EMS protocols, while others value the rapid exchange of information that verbal communication allows, compared to text-based methods.

8.3.6 – EMS System Model Recommendations

Our survey asked stakeholders to identify a preferred EMS system model for San Diego County. We received 312 responses, with the options being:

1. Base Hospital system for medical direction and the ability to provide abbreviated reports to non-base receiving hospitals (40% of responses).
2. No Base Stations: all hospitals can provide online medical direction (16% of responses).
3. Multiple Base Stations (i.e., current system) (19% of responses).
4. Add additional Base Stations designated by region to the current base station system (14% of responses).
5. Single centralized Base Station (11% of responses).

Of these options, #1 was the most popular, followed by options #3, #2, #4, and #5. Only 19% of stakeholders preferred to keep the EMS system as it currently is. All options are part of PCG's final considerations for the San Diego County base station hospital system.

8.3.7 – Effective EMS Programs Outside San Diego County

Stakeholders were asked to suggest the name of an effective EMS program outside of San Diego County. Thirty-two out of the 86 responses received (37%) listed Riverside County as an effective system. Overall, we received 30 different location recommendations, the top five suggested effective EMS programs were:

1. Riverside, CA (three base stations)
2. Los Angeles, CA (both City and County) (twenty-one base stations)
3. Inland Counties Emergency Medical Agency (ICEMA), CA (seven base stations)
4. Orange County, CA (seven base stations)
5. Las Vegas, NV (no base stations)

8.3.8 – Base Station Hospital System SCOT (Strengths, Challenges, Opportunities, and Threats)

Participants who answered questions regarding the base station hospital system completed a SCOT analysis and were asked to rank a list of provided strengths, challenges, opportunities, and threats. Stakeholders were given an opportunity to write in an additional SCOT area that was not previously mentioned. Below are the rankings for each SCOT aspect, in order by which category received the most responses:

8.3.8.1 – BSHS Strengths, Ranked by Most Responses per Strength:

1. ED Relationships with EMS Providers
2. Obtaining Medical Direction and Patient Destination Guidance
3. Base Station Hospital Orders
4. Hospital MICN Collaboration
5. Base Station Physicians Orders
6. Quality Assurance/Improvement Program
7. Education/Training Opportunities

8.3.8.2 – BSHS Challenges, Ranked by Most Responses per Challenge:

1. Limited System Resources
2. Base Station Hospital Contact
3. Base Station Hospital Report
4. Obtaining Medical Direction and Patient Destination Guidance
5. Availability of ED Physician
6. Second-Guessing by MICN
7. System Funding

8.3.8.3 – BSHS Opportunities, Ranked by Most Responses per Opportunity:

1. More Base Station Hospitals
2. Use of Technology
3. Single Base Station Hospitals
4. No Base Station Hospitals
5. Patient Load-Leveling

8.3.8.4 – BSHS Threats, Ranked by Most Responses per Threat:

1. Patient Transfer Offload Times
2. More Base Station Hospitals
3. Single Base Station Hospitals
4. No Base Station Hospitals
5. Use of Technology
6. Patient Load-Leveling

8.3.9 – Standing Orders

Our survey asked the following question regarding standing orders: “Should the County EMS System utilize more standing orders in lieu of base station or physician orders? If so, enter the protocols that should be converted to standing orders in the space provided.” This question was optional for participants, and we received a total of 261 responses, with top themes identified by stakeholder affiliation below:

8.3.9.1 – Prehospital/Other Stakeholder Feedback:

1. Expansion of Standing Orders:

- ▶ Many stakeholders expressed the desire for more protocols to be converted into standing orders. They believed that paramedics should have the authority to initiate certain treatments and interventions without needing to contact base station hospitals for permission.

2. Push Dose Epinephrine and Pain Management Protocols:

- ▶ A large percentage of stakeholders mentioned the need for push dose epinephrine to be a standing order. They felt that the time-sensitive nature of these situations warrants immediate action without waiting for orders. Multiple participants advocated for standing orders related to pain management, including the ability to change routes of administration or medications without requiring base station hospital consultation.

3. Empowerment and Autonomy:

- ▶ Many stakeholders expressed the sentiment that paramedics should be trusted with more decision-making power and autonomy in the field. They believe that strong training and education can support these changes and lead to better patient care outcomes.

8.3.9.2 – Hospital Stakeholder Feedback:

1. Collaboration, Communication, and Standing Orders:

- ▶ Stakeholders brought up the importance of collaboration and communication between different healthcare professionals, agencies, and organizations. They mentioned that interdisciplinary teamwork is crucial for delivering high-quality patient care and improving protocols. There were mixed opinions over the use of standing orders versus seeking physician consultation for medical interventions. While some stakeholders support the use of standing orders for quicker patient care, others advocate for physician oversight in complex cases.

2. Quality Assurance/Quality Improvement (QA/QI) Process:

- ▶ QA/QI was also brought up regarding standing orders, with emphasis on maintaining a robust QA/QI process to ensure the highest standards of patient care, which includes collaborating amongst prehospital and hospital employees. This ties into the previous point of needing better collaboration and communication across all fields.

3. Patient-Centered Care and Safety:

- ▶ Overwhelmingly, stakeholders agree that the patient's health and safety take priority, and providing effective, evidence-based care is repeatedly mentioned. The responses revolved around making decisions that best serve the patients while considering the potential risks and benefits of different approaches. The suggested approaches varied significantly, such as eliminating standing orders entirely, requiring more physician orders, or keeping the protocols as they currently are.

8.3.10 – Conclusion

8.3.10.1 – Key Observations

A theme noticed early in the survey analysis was the difference in opinions between stakeholder affiliations. This was apparent in how each stakeholder group ranked the effectiveness of the BSHS, as discussed in **Section 8.3.3**. Both stakeholder groups agreed the technology used for communication and reports needs to be improved, along with communication protocols when speaking to each other. Both stakeholder groups included several participants who stated that they were open to the idea of a single BSHS. Along with this survey, PCG conducted interviews with over 100 stakeholders, in-person and virtual listening sessions, and attended on-site visits with a multitude of hospitals (including non-base hospitals) and local ambulance providers to see their work performed firsthand. The survey results align with the sentiments received throughout the duration of this project.

8.3.10.1.1 – Prehospital/Other Stakeholders

Prehospital/Other stakeholders consistently had a more negative view of the current BSHS and felt the current EMS system needs several changes such as paramedic discretion, better technology to contact Base Hospitals, and either fewer or more Base Hospitals to make the system more efficient. These stakeholders strongly preferred a system for medical direction and the ability to provide abbreviated reports to non-base receiving hospitals, with no Base Hospitals as the next preference.

8.3.10.1.2 – Hospital Stakeholders

Hospital stakeholders consistently had a positive view of the current BSHS being that most of these stakeholders felt the current EMS system works well but could use minor improvements such as better relations between stakeholder affiliations and more education and training opportunities for all parties. Hospital stakeholders preferred either a Multiple Station Base Hospital System or a system for medical direction and the ability to provide abbreviated reports to non-base receiving hospitals.

8.3.10.2 – Final Notes

It should also be noted that each stakeholder affiliation has a very different work setting; Prehospital stakeholders work in the field, addressing patients' immediate needs to stabilize and sustain viability while transporting to a Base Hospital. Hospital stakeholders work within a hospital setting and determine where a patient needs to be, then tend to patients' injuries in order to reach their fullest health as soon as possible. All stakeholders are absolutely necessary for the sake of patient care. Despite different opinions and preferences, each stakeholder group presents enough similarities in their responses for common grounds to be found in the future EMS system model chosen by the County of San Diego while continuing to put patient care first.

SECTION 9: BSH SYSTEM FINDINGS AND RECOMMENDATIONS

9.1 – Introduction

This section summarizes the study findings of the San Diego County base station hospital (BSH) system based on extensive EMS system stakeholder engagement activities, reviewing several EMS-related documents, data analysis, independent research, and onsite, real-time observations of prehospital providers and base station hospital MICNs. This section also includes recommendations for the EMS system stakeholders to consider that are based on national, state, and local regulations and guidelines, industry best practices, and suggestions provided by the EMS stakeholders that participated in this study.

9.2 – Base Station Hospital System Findings

There were several findings regarding the various components of the BSH system identified over the course of this study, as well as some common themes and sentiments expressed by the participating EMS stakeholders representing both prehospital and hospital personnel at the executive/administrator and the healthcare provider perspectives. The consultants used a strengths, challenges (weakness), opportunities, and threats (SCOT) analysis approach to stakeholder interviews, listening sessions, and survey instruments. The opinions of the BSH system SCOTs varied based on the participant's EMS system affiliation: prehospital or hospital and administrator or healthcare provider. There were more challenges and threats mentioned than there were strengths and opportunities listed. Most of the stakeholders stated that the BSH system has worked in the past but is now stressed to the point that contacting a BSH is challenging. **Section 7** of this report includes the SCOT components and the opinions of the various hospital and prehospital stakeholders in more detail. Below is a condensed list of the most mentioned strengths, challenges, opportunities, and threats by the stakeholders that also support the recommendations PCG is providing. To be noted, some feedback was factually verifiable while some was based solely on BSH system perceptions and unable to be validated.

9.2.1 – Strengths

- ▶ San Diego benefits from a mature healthcare delivery system with established protocols, contributing to efficient and effective care.
- ▶ Paramedics value collaboration with MICNs on critical incidents.
- ▶ Effective communication and collaboration exist between BSHs and paramedics.
- ▶ MICNs are well-trained and provide a depth of medical knowledge and support.

9.2.2 – Challenges

- ▶ The requirement that all 9-1-1 system ALS calls require base station contact can be challenging due to the high volume of calls and limited MICN availability.
- ▶ Paramedics “base shop” because of delays with contacting a BSH.
- ▶ The MICN process is labor intensive (paper log; eBHR entry).
- ▶ MICNs can only handle one call at a time.

- ▶ Inconsistencies between MICNs regarding radio reports and documentation of medical direction provided.
- ▶ There is a lack of technology alternatives resulting in reliance on the current radio system.
- ▶ Decreased paramedic attendance at BSH educational programs.
- ▶ Challenges related to data collection and management with the County EMS Office not receiving 100% of ePCR data from EMS agencies.

9.2.3 – Opportunities

- ▶ Reduce radio traffic and contact base hospitals only for essential medical direction needs.
- ▶ Expand standing orders to reduce the need for base station calls.
- ▶ Leverage technology like apps for data transmission and real-time hospital status updates.
- ▶ Move towards a centralized medical direction system to enhance efficiency and consistency.
- ▶ Explore opportunities to unify, streamline, and improve coordination with paramedics, which may include a centralized base station that acts as a countywide traffic controller for ambulances. This system can balance patient loads, manage resources efficiently, and potentially offer telemedicine services.
- ▶ Expand community paramedicine and telehealth programs to alleviate strain on the system.
- ▶ Establish direct communication channels between EMS providers and receiving hospitals, bypassing the need for a base station intermediary.

9.2.4 – Threats

- ▶ Resistance to change by some stakeholders representing hospital providers.
- ▶ Concerns with BSHs investigating themselves regarding prehospital QA/QI inquiries.
- ▶ Some stakeholders perceive the Pre-PAC/PAC/PEARLS process as punitive.
- ▶ The perception by paramedics that they are not represented in committees and decision-making.
- ▶ Transitioning to a single base station system was perceived by some stakeholders as a threat to the BSH system.
- ▶ Distrust between different participants of the system.
- ▶ BSH physicians are not perceived as familiar with the County EMS system policies and protocols.

9.2.5 – Electronic Base Hospital Record Analysis Summary

A comprehensive analysis of the electronic base hospital records (eBHR) from 2018 to 2022 was completed and a detailed analysis is contained in **Section 4** of this report. A summary of key findings include:

- ▶ In 2022 there were 266,649 BSH calls made representing a 13% increase in calls since 2018.
- ▶ BSHs provided medical direction for approximately 14% (36,243) of all BSH system calls in 2022.

- ▶ BSHs rerouted less than approximately 1% (0.9%) of patient transports to their BSH when another receiving hospital was initially requested.
- ▶ Individual MICN documentation of calls for “medical direction provided” is inconsistent.
- ▶ The peak call time for 12-hours is between 0900 – 2100 and 1100 – 1500 for a 4-hour peak time period.

9.3 – Base Station Hospital System Recommendations

Based on our research and findings, the PCG project team developed a list of recommendations for the base station hospital system stakeholders and the County EMS Office to consider. These recommendations are being made in support of streamlining the interactions between the BSH and paramedics, enhancing the effectiveness and efficiency of EMS system participants, and improving the quality of pre-hospital patient care. Recommendations are grouped into five areas that include:



9.3.1 – General Recommendations

1. **Increase Collaboration and Transparency:** Foster open communication and collaboration among all stakeholders to build trust and ensure transparency in decision-making processes.
2. **Optimize BSH Radio Reports:** Reserve BSH radio reports for incidents requiring medical direction or orders, alleviating capacity strain and preventing "base shopping" by paramedics.
3. **Direct Notification to Receiving Hospitals:** Implement a system for direct transmission of brief alert/notification reports to receiving hospitals for all transports, relieving the burden on BSH MICNs.
4. **Enhance EMS Education Coordination:** BSHs should coordinate education/training with EMS provider agencies to enhance EMS education and support.
5. **Include EMS Field Providers in Decision-Making:** Ensure representation of EMS field providers in decision-making committees to incorporate their perspectives into EMS system decisions.
6. **Clarify Decision-Making Processes:** Improve understanding of EMS system decision-making processes regarding protocols and directives among stakeholders to enhance transparency.
7. **Designate EMS Liaisons in Hospitals:** All hospitals should designate EMS Liaisons, ideally paramedics employed by the hospitals, to facilitate communication and coordination with EMS agencies, provide patient care follow-up, and offer continued education.

8. **Provide Real-Time Hospital Status to EMS Field Personnel:** Implement a system for providing real-time updates on ED availability to EMS field personnel to streamline communication and enhance efficiency.
9. **Consider County EMS for Patient Load Leveling:** Explore the use of County EMS staff for patient load leveling management during high call volumes to balance patient transportation and minimize impact on ambulance offload times and ED overcrowding.

9.3.2 – Medical Direction Recommendations

1. **Pediatric Facility for Primary Medical Direction:** Evaluate the feasibility of designating a pediatric facility as the primary medical direction resource for pediatric patients, addressing field providers' need for specialized pediatric medical guidance.
2. **Establish a Core Group of Emergency Medical Physicians:** Create a dedicated group of emergency medical physicians to consistently provide medical direction to paramedics, ensuring familiarity with County EMS policies and protocols for improved consistency.
3. **Expand Standing Orders and Review Medical Direction Requirements:** Review existing requirements for medical direction and consider implementing standing orders where appropriate, based on feedback from prehospital and hospital EMS stakeholders, to streamline protocols and enhance efficiency.
4. **Utilize Emergency Medical Fellows for Medical Direction:** Explore the possibility of involving emergency medical fellows from UCSD in providing medical direction to paramedics, leveraging their training and expertise to support the EMS system, while addressing potential concerns from hospital stakeholders about influence on patient destination decisions.

9.3.3 – Quality Assurance/Improvement Recommendations

1. **Incorporate EMS Agencies' QI Plans into County QA/QI Program:** Request and review EMS agencies' QI plans, incorporating them into a collaborative QA/QI system involving EMS provider agencies, BSHs, and County EMS, focusing on EMS performance indicators from national and state initiatives.
2. **Ensure Understanding of Legal Protections:** Educate EMS provider agencies on California Evidence Codes 1157 & 1157.7 to ensure they understand the legal protection provided for QA/QI activities, addressing concerns about data sharing and discovery.
3. **Expand QA/QI Activities to Receiving Hospitals:** Expand BSH QA/QI activities to include participation from receiving satellite hospitals, fostering collaboration, and improving feedback loops between hospitals and EMS agencies.
4. **Define Prehospital Patient Care (Pre-PAC) Process:** Establish clear guidelines and procedures for the Pre-PAC process, addressing concerns raised by prehospital providers and ensuring consistency in prehospital patient care assessment.
5. **Consider Name Change to Clarify Committee's Purpose:** Consider renaming the PAC to EMS QA Committee to better reflect its purpose and focus on quality assurance within the EMS system.
6. **Facilitate Transcript/Recording Sharing for QA Purposes:** BSHs should provide transcripts or recordings of paramedic calls to agency QA staff for internal QA/QI activities, addressing concerns about HIPAA while ensuring necessary information exchange through Business Associate Agreements (BAA).

9.3.4 – Technology Recommendations

1. **Transition to Telephone Contact with Backup Radios:** Implement a telephone system between BSHs and prehospital providers, utilizing radios as a backup, ensuring consistent communication. Maintain radio contact for areas with limited cell phone coverage.
2. **Adopt App-Based Communication Tools:** Introduce app-based communication tools like Pulsara™ or Twiage™ to streamline patient care coordination and enable live video calls between prehospital personnel and medical staff.
3. **Expand SAFR EMS Hub for Real-Time Data Transmission:** Collaborate with San Diego Health Connect to expand the SAFR EMS Hub for real-time data transmission between EMS providers and hospitals, enhancing patient outcomes and communication efficiency.
4. **Encourage ECC Dispatch Triage with Technology Integration:** Encourage Emergency Communication Centers to integrate dispatch triage apps like Good Sam or MD Ally to connect low-acuity patients with healthcare providers, reducing system demand without dispatching first responders.
5. **Explore Tele911 and Other Telehealth Solutions:** Investigate Tele911 and similar mobile apps integrating telehealth into EMS systems, allowing paramedics to conduct physician telehealth visits instead of ED transportation, alleviating ED overcrowding.
6. **Engage San Diego 211 for Resource Exploration:** Initiate discussions with San Diego 211 to explore available services and resources, reducing demand on EMS and hospital systems through non-emergency medical transportation and social services.
7. **Establish a Technology Committee/Advisory Group:** Form a technology committee with stakeholders from prehospital and hospital providers to identify and implement technologies enhancing EMS system delivery in San Diego County.

9.3.5 – Data Recommendations

1. **Ensure Compliance with LEMSIS Reporting Requirements:** Require EMS agencies to provide minimum ePCR data to meet San Diego LEMSIS reporting compliance, as mandated by California Health and Safety Code 1797.227 and County EMS Policy S-601, fostering participation and data integrity.
2. **Establish Routine QA Data Reporting:** Implement a requirement for EMS agencies to routinely provide QA data, collaborating with County EMS to develop QA/QI metrics for regular reporting, reflecting the current landscape where most agencies have dedicated QA/QI staff.
3. **Provide Clear Definitions for the eBHR Data Elements:** To eliminate inconsistencies in documentation, specifically define what criteria is used to indicate “medical direction” and when MICNs should indicate that “medical direction” is provided.
4. **Include Location Information in Trauma Registry Data:** Enhance trauma registry data by including location information, preferably latitude/longitude correlation, to facilitate correlation with dispatch data and develop GIS heat maps, improving analysis and planning.
5. **Incorporate Air Ambulance Transport Data into Trauma Registry:** Ensure inclusion of air ambulance transport information in trauma registry data to provide a comprehensive view of trauma cases, enhancing data accuracy and analysis for Trauma Centers.

9.3.6 – Transition to a Single Standalone Emergency Medical Command & Control Center (EMCCC)

This recommendation is contingent upon County EMS receiving 100% of prehospital ePCR data, 100% trauma, STEMI, stroke center data, and EMS agency QA data and reports, and hospital ED data.

Many EMS stakeholders, including County EMS staff members, expressed interest in exploring a single standalone centralized center that would provide medical direction to paramedics as well as coordination of EMS system resources and patient destination guidance. A single centralized center could provide consistency in medical direction by utilizing a core group of qualified associate Medical Directors, coordinate MCI patient distribution, provide patient load leveling between hospitals, and provide patient destination guidance. In addition, other services that could be provided include system demand reduction activities such as providing telehealth services, a nurse advice line, dispatch triage services, arranging for alternate non-emergency transportation, coordination with alternative destination facilities, patient repatriation, and coordination of other not yet identified services to enhance EMS delivery in an equitable, efficient, and effective manner. There are opportunities for the consolidation of services and economy of scale with the four communications/dispatch centers, EMS provider agencies, and hospital systems that can reduce costs and duplication of services. With the pending implementation of community paramedic/mobile integrated healthcare programs, there are other opportunities a single center can provide.

While there are supporters of this concept, there are also some stakeholders adamantly opposed for a variety of reasons (e.g. funding source, lack of redundancy, elimination of MICNs, loss of local/geographical control, resistance to change, and more). If considered, this recommendation would require significant stakeholder involvement of the EMS system stakeholders.

This single EMCCC model would similarly reflect the components of **Model-D** and **Model-E** as noted in **Section 6**. Ideally, the EMCCC would be independent of any active hospital and would function as its own County resource (**Model-E**). In the event County EMS is unable to secure 100% of the EMS system data, an acceptable alternative would be to contract with one hospital to serve in this capacity (**Model-D**). Within this facility and function, only physicians should be providing medical direction to EMS crews. Staffed paramedics or MICNs could serve as call takers, ambulance/resource coordinators, QA staff, data managers, and protocol-guiding references for on-duty EMS crews. All medical orders and variances from protocols within these models, to reiterate, should only be delivered by physicians.

1. **Establish an EMS stakeholder group to develop a 3-year transition plan to establish a single Emergency Medical Command and Control Center (EMCCC) for medical direction, MCI patient distribution, patient load leveling, patient destination guidance, and other services to enhance the delivery of EMS throughout San Diego County.** This recommendation needs significant involvement from all EMS system stakeholders and other non-EMS stakeholders to develop a comprehensive EMCCC. The current BSH system is funded by each BSH healthcare affiliate including MICN staffing, infrastructure, and other incidental costs. The pros and cons of a single center should be thoroughly explored including the impact on EMS delivery and hospital ED services.
2. **Explore funding options including state and federal grants, service fees, and other revenue options.** The responsibility of funding a single EMCCC in support of the County EMS system is a primary concern for successful implementation and sustainability in the future.

9.4 – Summary

The San Diego BSH system has worked successfully for decades but is now stressed because of EMS system demands, ED overcrowding, long patient off-load times, and other factors regarding resource availability. The EMS stakeholders are dedicated to patient-centric care and are truly concerned with providing quality EMS care. Paramedics are frustrated with the requirement to contact a BSH on all calls they respond to because of difficulty contacting a BSH. MICNs feel strongly about their role and contribution to the EMS system, especially quality assurance. These recommendations are intended to add efficiencies and enhance effectiveness for the EMS stakeholders that are part of the San Diego County EMS system.

As independent observers (PCG), it is evident that embracing the Base Station Hospital System (BSHS) recommendations holds immense potential for the advancement and collective benefit of San Diego County's EMS stakeholders and the patients they care for. By uniting behind these recommendations, stakeholders can foster a culture of collaboration, transparency, and communication that enhances the quality of care provided to the community.

The BSHS recommendations offer a clear pathway towards optimizing technology usage, improving data collection processes, and ultimately enhancing patient outcomes. Transitioning to telephone contact with radios as backup, implementing app-based communication tools, and expanding real-time data transmission capabilities are just a few examples of the technological advancements that can streamline operations and improve efficiency within the EMS system.

Additionally, adopting recommendations for routine QA data reporting and including location information in trauma registry data can significantly enhance the accuracy and effectiveness of decision-making processes. By embracing these recommendations, stakeholders demonstrate their commitment to delivering the highest standard of care to the community while leveraging innovative solutions to address current challenges.

In conclusion, implementing the BSHS recommendations represents a proactive and forward-thinking approach towards enhancing the EMS system in San Diego County. By working together to implement these recommendations, stakeholders can ensure the continued improvement and effectiveness of EMS services for the benefit of all.

APPENDIX A: LIST OF MINIMUM NUMBER OF STAKEHOLDERS TO INTERVIEW

Required Interviewee List for the County of San Diego	
Role/Organization	RFP Requirement
Chair and/or Vice Chair (or designee) of Base Station Physicians Committee	7.2.1.1 and 7.2.2.1
Chair and/or Vice Chair (or designee) of Medical Audit Committee	7.2.1.2 and 7.2.2.2
Chair and/or Vice Chair (or designee) of Emergency Medical Care Committee	7.2.1.3 and 7.2.2.3
Chair and/or Vice Chair (or designee) of Prehospital Audit Committee	7.2.1.4 and 7.2.2.4
Chair and/or Vice Chair (or designee) of Ambulance Association of San Diego County	7.2.1.5 and 7.2.2.5
A representative of the San Diego Fire Chiefs Association	7.2.1.6 and 7.2.2.6
A representative of the EMS Section of the San Diego Fire Chiefs Association	7.2.1.7 and 7.2.2.7
The President and/or Vice President of Hospital Association of San Diego and Imperial Counties	7.2.1.8 and 7.2.2.8
Hospital Leader Selectees	7.2.1.9 and 7.2.2.9
Chair and/or Vice Chair (or designee) of County Paramedics Agencies Committee (CPAC)	7.2.1.10
Chair and/or Vice Chair (or designee) of Health Services Capacity Task Force (HSCTF)	7.2.1.11
A representative from the Behavioral Health Advisory Board	7.2.1.12
A representative from the Health Services Advisory Board	7.2.1.13

APPENDIX B: COUNTY OF SAN DIEGO PROJECT CATCHMENT A WEBSITE



San Diego County EMS Office

Comprehensive Evaluation of the Base Hospital System and Trauma Center Catchment Area Designation



The San Diego County Board of Supervisors directed the County staff to develop a plan for comprehensive evaluation of the base station hospital system and trauma center catchment area designations, which included the recommendation to contract for a consultant. As the designated Local Emergency Medical Services Agency (LEMSA), the San Diego County Emergency Medical Services Office (County EMS) is responsible for ongoing oversight of the Emergency Medical Services (EMS) system, which includes designation of base station hospitals, trauma centers, and trauma center catchment areas. As a region, San Diego offers a robust system of emergency, specialty, and trauma medical care through its cooperating hospitals.

The purpose of this project is to conduct a comprehensive review and evaluation of:

1. the *Base Station Hospital System* (BSHS), and
2. the *Trauma Center Catchment Area Designations* (TCCAD).

A critical component of this evaluation is providing opportunities to gain valuable stakeholder input through listening sessions, stakeholder interviews, and surveys. In addition, the study team will conduct industry research, carry out comprehensive analysis, and evaluate best practices.

Expand All | Collapse All

What is a Base Station Hospital?



In San Diego County, *Base Station Hospitals* are designated by the County EMS Office to provide on-line medical direction to EMS professionals responding to 9-1-1 calls in the field. This medical direction, provided by the base station hospital physician through specially-trained Mobile Intensive Care Nurses (MICNs), focuses on patient treatment on the scene and assists in determining appropriate patient destinations.

The base hospital also provides EMS continuing education, quality assurance review, and monitors compliance with associated prehospital protocols and policies.

The base station hospital coordinates patient distribution in a large-scale disaster or other incidents, as described in the County of San Diego Emergency Operations Plan Annex D – Multi-Casualty Operations.

In San Diego County, there are currently seven base hospitals in the EMS system:

- Tri-City Medical Center,
- Palomar Medical Center,
- Scripps Memorial Hospital La Jolla,
- Scripps Mercy Hospital San Diego,
- Sharp Memorial Hospital,
- UCSD Medical Center Hillcrest, and
- Sharp Grossmont Hospital.

Additionally, in San Diego County, there are 14 hospitals with emergency departments that are not Base Station Hospitals.

With the exceptions of Sharp Grossmont and Tri-City, the designated Base Station Hospitals are also designated as Trauma Centers.

What is a Trauma Catchment Area?



Trauma catchments refer to geographic areas with defined boundaries assigned to a designated trauma center - a **trauma system designation "map."** These Trauma Catchments are designated to determine where paramedics will transport a patient with significant traumatic injuries for specialized trauma care.

Factors that determine the trauma catchment area include but is not limited to the following:

- population,
- projected population trends,

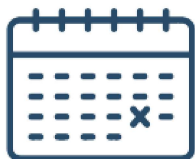
- drive time,
- response time, and
- other factors as defined in County EMS **Policy T-705, Trauma Catchment Service Area.**

Trauma Catchment Designations are an important element to high-quality, 24/7 available, trauma care. The County EMS Office, on behalf of the Board of Supervisors, designates specific hospitals with the staff and resources necessary to treat emergency medical patients identified by the Base Station Hospital as meeting San Diego County trauma patient criteria per County EMS **Policy T-460, Identification of the Trauma Center Patient.**

In San Diego County, there are six trauma centers in the EMS system:

- Palomar Medical Center,
- Scripps Memorial Hospital La Jolla,
- Scripps Mercy Hospital San Diego,
- Sharp Memorial Hospital,
- UCSD Medical Center Hillcrest, and
- Rady Children's Hospital.

In the organized EMS delivery system, paramedics and EMTs transport patients meeting trauma criteria to the appropriate, designated trauma center based on the Trauma Catchment Area designation.



This comprehensive review and evaluation began in January 2023 and is scheduled to be completed by December 31, 2023. PCG will work with the County of San Diego, BSHS and TCCAD stakeholders, and the public to ensure all voices are heard regarding the care provided to this community to inform recommendations that will assist the County in defining the future state of the EMS system. Key *tentative* timelines are:

- **March – April 2023**
 - Perform EMS and Hospital Community stakeholder interviews
- **May – June 2023**
 - Distribute BSHS and TCCAD stakeholder surveys
- **May – June 2023**
 - Conduct in-person and virtual listening sessions with BSHS and TCCAD stakeholders
- **June – October 2023**
 - Gather and analyze countywide EMS data, which will provide insight into the inner workings of the BSHS and TCCAD
- **November 2023**
 - Conduct listening sessions and input surveys to obtain feedback on recommendations
- **December 2023**
 - Incorporate feedback related to initial findings and recommendations, and complete written reports
- **Spring 2024**
 - Present recommendations to the County of San Diego Board of Supervisors

Based on results from the data analysis, interview findings, input surveys, listening sessions, and best practices, PCG will develop an evidence-based final report of findings and recommendations to San Diego County EMS.

This calendar will be updated as these two projects progress (Last update: 11/21/23).

Upcoming Project Milestones

The next steps of this process will include completing the consultant's written report and delivering the report to the Board of Supervisors as recommendations.

We anticipate the Board will give the Public Safety Group leadership direction to work closely with the San Diego County EMS Office, the community, EMS stakeholders, and others to methodically implement some or all of the report's recommendations.

County EMS pledges to work closely with stakeholders, EMS agencies, hospitals, and the general public to thoughtfully and efficiently mold future EMS policy to improve patient care in our EMS delivery system in San Diego County, which remains our primary goal.

Listening Session Information

The Public Consulting Group's team engaged stakeholders, partner services, and the public early in this evaluation process via interviews, surveys, public presentations, and in-person listening sessions to gather information. The consultant's initial findings were presented via public community meetings held during the week of November 7, 2023. A recorded version of these sessions is available for those who were not able to attend. **Click this link** to access the recording. County EMS felt it important to release these early findings for the public's review and provide feedback to inform the process further. This evaluation is being conducted by Public Consulting Group LLC (PCG).

In the first phase, PCG collected stakeholder input via:

- In-person and virtual listening sessions,
- Public and stakeholder input surveys,
- Ambulance ride-a-longs and base hospital MICN sit-ins, and
- Other various stakeholder interviews.

In the second phase, PCG:

- Presented their initial findings and recommendations. These findings included their analysis of the information collected during the first phase of the project.
- Heard feedback from stakeholders and the public following the presentation at each of these in-person listening sessions.

The County of San Diego values all voices and is prepared to listen. We look forward to hearing from you. If you would like to provide any further feedback to PCG, please email the PCG team at publicsafetystudy@pcgus.com.

Concluded In-Person/Virtual Listening Sessions



Virtual Listening Sessions

- **Virtual Listening Session #1** (May 31, 2023) - *Hospital Association of San Diego and Imperial Counties and other Hospitals/Trauma centers*
- **Virtual Listening Session #2** (June 13, 2023) - *Emergency Department RNs, MICNs, & other ED clinicians*
- **Virtual Listening Session #3** (June 15, 2023) - *Trauma Directors, Program Managers, & other Trauma clinicians*
- **Virtual Listening Session #4** (June 16, 2023) - *Prehospital EMS Field Providers*
- **Virtual Listening Session #5** (June 16, 2023) - *Ambulance Association of San Diego County*
- **Virtual Listening Session #6** (June 20, 2023) - *San Diego Fire Chiefs Association & SDCFA EMS Section Members*

In-Person Listening Sessions (1st Phase)

- **Listening Session #1** (May 23, 2023) - *Lakeside County Library*
- **Listening Session #2** (May 24, 2023) - *North Inland Live Well Center*
- **Listening Session #3** (May 24, 2023) - *South Region Live Well Center National City*
- **Listening Session #4** (May 25, 2023) - *Joan Kroc Center*
- **Listening Session #5** (May 25, 2023) - *Encinitas Community Center*

In-Person Listening Sessions (2nd Phase)

- **Listening Session #6** (November 7, 2023) - *Encinitas Community Center*
- **Listening Session #7** (November 8, 2023) - *South Region Live Well Center National City*
- **Listening Session #8** (November 8, 2023) - *Lakeside County Library*
- **Listening Session #9** (November 9, 2023) - *North Inland Live Well Center*
- **Listening Session #10** (November 9, 2023) - *Joan Kroc Center*

Stakeholder Feedback Survey

The County of San Diego is offering an anonymous survey to stakeholders of the Base Station Hospital System and Trauma Center Catchment Area Designations to gain vital feedback regarding each of these components of the County EMS system.

Stakeholders are encouraged to express their honest opinions.



If you are:

- A Member of the Public
- An EMT, Paramedic, Firefighter, or First Responder
- An Emergency Department RN or Clinician
- A Physician or Advanced Care Provider
- A Community Partner
- An EMS System Participant

Survey concluded - Thank you for your participation!

This survey was created by the PCG team and is formatted with various styles of questioning. We want to emphasize that there are no right or wrong responses, and we encourage everyone to express their honest and anonymous opinions.

County EMS is pleased to announce that Public Consulting Group LLC (PCG) was chosen to perform consulting services for the Comprehensive Evaluation of the Base Station Hospital System and Trauma Center Catchment Area Designations.

PCG is a consulting, operations, and technology firm that has dedicated itself almost exclusively to serving the public sector for over 35 years. PCG Health is a recognized leader in the healthcare field and is at the forefront of developing and helping clients implement innovative solutions. The project team's breadth of knowledge in the health care and emergency medical services (EMS) fields covers all programmatic facets. The dedicated project team includes subject matter experts (SMEs) with practical emergency medical services expertise (including trauma center and hospital), operations consulting for fire/EMS departments, public engagement, and project management experience. The SMEs have direct experience supporting California hospitals, EMS providers, and health organizations; bringing a relevant perspective to the County's comprehensive emergency service operations, context, and challenges.



For additional information, please contact County EMS via EMSAdmin@sdcounty.ca.gov



APPENDIX C: COUNTY PROJECT ENGAGEMENT WEBSITE

Home / Base Station Hospital & Trauma Catchment Review

Base Station Hospital & Trauma Catchment Review

[f](#)
[t](#)
[in](#)
[e](#)



The San Diego region offers a robust Emergency Medical Services (EMS) System of emergency, specialty, and trauma medical care through its cooperating hospitals. The County of San Diego, in its role as the Local Emergency Medical Services Agency (LEMSA) oversees and upholds the standards of the EMS system, which includes designation of base station hospitals, trauma centers, and trauma center catchment areas.

The purpose of this project is to conduct a comprehensive review and evaluation of:

1. Base Station Hospital System (BSHS)
2. Trauma Center Catchment Area Designations (TCCAD)

Public and stakeholder input is critical to ensure a comprehensive evaluation. Opportunities to learn and provide feedback on the project will be available through this site and other activities.

We look forward to hearing from you!

Background

County EMS monitors and evaluates the local emergency medical system on an ongoing basis by conducting surveillance and reporting key system performance indicators and metrics. In collaboration with its partners through advisory groups such as the Emergency Medical Care Committee and the Health Services Capacity Task Force, the County EMS then revises policies and protocols as indicated by the data. Although there are systems in place to ensure data-driven adjustments can be made to the local EMS system when needed, there has not been a comprehensive evaluation of the base station hospital system model and trauma center catchment area designations in several decades. With the changing dynamics of the San Diego region in recent years and anticipated changes to San Diego demographics over the next decade, a comprehensive evaluation of these critical system components will be beneficial to ensure the local EMS system will continue to be one of the finest in the nation.

In developing the comprehensive evaluations, many factors will be considered including:

- Industry research
- Best practices
- Public and stakeholder input

How can you participate in the process:

- Stay informed by reviewing the information on this site
- Share the information with others
- Participate in the engagement tools on this site
- Contribute to conversations at meetings and listening sessions
- Speak up! Don't hesitate to ask question

[News feed](#)
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[Ask a Question](#)

Recorded Presentation of Initial Findings and Recommendations

[f](#)
[t](#)
[in](#)
[e](#)

21 Nov 2023

As part of the ongoing **Comprehensive Evaluation of the Base Hospital System and Trauma Catchment Area Designation**, the Public Consultant Group (PCG) shared its initial findings and recommendations at five in-person listening sessions. These sessions were held November 7 - November 9, 2023 in each of the [San Diego County Supervisorial Districts](#).

Visit us at SanDiegoCounty.gov

Access the County's EMS Office Project page for additional information. Click the link below.

[San Diego County EMS Office Project Page](#)

[Project Calendar \(Last update: 1/16/24\)](#)

Who's Listening

Andrew Parr

EMS Administrator

Phone (858) 245-4231

Email Andrew.Parr@sdcounty.ca.gov

AP

Brian Christison

EMS Program Coordinator

Phone (619) 507-7627

Email Brian.Christison@sdcounty.ca.gov

BC

Public Consulting Group (PCG)

Consultant Group

Email publicsafetystudy@pcgus.com



Timeline

- Phase I (Spring - Summer 2023)**
 Collect data including public and stakeholder input and conduct analysis.
- Phase II (Summer - Fall 2023)**
 Finalize research analysis and develop initial findings report and draft system change recommendations for public and stakeholder consultation.
- Phase III (Fall - Winter 2023)**
 Finalize findings report and system change recommendations and present it to the Board for their consideration.

The recorded presentation link can be found [here](#), hosted by PCG.

This 57-minute presentation includes:

- Project process and progress
- Base Hospital System evaluation details
- Trauma Catchment Area Designation assessments
- Initial findings and recommendations.

Upcoming In-Person Listening Sessions (2nd Phase)



16 Oct 2023

The 2nd phase of listening sessions has concluded. Thank you to all who attended.

Through this second phase of listening sessions, PCG will present their findings. These findings include their analysis, including the information collected during the first phase of the project. PCG will hear feedback from stakeholders and the public following the presentation at each of these in-person listening sessions.

For more information, please view the flyer title - **Community Meetings (2nd phase)** under "Outreach Flyers" on the right-hand side of this site.

Public Input Survey

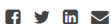


01 Aug 2023

This survey has concluded. Thank you for your input.

The Public Input Survey is now live! Please click the link under the "Take a Survey" tab to complete this short survey as the County and PCG values your feedback.

Survey



23 May 2023



This survey has concluded.

The County of San Diego is collecting feedback from stakeholders of the Base Station Hospital System and Trauma Center Catchment Area Designations to gain vital information regarding each of these components of the County EMS system. This survey supports the current project – *Comprehensive Evaluation of the Base Hospital System and Trauma Center Catchment Area Designations* – conducted by Public Consulting Group LLC (PCG) on behalf of the County of San Diego.

This survey was created by the PCG team and is formatted with various styles of questioning. We want to emphasize that there are no right or wrong responses, and we encourage everyone to express their anonymous thoughts and opinions.

This survey is open to everyone, including hospital and EMS professionals, members of the public, and all stakeholders. [Take the survey now!](#)

Upcoming Virtual Listening Sessions!



09 Jun 2023

The first phase of listening sessions has concluded. Thank you to all who attended.

The County of San Diego would like to hear from you about the County's Emergency Medical Services (EMS) Delivery System.

We want to hear your thoughts on the following:

- How paramedics and EMTs should receive medical direction,
- Which hospital the patient should be taken to, and
- Which Trauma Center should be selected if the patient is badly injured.

On behalf of the County of San Diego, Public Consulting Group LLC (PCG) is conducting a *Comprehensive Evaluation of the Base Station Hospital System and the Trauma Catchment Area Designations*. A vital element of this evaluation is hearing your valuable input. We invite all EMS system stakeholders, healthcare community members, *and* the public to participate.

Dates and times are listed under "Key Dates" on this web page.

Outreach Flyers

Community Meetings (2nd Phase) (520 KB) (pdf)

Stakeholder Survey Flyer (702 KB) (pdf)

Virtual Meetings (547 KB) (pdf)

Community Meetings (1st Phase) (535 KB) (pdf)

Key Dates

(Concluded) Community Meeting: Draft Report Review

November 07 2023

(Concluded) Community Meeting: Draft Report Review

November 08 2023

(Concluded) Community Meeting: Draft Report Review

November 08 2023

(Concluded) Community Meeting: Draft Report Review

November 09 2023

(Concluded) Community Meeting: Draft Report Review

November 09 2023

[More...](#)

FAQs

What is a Base Station Hospital?

What is a Trauma Catchment Area?

APPENDIX D: SPRING LISTENING SESSION POWERPOINT

Listening Sessions

Comprehensive Evaluation of the Base Hospital System and Trauma Center Catchment Area Designation

Led by Ken Riddle, John Eric Henry, and Bill Bullard



Agenda

Project Overview

Project Approach

Project Team

What is a Base Station Hospital?

SCOT Analysis

What is a Trauma Center?

SCOT Analysis

Questions

Project Overview

The San Diego County Board of Supervisors directed the County staff to develop a plan for comprehensive evaluation of the ***base station hospital system and trauma center catchment area designations***, which included the recommendation to contract for a consultant. As the designated Local Emergency Medical Services Agency (LEMSA), the San Diego County Emergency Medical Services Office (County EMS) is responsible for ongoing oversight of the Emergency Medical Services (EMS) system, which includes designation of base station hospitals, trauma centers, and trauma center catchment areas. As a region, San Diego offers a robust system of emergency, specialty, and trauma medical care through its cooperating hospitals.

The purpose of this project is to conduct a comprehensive review and evaluation of:

- the Base Station Hospital System (BSHS)
- the Trauma Center Catchment Area Designations (TCCAD)

Project Approach

- Stakeholder Interviews (100 minimum)
 - Individual
 - Focus Group
- Stakeholder & Public Listening Sessions
 - In-Person: May 23 – 25, 2023
 - Virtual: June 2023
- Stakeholder & Public Surveys (June/July 2023)
 - Public Comment Collection Form
 - Prehospital & Hospital Focused
- EMS Ride-Alongs & MICN Observations
- Research Industry Standards & Best Practices
- Identify 5 Options for BSHS & TCCAD
- Draft Written Reports
- Stakeholder Listening Sessions (Fall 2023)
- Final Reports (December 2023)

Project Team



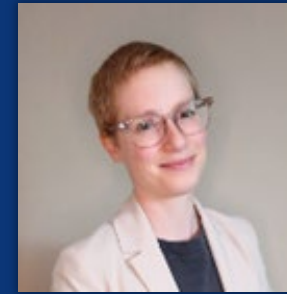
Chief Ken Riddle



John Eric Henry



Chief Bill Bullard



Lauren Cantley



Alina Coffman



Chief Tim Nowak



Chief Jason Fuller



Kaitlynn Edwards



Melanie Brener

What is a Base Station Hospital?

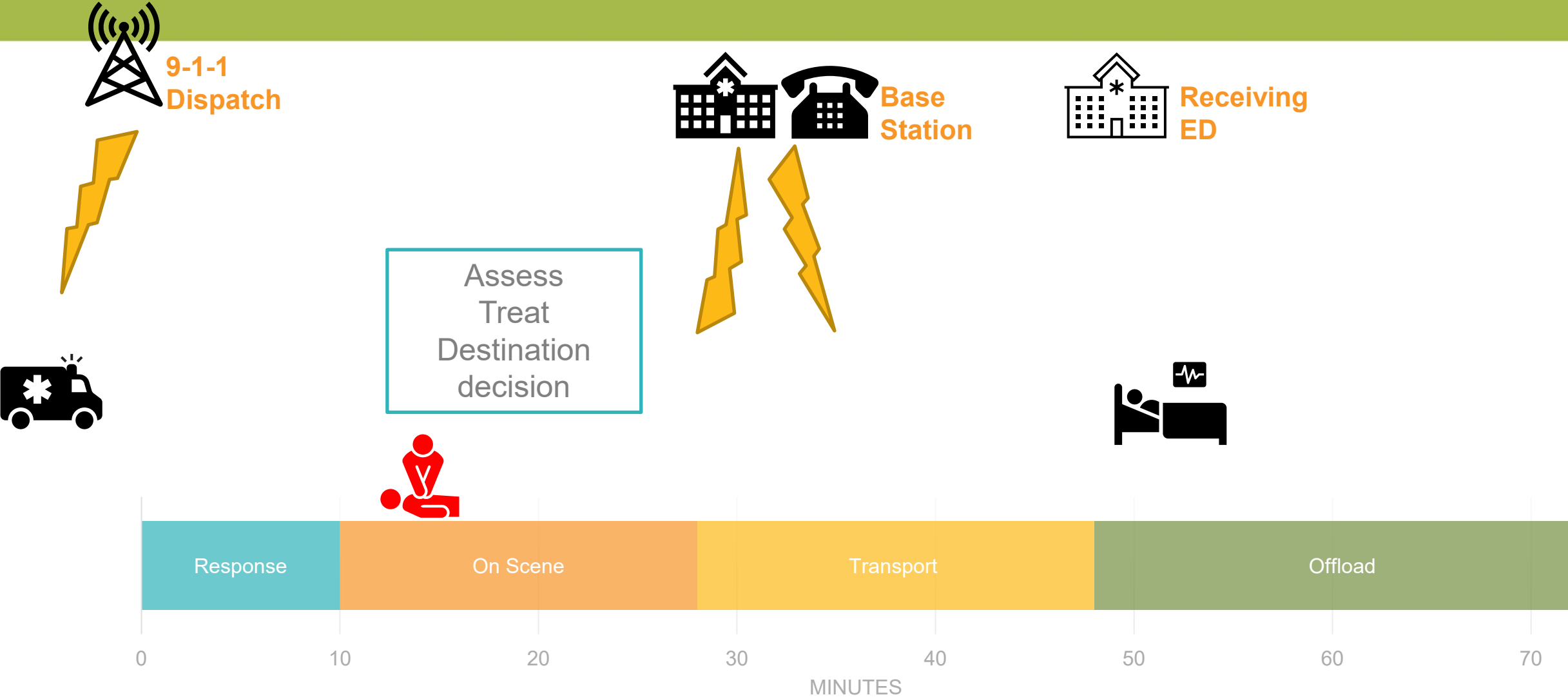
In San Diego County, Base Station Hospitals are designated by the County EMS Office to provide on-line medical direction to EMS professionals responding to 9-1-1 calls in the field. This medical direction, provided by the base station hospital physician through specially-trained Mobile Intensive Care Nurses (MICNs), focuses on patient treatment on the scene and assists in determining appropriate patient destinations.

In San Diego County, there are currently seven base hospitals in the EMS system (listed on the next slide). There are 14 additional hospitals in San Diego County with emergency departments that are not Base Station Hospitals.

With the exceptions of Sharp Grossmont and Tri-City, the designated Base Station Hospitals are also designated as Trauma Centers.



LIVE WELL
SAN DIEGO



The **Base Station Hospitals** in the EMS system of San Diego County:

- Tri-City Medical Center
- Palomar Medical Center*
- Scripps Memorial Hospital La Jolla*
- Scripps Mercy Hospital San Diego*
- Sharp Memorial Hospital*
- UCSD Medical Center Hillcrest*
- Sharp Grossmont Hospital

Trauma Centers*

- Rady Children's Hospital – San Diego



Sharp Memorial Hospital



Palomar Medical Center West



UCSD Medical Center Hillcrest



Scripps Memorial Hospital La Jolla



Rady Children's Hospital



Tri-City Medical Center



Sharp Grossmont Hospital



Scripps Mercy Hospital San Diego

Base Station Hospital System Components

- On-line Medical Direction
 - Base Station Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution

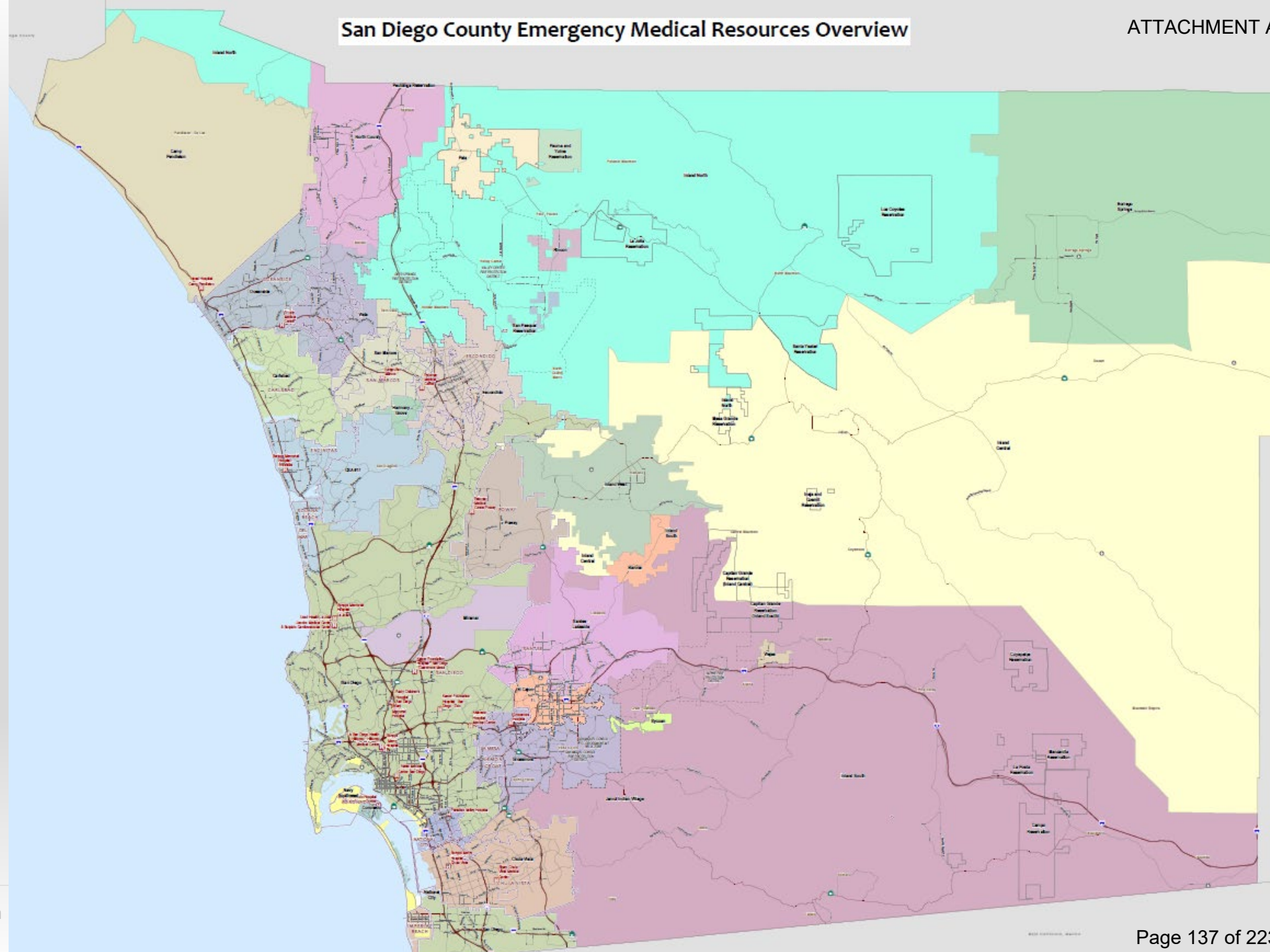
Legend

Ambulance Service Areas

- Barona
- Borrego Springs
- CSA #17
- Camp Pendleton
- Carlsbad
- Chula Vista
- Coronado
- Cuyapaipe Reservation
- El Cajon
- Escondido
- Grossmont
- Harmony Grove
- Inaja and Cosmit Reservation
- Inland Central
- Inland North
- Inland South
- Inland West
- Jamul Indian Village
- Miramar
- National City
- Navy Southwest
- North County
- Oceanside
- Pauma and Yuima Reservation
- Poway
- Rincon
- San Diego
- San Marcos
- San Pasqual Reservation
- Santee - Lakeside
- Sycuan
- Viejas
- Vista
- Campo Reservation
- Capitan Grande Reservation (Inland Central)
- Capitan Grande Reservation (Inland South)
- La Jolla Reservation
- La Posta Reservation
- Los Coyotes Reservation
- Manzanita Reservation
- Mesa Grande Reservation
- Pala
- Pechanga Reservation
- Santa Ysabel Reservation

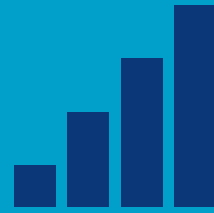
San Diego County Emergency Medical Resources Overview

ATTACHMENT A



Components:

- On-line Medical Direction
 - Base Station Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution



Strengths

What works well?

What do we do better?

Positive attributes of the BSHS?

Geographical locations?

Online medical direction?



Challenges

What is not working?

What could work better?

Negative attributes of the BSHS?

Communications failures?

Delays in obtaining base station physician orders?

Components:

- On-line Medical Direction
 - Base Station Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution

Components:

- On-line Medical Direction
 - Base Station Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution



Opportunities

What can be improved/enhanced?

Trends?

Regulations/Protocols?

Technology?

Better systems for online medical direction and data collection?

More Base Station Hospitals?

Less Base Station Hospitals?

No Base Station Hospitals?

Components:

- On-line Medical Direction
 - Base Station Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution



Threats

Trends?

Regulations/Protocols?

More Base Station Hospitals?

Less Base Station Hospitals?

No Base Station Hospitals?

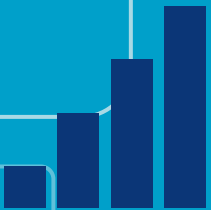
What is a Trauma Catchment Area?

Trauma catchments refer to geographic areas with defined boundaries assigned to a designated trauma center - a trauma system designation "map." These Trauma Catchments are designated to determine where paramedics will transport a patient with significant traumatic injuries for specialized trauma care.

Factors that determine the trauma catchment area include but is not limited to the following:

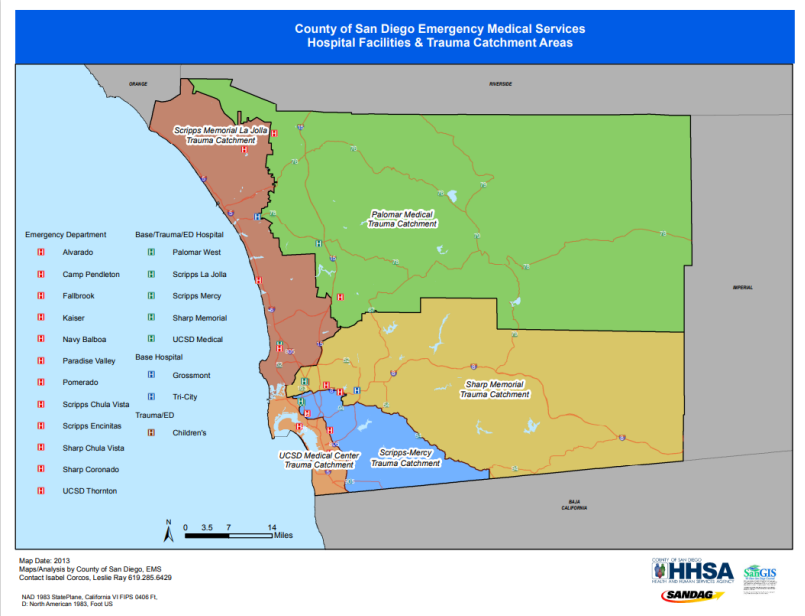
- Population
- Projected population trends
- Drive time
- Response time
- Other factors as defined in County EMS Policy T-705, Trauma Catchment Service Area.





Strengths

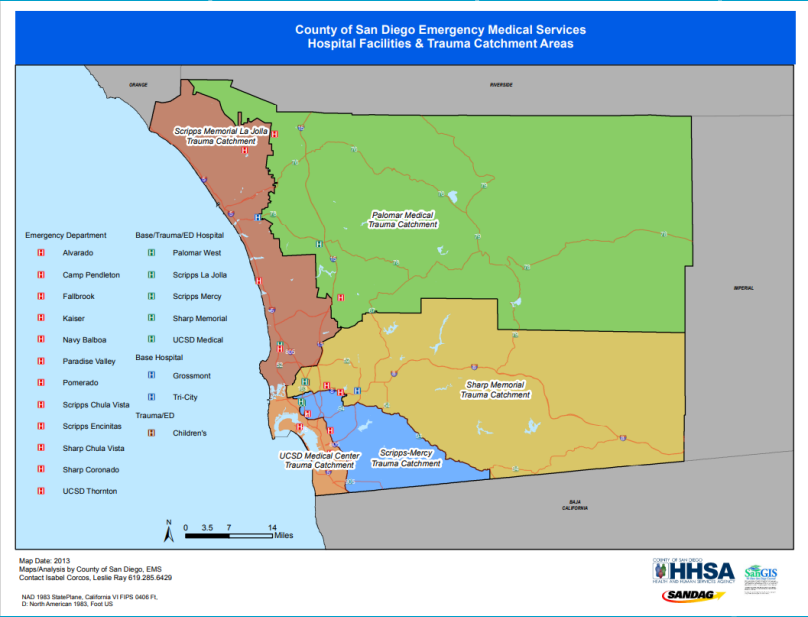
- What works well?
- What do we do better?
- Positive attributes of the TCCAD?
- Geographical locations?
- Collaboration?





Challenges

What is not working?
What could work better?
Barriers to compliance with the current catchment areas?



What can be improved/enhanced?

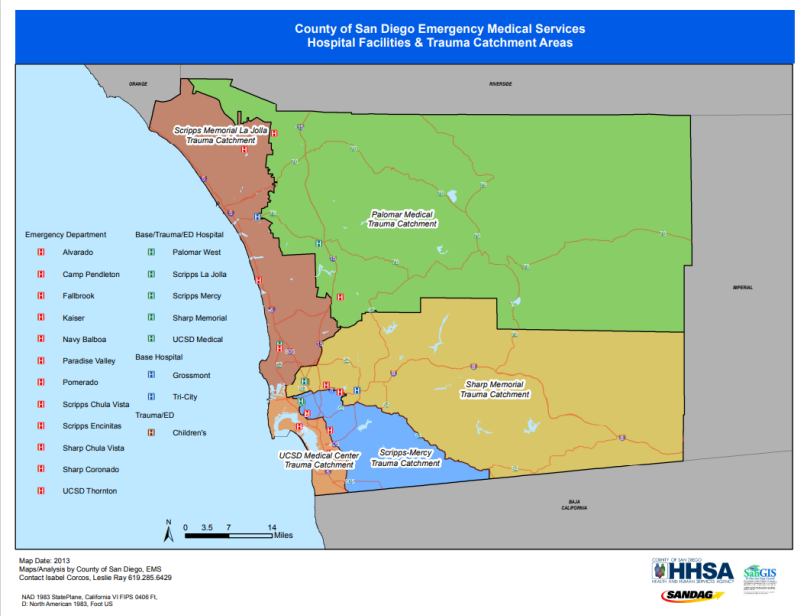
Regulations/Protocols?

Map Date: 2013
Maps/Analysis by County of San Diego, EMS
Contact Isabel Corcos, Leslie Ray 619.285.6429



Threats

- Trends?
- Regulations/Protocols?
- Funding?
- Population shifts?
- Transport times?



Questions?



Share Your Thoughts:

Please share any additional feedback by scanning the QR code below to fill out a comment collection form:



To schedule an interview, or for additional project information, please contact Lauren Cantley: lcantley@pcgus.com

APPENDIX E: SPRING IN-PERSON LISTENING SESSION MARKETING FLYER




Base Station Hospital System and the Trauma Catchment Area Designations Evaluation

COMMUNITY MEETINGS

The San Diego region offers a robust emergency medical services (EMS) system of emergency, specialty, and trauma medical care through its cooperating hospitals. The County oversees the emergency medical services system.

A comprehensive evaluation of these critical system components is needed to ensure the local EMS system continues to be one of the finest in the nation.

Join us to:

- Learn about the evaluation
- Share your thoughts on system components
- Ask questions
- Learn how to stay involved

Who may be interested in this project:

- Public
- Emergency responders
- Healthcare workers
- Hospital personnel

Each session will have the same presentation and format.
Please join any one of the sessions listed.

May 23 at 1 pm

Lakeside County Library
12428 Woodside Ave, Lakeside, CA 92040

May 24 at 10am

North Inland Live Well Center
649 W Mission Ave #1, Escondido, CA 92025

May 24 at 2pm

National City Live Well Center
401 Mile of Cars, National City, CA 91950

May 25 at 10 am

The Salvation Army Kroc Center
6611 University Ave, San Diego, CA 92115

May 25 at 7pm

Encinitas Community Center
1140 Oakcrest Park Dr, Encinitas, CA 92024

Visit engage.sandiegocounty.gov/ems for more information.

Unable to attend a session? Request a survey at: publicsafetystudy@pcgus.com

Accessibility and Language Services

Disability-related accommodations necessary to facilitate meeting participation, language interpretation, including American Sign Language, and written materials in alternative languages and formats are available upon request. Please submit your request at least 72 hours in advance of event to: publicsafetystudy@pcgus.com

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用你的語言

Sa iyong wika

당신의 언어로

در زبان شما

Afkaaga

En su idioma

Bằng ngôn ngữ của bạn



APPENDIX F: SPRING VIRTUAL LISTENING SESSION MARKETING FLYER




Base Station Hospital System and the Trauma Catchment Area Designations Evaluation

COMMUNITY MEETINGS

The San Diego region offers a robust emergency medical services (EMS) system of emergency, specialty, and trauma medical care through its cooperating hospitals. The County oversees the emergency medical services system.

A comprehensive evaluation of these critical system components is needed to ensure the local EMS system continues to be one of the finest in the nation.

Join us to:

- Learn about the evaluation
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- Ask questions
- Learn how to stay involved

Who may be interested in this project:

- Public
- Emergency responders
- Healthcare workers
- Hospital personnel

Each session will have the same presentation and format. Please join any one of the sessions listed.



June 13 at 1:30pm
ED RNs and MICNs
[Register here!](#)

June 15 at 1:00pm
Trauma Directors & Managers
[Register here!](#)

June 16 at 9:00am
Prehospital EMS Providers
[Register here!](#)

June 16 at 1:00pm
Ambulance Association of San Diego
[Register here!](#)

June 20 at 2:30pm
San Diego Fire Chiefs Association & SDFCA
EMS Section Members
[Register here!](#)

Visit engage.sandiegocounty.gov/ems for more information.

Unable to attend a session? Request a survey at: publicsafetystudy@pcgus.com

Accessibility and Language Services

Disability-related accommodations necessary to facilitate meeting participation, language interpretation, including American Sign Language, and written materials in alternative languages and formats are available upon request. Please submit your request at least 72 hours in advance of event to: publicsafetystudy@pcgus.com

بلغتک

用你的語言

Sa iyong wika

당신의 언어로

در زبان شما 

Afkaaga

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**APPENDIX G: FALL LISTENING SESSION
POWERPOINT**

Listening Sessions

Comprehensive Evaluation of the Base Hospital System and Trauma Center Catchment Area Designation

Led by Ken Riddle & Tim Nowak



Agenda

- **Introductions**
- **Project Overview**
- **Stakeholder Engagement**
- **CoSD BSH System Findings**
- **BSH System Alternative Models**
- **BSH System Recommendations**
- **Trauma Center Catchment Area Designations Findings**
- **Potential Trauma Center Catchment Area Options**
- **Questions**

Introduction to the Project Team



Chief Ken Riddle



John Eric Henry



Chief Tim Nowak



Chief Bill Bullard



Alina Coffman



Kaitlynn Edwards



Lauren Cantley



Melanie Brener

Project Overview

The San Diego County Board of Supervisors directed the County staff to develop a plan for comprehensive evaluation of the ***base station hospital system and trauma center catchment area designations***, which included the recommendation to contract for a consultant. As the designated Local Emergency Medical Services Agency (LEMSA), the San Diego County Emergency Medical Services Office (County EMS) is responsible for ongoing oversight of the Emergency Medical Services (EMS) system, which includes designation of base station hospitals, trauma centers, and trauma center catchment areas. As a region, San Diego offers a robust system of emergency, specialty, and trauma medical care through its cooperating hospitals.

The purpose of this project is to conduct a comprehensive review and evaluation of:

- the Base Station Hospital System (BSHS)
- the Trauma Center Catchment Area Designations (TCCAD)

Purpose of Listening Sessions

- Progress report regarding the study
- Provide overview of findings
- Provide overview of recommendations and options
- Receive feedback from stakeholders

The **Base Station Hospitals** in the EMS system of San Diego County:

- Tri-City Medical Center
- Palomar Medical Center*
- Scripps Memorial Hospital La Jolla*
- Scripps Mercy Hospital San Diego*
- Sharp Memorial Hospital*
- UCSD Medical Center Hillcrest*
- Sharp Grossmont Hospital

Trauma Centers*

- Rady Children's Hospital – San Diego



Sharp Memorial Hospital



Palomar Medical Center West



UCSD Medical Center Hillcrest



Scripps Memorial Hospital La Jolla



Rady Children's Hospital



Tri-City Medical Center



Sharp Grossmont Hospital



Scripps Mercy Hospital San Diego

Base Station Hospital System Components

- On-line Medical Direction
 - Base Station Hospital Order
 - Base Station Physician Order
- Quality Assurance/Improvement
- Education/Training
- Data Collection (BSHR)
- Patient Destination Guidance
- MCI Patient Distribution

Stakeholder Engagement: Interviews, Listening Sessions & Surveys

Engagement Method	Total Stakeholders	Prehospital Stakeholders	Hospital Stakeholders	Other Stakeholders
In-Person Interviews	15	3	4	8
Virtual Interviews	102	32	68	2
In-Person Listening Sessions	29	4	24	1
Virtual Listening Sessions	75	24	51	-
EMS Stakeholder Surveys	367	294	61	12
Public Input Surveys	30	-	-	-
Totals	618	357	208	19

Stakeholder Engagement – Onsite Activities

- **Four onsite visits:**
 - March 16 – 17
 - May 23 – 25
 - June 27 – 29
 - August 7
- **EMS Ride-along Observations:** OFD, SDFR, AMR & Falck
- **Base Hospital Station Observations:** All BSHs
- **Emergency Communications Centers:** SDFR & SD County
- **CoSD Fire Department Leadership Progress Report**
- **Los Angeles County Medical Alert Center (MAC)**

CoSD Base Station Hospital System Findings

- The identified SCOTs differed based on the EMS system affiliation: Prehospital vs. Hospital & Administration vs. Provider
- BSHS has worked in the past, but is now stressed with a 13% increase in BSH calls since 2018 (266,649 BSHS calls in 2022)
- BSHS provided medical direction for approximately 14% (36,243) of all BSHS calls in 2022
- MICNs documentation of calls for “medical direction provided” is inconsistent
- BSHs rerouted less than approximately 1% (0.9%) of transports to their BSH when another receiving hospital was initially requested
- Paramedics “base shop” because of delays with contacting a BSH
- Paramedics & MICNs expressed that radio reports are too long

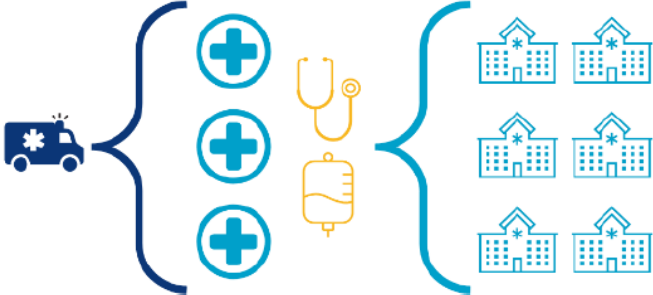
CoSD Base Station Hospital System Findings

- Effective communications and collaboration exists between BSHs
- Paramedics value the collaboration with MICNs on critical incidents
- Lack of technology relying on current radio system
- MICNs can only handle one call at a time
- The MICN process is labor intensive (paper log; BSHR entry)
- Less attendance at hospital education/training sessions
- Some stakeholders perceive the Pre-PAC/PAC/PEARLS process is punitive
- Concerns with BSHs investigating themselves regarding prehospital complaints
- Perception by paramedics that they are not represented in committees and decision making

Base Station Hospital System Alternatives

	Notify Base for All Transports	Notify Receiving Hospital for All Transports
Multiple Bases for Orders	Multiple Bases for Orders Notify Base for All Transports (Model-A)	Multiple Bases for Orders Notify Receiving Hospital for All Transports (Model-B)
Single Base for Orders	Single Base for Orders Notify Base for All Transports (Model-C)	Single Base for Orders Notify Receiving Hospital for All Transports (Model-D)
Internal Base For Orders	-----	Internal Base for Orders Notify Receiving Hospital for All Transports (Model-E)
No Base for Orders	-----	No Base for Orders Notify Receiving Hospital for All Transports (Model-F)

Model-A

Model	Description	Image Example
Model-A	Multiple Bases for Orders Notify Base for All Transports	

KEY


EMS
CREW


BASE
STATION

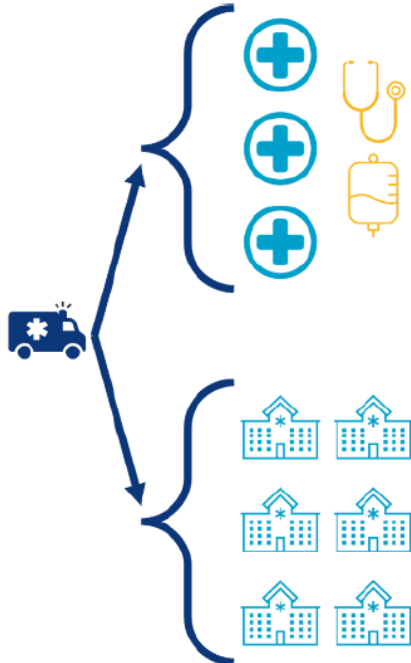

PHYSICIAN
CONSULT


MEDICAL
ORDERS


RECEIVING
HOSPITAL

Model-A Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Highest operational impact is directed toward the base stations. Call Process: One call is made by EMS to a single entity. Technology: Phone or radio preferred. Facility(ies): Multiple bases equates to multiple infrastructure needs. Physician Access: Internal physician access available through base station. Hospital Status Tracking: Managed by the base stations. Diversion Process: Managed by the base stations. MCI Process: Managed by the base stations.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base stations. Medical Orders: Provided by base stations. Data Tracking: Often integrated into base station functions. Quality Program: Often integrated into base station functions. Training Program: Often integrated into base station functions.	EXPECTATIONS: Workforce involved in base station operations typically have ancillary responsibilities in addition to their base station role. Staff Qualifications: Typically EMT, Paramedic, or RN qualified for call handling; physician for medical orders. MICN only allowed in California. Workforce Availability: Requires dedicated or additional staffing to maintain base stations. Base Funding: Often supported by an oversight entity.

Model-B

Model	Description	Image Example
Model-B	Multiple Bases for Orders Notify Receiving Hospital for All Transports	

KEY


EMS
CREW


BASE
STATION

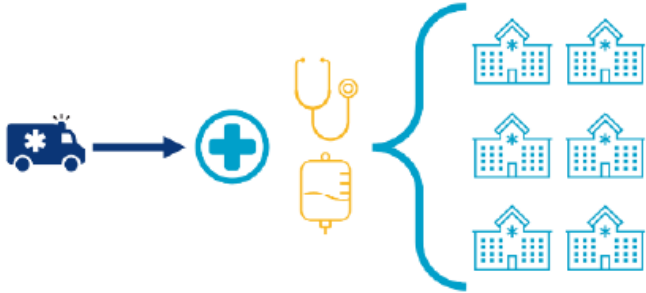

PHYSICIAN
CONSULT


MEDICAL
ORDERS


RECEIVING
HOSPITAL

Model-B Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources, while base station operations are often integrated into a hospital setting. Call Process: Two calls are made by EMS to two entities (unless the receiving hospital is a base station; and if medical orders are necessary). Technology: Phone or radio preferred. Facility(ies): Multiple bases equates to multiple infrastructure needs. Physician Access: Internal physician access available through base station. Hospital Status Tracking: Often managed by the receiving hospitals. Diversion Process: Often managed by the receiving hospitals. MCI Process: Often managed by the receiving hospitals.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base stations. Medical Orders: Provided by base stations. Data Tracking: Often provided internally by the EMS agency but may incorporate base stations. Quality Program: Often provided internally by the EMS agency but may incorporate base stations. Training Program: Often provided internally by the EMS agency but may incorporate base stations.	EXPECTATIONS: Workforce involved in base station operations are typically integrated into their respective hospital system and have additional clinical role functions. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. MICN only allowed in California. Workforce Availability: Typically integrated into current workforce. Base Funding: Typically supported by the hospital facilities/base stations.

Model-C

Model	Description	Image Example
Model-C	Single Base for Orders Notify Base for All Transports	

KEY


EMS
CREW


BASE
STATION


PHYSICIAN
CONSULT


MEDICAL
ORDERS


RECEIVING
HOSPITAL

Model-C Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Significant impact is placed on the sole base station, which may be a standalone resource that is separate from any hospital facility or system. Call Process: One call is made by EMS to a single entity. Technology: Phone or radio are preferred, but app-based platforms may be integrated. Facility(ies): May be a hospital facility or another standalone facility with infrastructure needs. Physician Access: Typically available via on-call scheduling or in-hospital availability. Hospital Status Tracking: Managed by the base station. Diversion Process: Managed by the base station. MCI Process: Managed by the base station.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities; internal system oversight is often easiest achieved with this model. Regulatory Compliance: Oversight by a central source and maintained daily by the base station. Medical Orders: Provided by the base station. Data Tracking: Often integrated into base station functions. Quality Program: Often integrated into base station functions. Training Program: Often integrated into base station functions.	EXPECTATIONS: Workforce involved in base station operations are typically dedicated to their role in the medical oversight and hospital notification process. Staff Qualifications: Typically EMT, Paramedic, and/or RN qualified for call handling; physician for medical orders. MICN only allowed in California. Workforce Availability: Requires dedicated or additional staffing to maintain the base station. Base Funding: Often supported by an oversight entity.

Model-D

Model	Description	Image Example
Model-D	Single Base for Orders Notify Receiving Hospital for All Transports	

KEY


EMS
CREW


BASE
STATION


PHYSICIAN
CONSULT


MEDICAL
ORDERS


RECEIVING
HOSPITAL

Model-D Factors & Considerations

 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources, while base station operations are often integrated into a hospital setting. Call Process: Two calls are made by EMS to two entities (unless the receiving hospital is a base station; and if medical orders are necessary). Technology: Phone or radio preferred. Facility(ies): May be a hospital facility or another standalone facility with infrastructure needs. Physician Access: Typically available via on-call scheduling or in-hospital availability. Hospital Status Tracking: Often managed by the receiving hospitals. Diversion Process: Often managed by the receiving hospitals. MCI Process: Often managed by the receiving hospitals.	RESPONSIBILITY: An oversight body is often utilized to outline base station qualifications, roles, and responsibilities. Regulatory Compliance: Oversight by a central source and maintained daily by the base station. Medical Orders: Provided by the base station. Data Tracking: Often provided internally by the EMS agency but may incorporate base stations. Quality Program: Often provided internally by the EMS agency but may incorporate the base station. Training Program: Often provided internally by the EMS agency but may incorporate base stations.	EXPECTATIONS: Workforce involved in base station operations are typically integrated into their respective hospital system and have additional clinical role functions. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. MICN only allowed in California. Workforce Availability: Typically integrated into current workforce. Base Funding: Typically supported by the hospital facility/base station.

Model-E

Model	Description	Image Example
Model-E	Internal Base for Orders Notify Receiving Hospital for All Transports	

KEY


EMS
CREW


BASE
STATION


PHYSICIAN
CONSULT


MEDICAL
ORDERS


RECEIVING
HOSPITAL

Model-E Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: EMS agencies incur the largest impact as medical direction is sought through internal means. Call Process: Two calls are made by EMS to two entities (if medical orders are necessary). Technology: Phone or radio are preferred, but app-based platforms may be integrated. Facility(ies): Infrastructure needs are incorporated into current EMS agency structures. Physician Access: Available via on-call scheduling directly with the EMS agency. Hospital Status Tracking: Managed by the receiving hospitals. Diversion Process: Managed by the receiving hospitals. MCI Process: Managed by the receiving hospitals.	RESPONSIBILITY: EMS agencies function as the oversight body to assure medical orders processes are in place. Regulatory Compliance: Oversight by the EMS agency. Medical Orders: Provided by EMS agency physician resources. Data Tracking: Provided by the EMS agency. Quality Program: Provided by the EMS agency. Training Program: Provided by the EMS agency.	EXPECTATIONS: Workforce needs are incorporated into EMS agency staffing related to physician medical direction services and ancillary call handling services. Staff Qualifications: Internally handled by EMTs and/or Paramedics. Workforce Availability: Internally coordinated by the EMS agency. Base Funding: All costs incurred by the EMS agency.

Model-F

Model	Description	Image Example
Model-F	No Base for Orders Notify Receiving Hospital for All Transports	

KEY



EMS
CREW



BASE
STATION



PHYSICIAN
CONSULT



MEDICAL
ORDERS



RECEIVING
HOSPITAL

Model-F Factors & Considerations		
 OPERATIONAL	 OVERSIGHT	 ADMINISTRATIVE
IMPACTS: Primary impact remains with EMS crews to contact the most appropriate resources. Call Process: One call is made by EMS to the receiving hospital only. Technology: Phone or radio are preferred. Facility(ies): No additional infrastructure needs. Physician Access: Internal physician access available through receiving hospital. Hospital Status Tracking: Managed by receiving hospitals. Diversion Process: Managed by receiving hospitals. MCI Process: Managed by receiving hospitals.	RESPONSIBILITY: Shared oversight is necessary between EMS agencies and receiving hospitals. Regulatory Compliance: There typically is no oversight entity. Medical Orders: Provided by receiving hospitals. Data Tracking: Often provided internally by the EMS agency but may incorporate receiving hospitals. Quality Program: Often provided internally by the EMS agency but may incorporate receiving hospitals. Training Program: Often provided internally by the EMS agency but may incorporate receiving hospitals.	EXPECTATIONS: Workforce involved in medical orders functions are typically integrated into the respective hospital system and share additional clinical roles. Staff Qualifications: Typically Paramedic and/or RN qualified for call handling; physician for medical orders. MICN only allowed in California. Workforce Availability: Typically integrated into current workforce. Base Funding: No base funding costs; any expenses typically supported by the hospital facilities.

CoSD BSH System Options/Recommendations

- **General Recommendations**

- Increase collaboration & transparent communication with/between all stakeholders
- Limit Base Station radio reports to only incidents that require medical direction/orders
- Provide brief alert/notification reports directly to receiving hospitals for all transports
- BSHs should coordinate education/training with EMS provider agencies
- Include EMS field providers in committees and decision making
- County EMS should ensure stakeholders understand the decision-making process regarding protocols and other directives
- All hospitals to designate an EMS Liaison for communications and coordination with County EMS and EMS provider agencies
- Provide real-time hospital status to EMS field personnel
- Consider County EMS to provide patient load leveling

CoSD BSH System Options/Recommendations

- **Medical Direction Recommendations**
 - Consider a Pediatric facility for primary medical direction for pediatric patients
 - Develop a core group of emergency medical physicians to provide medical direction to paramedics
 - Review existing requirements for medical direction and where appropriate, implement standing orders in place of BSH contact
 - Consider the use of emergency medical fellows at UCSD for medical direction to paramedics

CoSD BSH System Options/Recommendations

- **Quality Assurance/Improvement**
 - Actively engage EMS Agency QA/QI staff with County QA/QI staff to develop QA/QI metrics and routine reporting
 - Request and review EMS Agencies QI plans (S-004) and incorporate into County QA/QI program
 - Ensure EMS agencies understand Waiver 1157 and the protection from discovery it provides
 - Continue BSH QA/QI activities and expand to receiving hospital participation
 - Define the structure and process of the Pre-PAC
 - Consider changing the name of PAC to EMS QA committee
 - BSHs to provide transcript/recording of paramedic calls to the agency QA staff for agency QA purposes

CoSD BSH System Options/Recommendations

- **Technology Recommendations**

- Transition from radio contact to telephone contact, use radios as a back-up
- Implementation of app-based communication tools, i.e., ([Pulsara](#) or [Twiage](#))
- Initiate discussions with San Diego Health Connect regarding expanding the SAFR EMS Hub for real time data transmission
- Encourage Emergency Communication Centers to consider implementing dispatch triage in conjunction with technology such as [Good Sam](#), [MD Ally](#) or other system.
- Consider other technologies such as [Tele911](#)
- Initiate discussion with San Diego 211 regarding available services and resources
- Consider establishing a technology committee/advisory group.

CoSD BSH System Options/Recommendations

- **Data Collection Recommendations**

- Require EMS agencies to provide the **minimum** ePCR data necessary to meet the San Diego LEMSIS reporting compliance requirements
- Require EMS agencies to provide QA data on a routine basis
- Include location information in trauma registry data, prefer latt/long correlation
- Include air ambulance transport information in trauma registry data

CoSD BSH System Options/Recommendations

- **Transition to a Single Standalone Emergency Medical Command & Control Center (EMCCC)**

This recommendation is contingent upon County EMS receiving 100% of prehospital ePCR data, 100% trauma, STEMI, stroke center data, and EMS agency QA data and reports, and hospital ED data.

- Establish an EMS stakeholder group to develop a 3-year transition plan to a single EMCCC for medical direction, MCI patient distribution, patient load leveling, patient destination guidance and other services to enhance the delivery of EMS throughout San Diego County.
- Explore funding options including state and federal grants, service fees, and other revenue options.

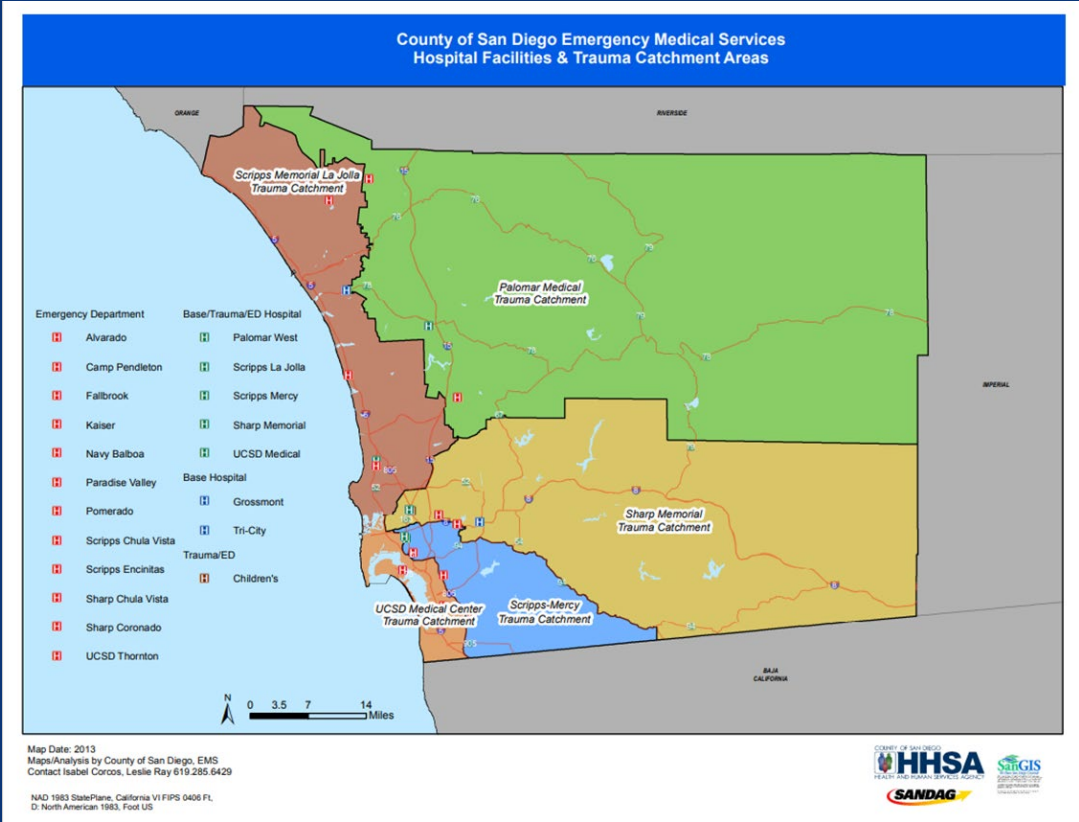
Questions?



San Diego County Trauma System

Existing Trauma System

- Adult trauma centers, 5 – Level I and II
- Pediatric trauma centers, 1 – Level I



San Diego County Trauma Volume, 2022	
Trauma Center	Count
Palomar	1,606
Scripps-La Jolla	1,866
Scripps-Mercy	2,536
Sharp Memorial	2,721
UCSD	3,205
Rady/Children's	805
Total	12,739
Source: San Diego County trauma data	

San Diego County Trauma System – Destinations

Current Trauma Destination Policy

- Utilize catchment areas to determine the destination for adult patients who meet trauma criteria
- All pediatric trauma goes to the pediatric trauma center (unless too unstable)
- Policy requires the catchment areas be reviewed periodically
- Last review was in the 1990s

Typical Trauma System Destination Methodologies

- 1) Define geographic regions for each trauma center
 - San Diego County, Las Vegas Clark County (NV)
- 2) Patient is transported to the closest, most appropriate trauma center
 - Orange County, Riverside County, State of Texas

Trauma Center Catchment Area Designations Findings

- Hospital/Trauma Center stakeholders are happy with the current catchment area designations
- Prehospital personnel in the North County region are not happy with the current catchment area designations
- Concerns regarding the number of trauma related border incidents and patient distribution
- Trauma Registry data is incomplete
- Data limitations on locations of trauma cases
- Number of trauma cases transported by air ambulance not available

Potential Trauma Center Catchment Area Options

- Option 1: Current Trauma Center Catchment Area Designations

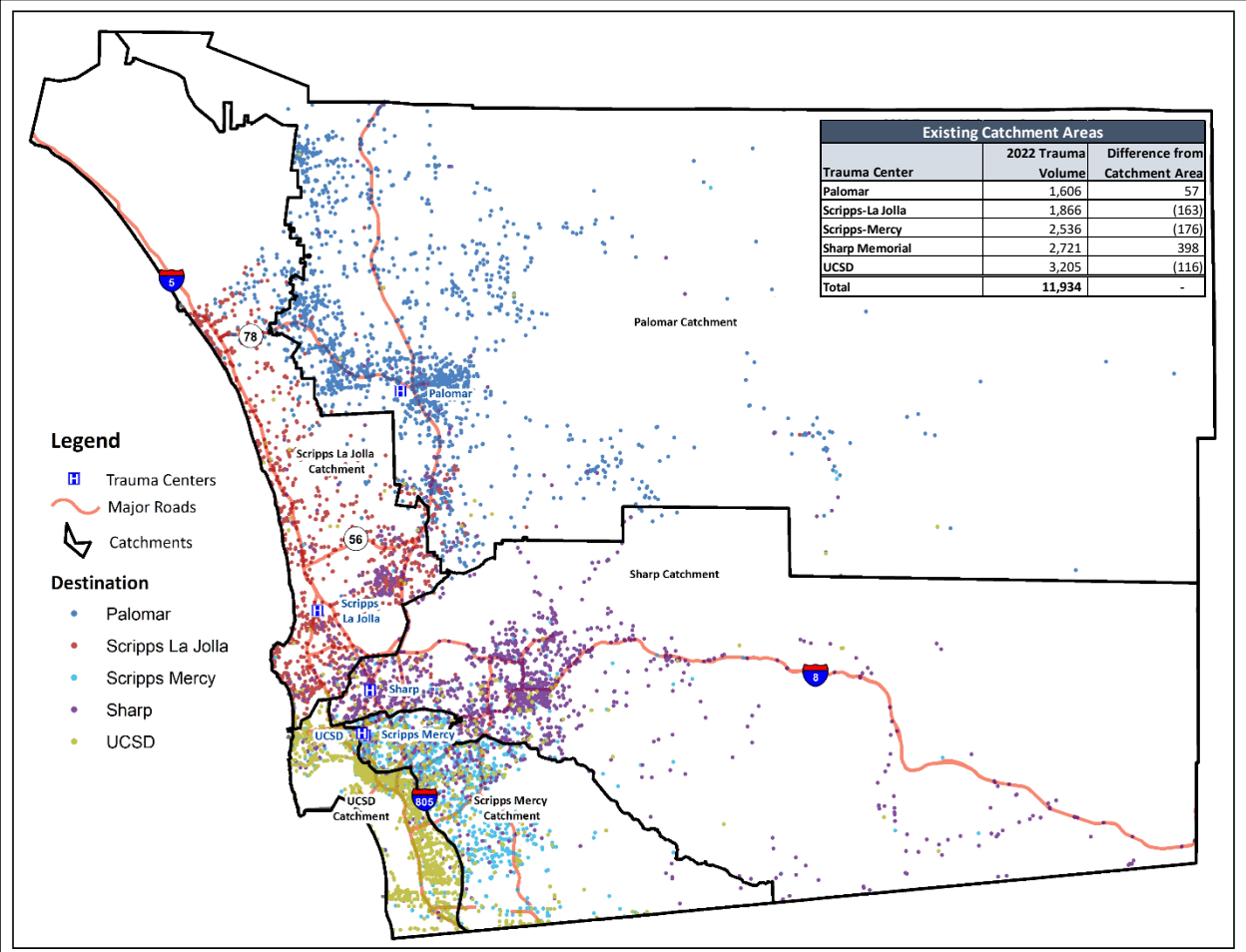


Figure 5.3

Potential Trauma Center Catchment Area Options

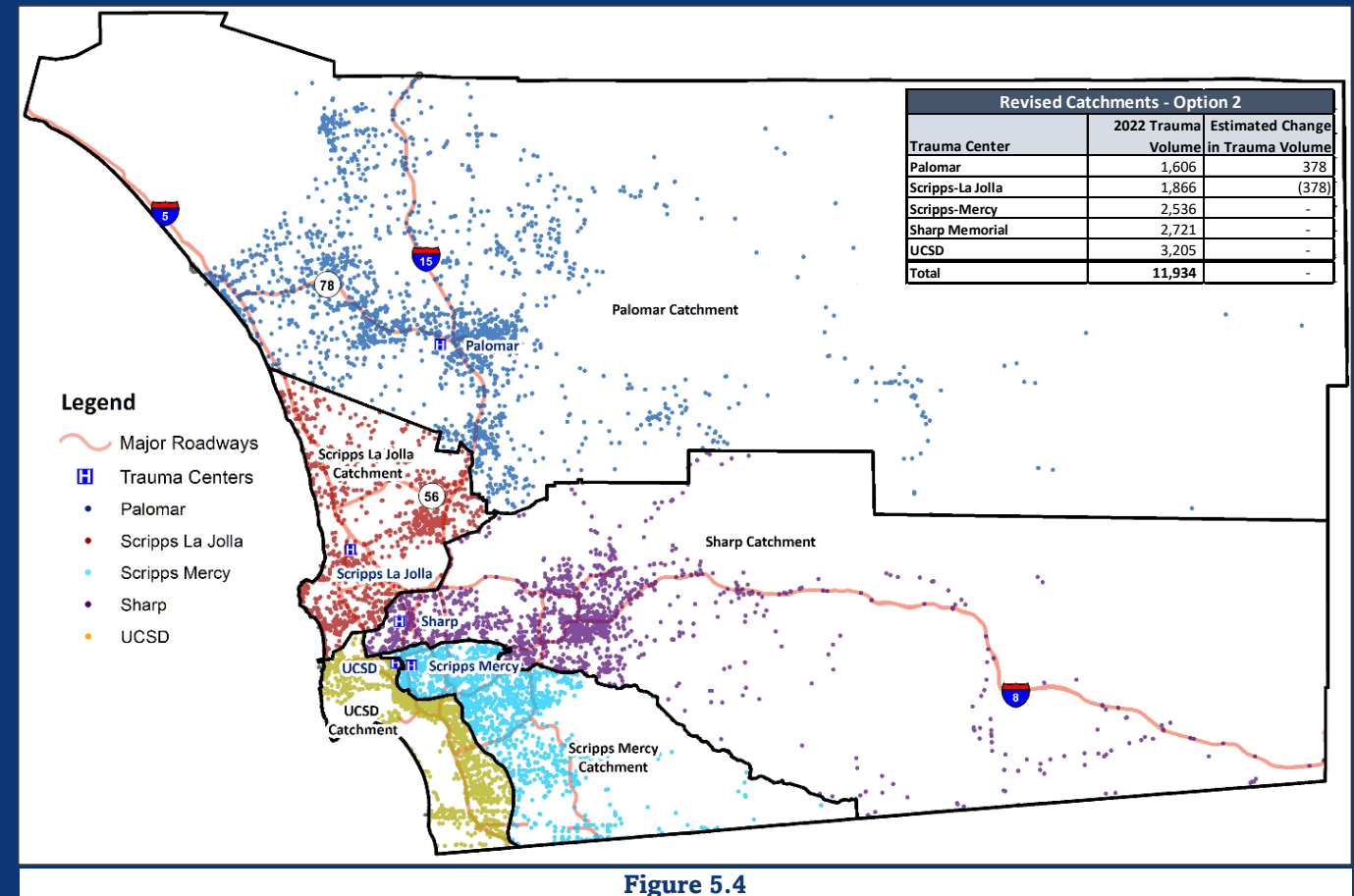
• Option 2: Adjust Northwest Trauma Center Catchment Areas

Pros

- North County trauma cases go to closest trauma center
- No impact on South County centers

Cons

- Negatively impacts Scripps-La Jolla



Potential Trauma Center Catchment Area Options

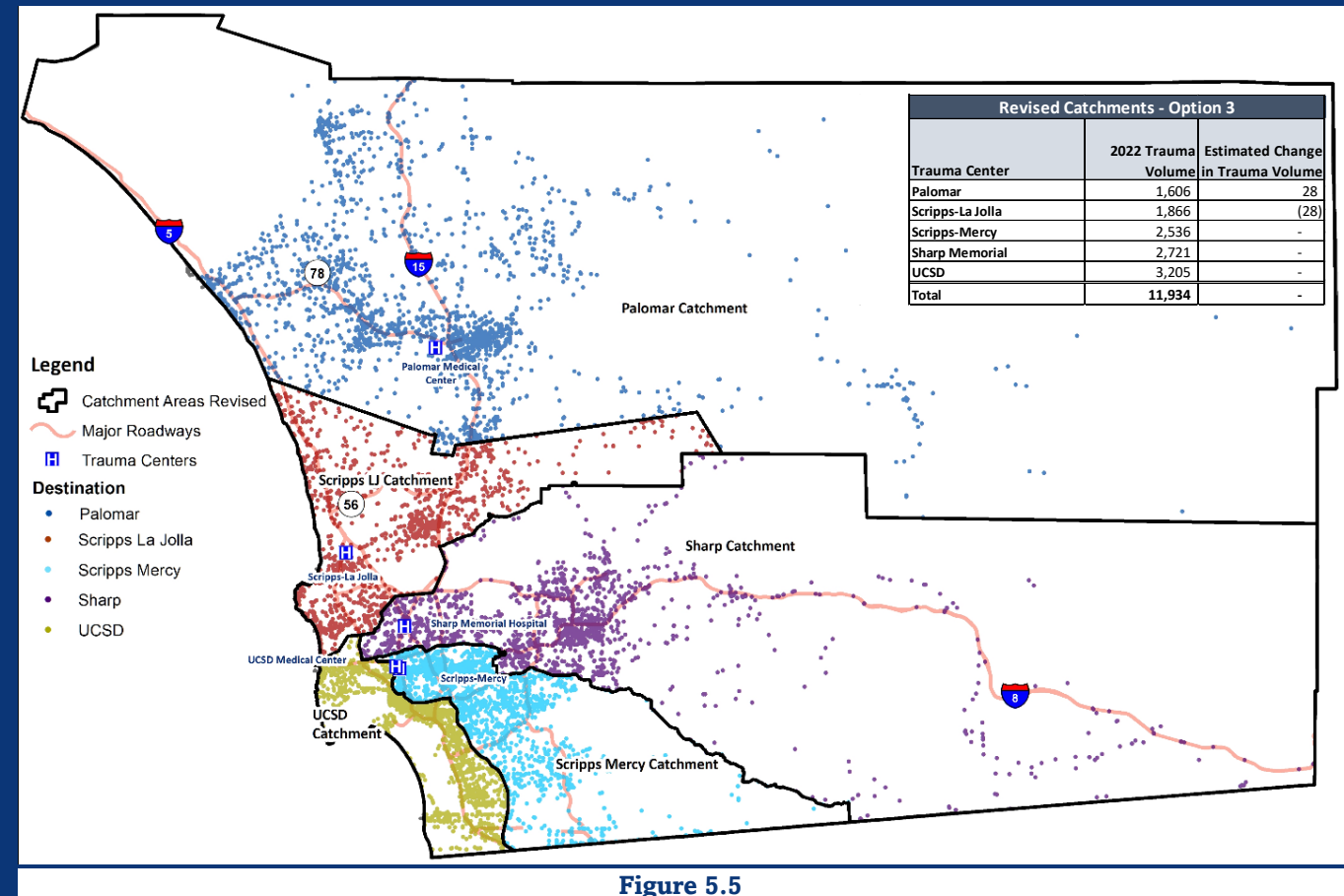
- *Option 3: Adjust Catchment Area Border between Palomar and Scripps-La Jolla*

Pros

- North County trauma cases go to closest trauma center
- Sends Central County trauma to Scripps-La Jolla to mitigate change in catchment area
- No impact on South County centers

Cons

- Central County trauma may be transported further to balance volumes



Potential Trauma Center Catchment Area Options

- Option 4: Maintain Original Trauma Volume Percentages*

Pros

- Maintains proportional volumes to the last catchment area definitions

Cons

- Trauma volume has not increased at the same rate in all areas
- Unrealistic to move 350 cases from UCSD catchment area to Palomar

San Diego Trauma Volume, Adjusted by FY99 Market Share					
Adult Trauma Centers	FY99		Actual 2022 Trauma Volume	Adjusted Trauma Volume by FY99 Percentile	Change
Palomar	1,163	16.4%	1,606	1,956	350
Scripps-La Jolla	1,109	15.6%	1,866	1,866	(0)
Scripps-Mercy	1,622	22.9%	2,536	2,729	193
Sharp Memorial	1,571	22.1%	2,721	2,643	(78)
UCSD	1,629	23.0%	3,205	2,740	(465)
Total	7,094	100.0%	11,934	11,934	-
Note: FY=July June Sources: The Abaris Group (FY99-2002), County of San Diego (2010-2022)					

Potential Trauma Center Catchment Area Options

• Option 5: Maintain Trauma Volumes using Population Growth

Pros

- Maintains proportional volumes based on population to the last catchment area definitions

Cons

- Population growth has been significantly different by catchment area with most increase in Scripps-La Jolla and Scripps-Mercy areas
- Based on injury locations, unrealistic to match to population growth

San Diego Trauma Volume, Adjusted by Population Growth								
Adult Trauma Centers	2000			2022		Adjusted Trauma Volume		Change
	Trauma Volume	Population	Case Rate/ 1,000 pop.	Trauma Volume	Population	by 2000 Case Rate	by 2000 Case Rate and Total Trauma Volume Growth	
Palomar	1,163	503,524	2.31	1,606	595,115	1,375	2,005	399
Scripps-La Jolla	1,109	705,224	1.57	1,866	868,216	1,365	1,991	125
Scripps-Mercy	1,622	661,998	2.45	2,536	772,189	1,892	2,759	223
Sharp Memorial	1,571	571,103	2.75	2,721	647,805	1,782	2,599	(122)
UCSD	1,629	371,984	4.38	3,205	403,981	1,769	2,580	(625)
Total	7,094	2,813,833	2.52	11,934	3,287,306	8,183	11,934	0
Notes: 2000 includes FY20 for Trauma Volume and CY20 for Population								
Sources: The Abaris Group, County of San Diego, www.opendata.sandag.org								

Potential Trauma Center Catchment Area Models

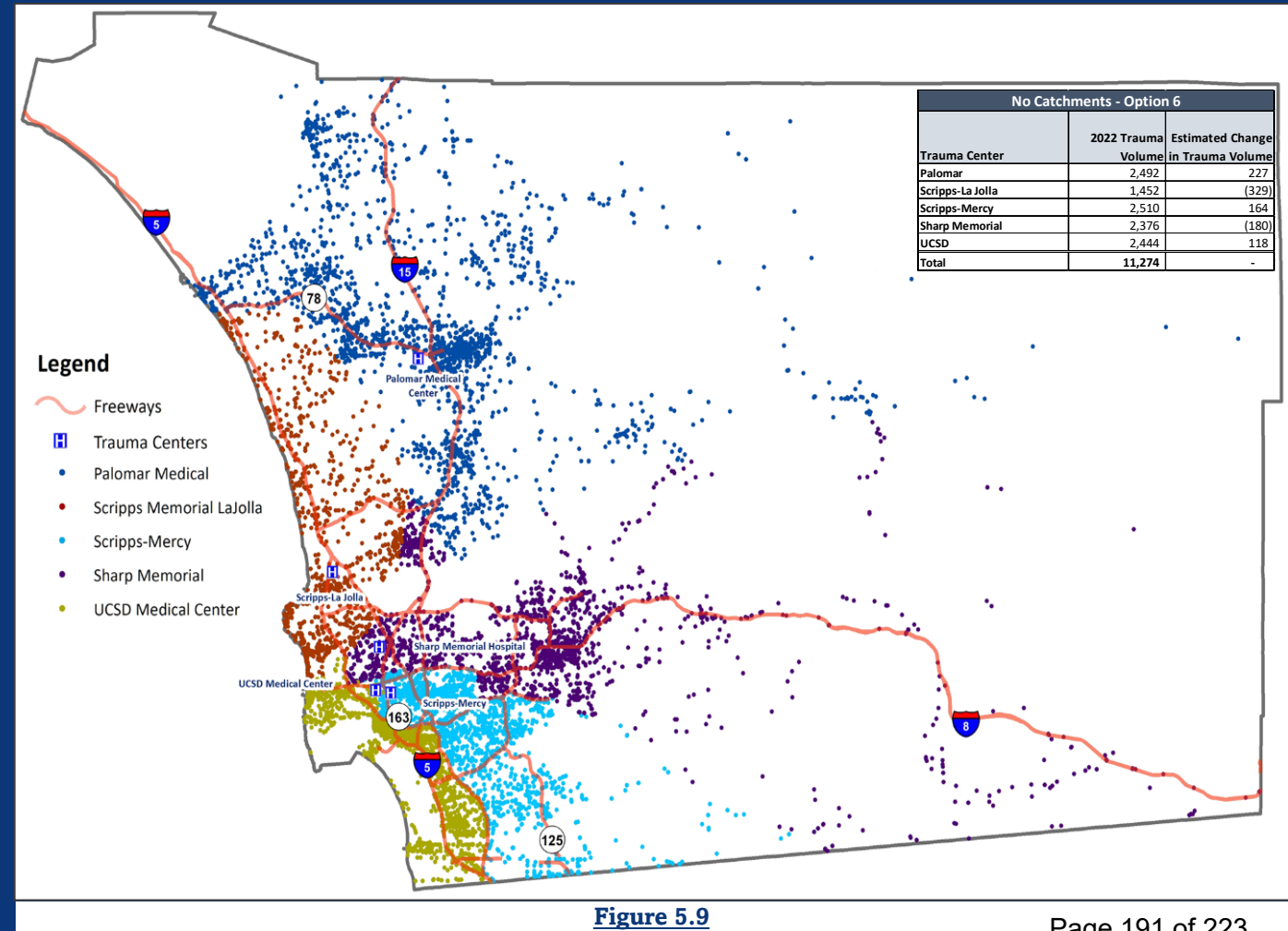
• Option 6: No Trauma Center Catchment Areas

Pros

- Provides most system flexibility due to traffic patterns
- Easiest to implement for field crews

Cons

- Does not ensure each trauma center receives sufficient volume to maintain clinical and financial viability



Potential Trauma Center Catchment Area Options

• Option A : Traffic-Flex Catchment Areas

For North County example, 250 trauma cases would flex based on traffic patterns

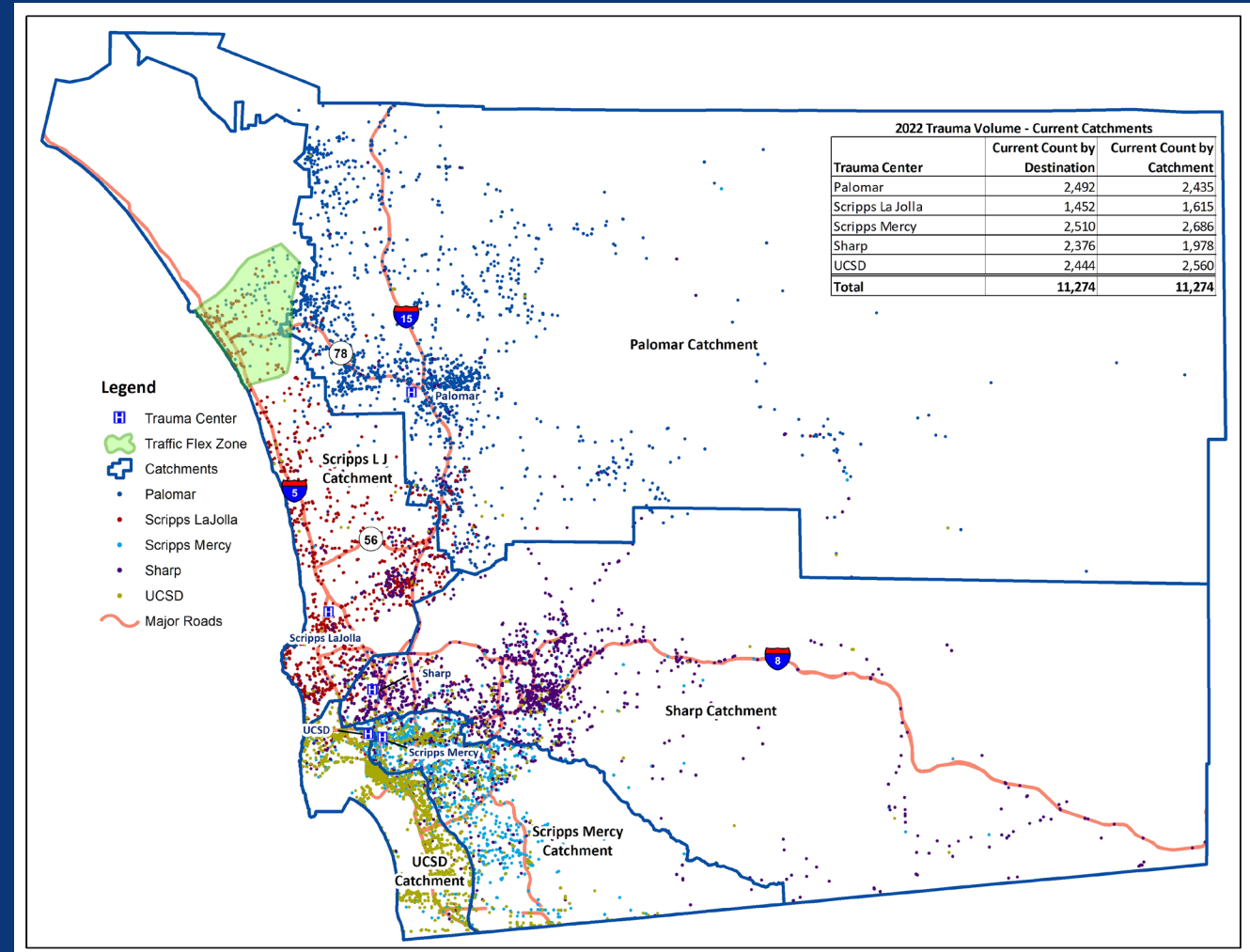
Pros

- Ensure patients are transported to closest trauma center
- Technology exists today to adjust destinations based on real-time traffic information

Cons

- Allows for destination flexibility that could be misused by field crews

** This approach can be combined with any of the options provided*



Potential Trauma Center Catchment Area Options/Recommendations

- **General Recommendations**
 - Consider changing the name of the MAC to Trauma Advisory Committee (TAC)
- **Technology Recommendations**
 - Implementation of app-based communication tools, i.e., ([Pulsara](#) or [Twiage](#))
 - Transition from radio contact to telephone contact, use radios as a back-up
- **Destination Recommendations**
 - Utilize technology to assist with determining which trauma center is closest based on time not distance
 - Collaboration between Trauma Center leadership regarding border trauma patients to minimize the impact of border patients on any one or two facilities

Questions?





Solutions that Matter

APPENDIX H: COUNTY EMS STAKEHOLDER SURVEY QUESTIONS

Stakeholder Feedback on the Base Station Hospital System and Trauma Center Catchment

The County of San Diego is pleased to present this survey to stakeholders of the Base Station Hospital System and Trauma Center Catchment Area Designations to gain vital feedback regarding each of these components of the County EMS system. This survey is in support of the current project – *Comprehensive Evaluation of the Base Hospital System and Trauma Center Catchment Area Designation* – conducted by Public Consulting Group LLC on behalf of the County of San Diego.

Introduction

***Required**

This survey was created by the PCG team and is formatted with various styles of questioning. We want to emphasize that there are no right or wrong responses, and we encourage everyone to express their honest and anonymous opinions.

Demographics

1. What is your role in the County EMS system? *

- ☐ Hospital Affiliation
- ☐ Pre-Hospital Affiliation
- ☐ Other

2. What is your Hospital role? *

- ☐ Administrator/Executive
- ☐ Health Care Provider
- ☐ MICN
- ☐ Other

3. What is your Pre-Hospital role? *

- ☐ Administrator/Executive
- ☐ Health Care Provider

4. What is your Health Care Provider role? *

- ☐ EMT
- ☐ Paramedic
- ☐ Other

5. What is your role in the County EMS system? *

- ☐ EMT/Paramedic Training not affiliated with a hospital or provider agency
- ☐ Law Enforcement Affiliation
- ☐ Helicopter Ambulance Service
- ☐ Firefighter Non-Medical
- ☐ Other

6. Please describe your provider type: *

- ☐ Public Provider
- ☐ Private Provider
- ☐ Other

7. Please select your Public Provider type: *

- ☐ Fire Department First Response Only
- ☐ Fire Department First Response and Ambulance Service
- ☐ Non-Fire Department Ambulance Service
- ☐ Other

8. Please select your Private Provider type: *

- ☐ For Profit
- ☐ Non-Profit
- ☐ Other

9. How long have you worked within the County EMS/Hospital system? *

0-1 year	1-2 years	2-5 years	5-10 years	10-15 years	15+ years
☐	☐	☐	☐	☐	☐

10. What region of the County do you primarily work? *

- ☐ East County
- ☐ Metro San Diego
- ☐ North County
- ☐ Rural East County
- ☐ South County
- ☐ Multiple Regions

11. Does your agency have a medical director? *

- ☐ Yes; Full-time
- ☐ Yes; Part-time
- ☐ No

12. Does your agency have a quality assurance/improvement coordinator? *

- ☐ Yes; Full-time
- ☐ Yes; Part-time
- ☐ No

13. Which study area would you like to provide input to the County EMS Agency? *

- ☐ Base Station Hospital System
- ☐ Trauma Center Catchment Area Designations
- ☐ Both

Base Station Hospital System

14. On a scale of 1-5, with 5 representing "very effective," please rate the effectiveness of the current Base Station Hospital System:

	1	2	3	4	5
	☐	☐	☐	☐	☐

15. Please explain your rating for the question above.

16. On a scale of 1-5, with 5 representing "very effective," please rate the effectiveness of the current Base Station Hospital System attributes: *

	1	2	3	4	5	N/A
Answering Speed	☐	☐	☐	☐	☐	☐
Medical Direction	☐	☐	☐	☐	☐	☐
Communication with MICN	☐	☐	☐	☐	☐	☐
Quality assurance program	☐	☐	☐	☐	☐	☐
Communications with the receiving hospitals	☐	☐	☐	☐	☐	☐

17. On a scale of 1-5, with 5 representing "very valuable," please rate the value of making a radio report: *

	1	2	3	4	5	N/A
Medical Direction	☐	☐	☐	☐	☐	☐
Destination Guidance	☐	☐	☐	☐	☐	☐
Patient Care Guidance from MICN	☐	☐	☐	☐	☐	☐
Data Collection	☐	☐	☐	☐	☐	☐
Quality Assurance	☐	☐	☐	☐	☐	☐

18. If the base hospital contact radio reports were modified, which of these options would make sense to you and your role in the EMS delivery system? *

- ☐ Provide electronic patient care report data in lieu of base station radio/reports
- ☐ Provide electronic patient care report data in lieu of base station radio/reports (with data agreement in place)
- ☐ Use of other technology (telehealth, phone-based apps, etc.)
- ☐ N/A (no opinion)
- ☐ Other

19. Should the County EMS System utilize more standing orders in lieu of base station or physician orders? If so, enter the protocols that should be converted to standing orders in the space provided.

20. In your primary EMS role practice, please rate the value of having real-time communications with an MICN on a scale of 1-5. *

1	2	3	4	5	N/A
☐	☐	☐	☐	☐	☐

21. Please explain your rating for the question above.

22. There are several EMS system models used to provide medical direction (no central Base Stations, single centralized Base Station, or multiple Base Stations, etc.). Select the model that you think is most effective in San Diego County: *

- ☐ No Base Stations; all hospitals can provide online medical direction
- ☐ Single centralized Base Station
- ☐ Multiple Base Stations (i.e., current system)
- ☐ Add additional Base Stations designated by region to the current base station system
- ☐ Base Hospital system for medical direction and the ability to provide abbreviated reports to non-base receiving hospitals
- ☐ Other

23. If you have any comments regarding the question above, please share them here:

24. If you have experience/knowledge with a Base Station Hospital System **outside of San Diego County** that you think is highly effective, enter the name and qualities of the system and how this could be used as a model for the County of San Diego.

Base Hospital SCOT Analysis

Identification of Base Station Hospital System strengths, challenges, opportunities, and threats (SCOT) help improve our system by:

- Helping align services and programs with community expectations on the most critical needs.
- Recognizing, identifying, and analyzing these System components which creates opportunities that can be addressed by Base Station Hospital System policy makers/leaders and allow the System to evolve.

Honest opinions on all key components will ensure the continued success of the Base Station Hospital System.

25. Rank the **STRENGTHS** of the current Base Station Hospital System, with 1 being the strength you think is most important. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Hospital MICN Collaboration
ED relationships with EMS providers
Obtaining medical direction and patient destination guidance
Base Station Hospital orders
Base Station Physicians orders
Quality Assurance/Improvement program
Education/Training opportunities
Other (please specify below)

26. Please list any other strengths you would like to note:

--

27. Rank the **CHALLENGES** of the current Base Station Hospital System, with 1 being the challenge you think is most important to address. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Limited system resources
System funding
Base Station contact
Base Station Hospital Report
Obtaining medical direction and patient destination guidance
Second guessing by MICN
Availability of ED physician
Other (please specify below)

28. Please list any other challenges you would like to note:

--

29. Rank the **OPPORTUNITIES** of the current Base Station Hospital System, with 1 being the opportunity you think is most important to pursue. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

More Base Station Hospitals
Single Base Station Hospitals
No Base Station Hospitals
Use of technology
Patient load-leveling
Other (please specify below)

30. Please list any other opportunities you would like to note:

--

31. Rank the **THREATS** of the current Base Station Hospital System, with 1 being the threat you think is most important to address. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

More Base Station Hospitals
Single Base Station Hospitals
No Base Station Hospitals
Use of technology
Patient load-leveling
Patient transfer offload times
Other (please specify below)

32. Please list any other threats you would like to note:

33. Is there anything else in the Base Station Hospital System that you would like to improve or change? Please explain. *

34. If you are only answering questions regarding the Base Station Hospital System, please select "Done." If you are also answering questions regarding the Trauma Center Catchment Area Designations, please select "Continue." *

☐ Done

☐ Continue

Trauma Center Catchment Area Designations

35. On a scale of 1-5, with 5 being "very effective," how effective are the current Trauma Catchment Area Designations in regard to trauma patient care? *

1	2	3	4	5
☐	☐	☐	☐	☐

36. Please explain your rating for the question above.

37. Do you think the County EMS System should include Trauma Center Catchment Areas, or transport to the closest and most appropriate Trauma Center?

- ☐ The System should include Trauma Center Catchment Areas
- ☐ Trauma designation policy should state closest and most appropriate

38. Are there circumstances where you feel paramedics should have discretion to transport to an alternative Trauma Center outside the current catchment areas? Select all that apply. *

- ☐ Traffic delays/congestion
- ☐ Transfer of care delay
- ☐ Another Trauma Center is closer in time (not distance)
- ☐ Never leave catchment area
- ☐ N/A - I don't know
- ☐ Other

39. Please explain your answer to the question above.

40. If you have experience/knowledge with a trauma system outside the County of San Diego that you think is highly effective, please share the region/county, the trauma system attributes, and how this could be used as a model for the County of San Diego. *

Trauma System SCOT Analysis

Identification of Trauma System strengths, challenges, opportunities, and threats (SCOT) help improve our system by:

- Helping align services and programs with community expectations on the most critical needs.
- Recognizing, identifying, and analyzing these System components which creates opportunities that can be addressed by Trauma System policy makers/leaders and allow the System to evolve.

Honest opinions on all key components will ensure the continued success of the Trauma System.

41. Rank the **STRENGTHS** of the current Trauma System, with 1 being the strength you think is most important. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Well-established system
Excellent trauma care
Easily accessible
Effective trauma field triage criteria policy
Excellent collaboration
Other (please specify below)

42. Please list any other strengths you would like to note:

--

43. Rank the **CHALLENGES** of the current Trauma System, with 1 being the challenge you think is most important to address. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Trauma funding
Appropriate use of air ambulance
Sufficient trauma volume per Trauma Center
Ability to reach Trauma Center quickly
Trauma triage criteria is too inclusive
Other (please specify below)

44. Please list any other challenges you would like to note:

--

45. Rank the **OPPORTUNITIES** of the current Trauma System, with 1 being the opportunity you think is most important to pursue. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Allowing paramedics to pick the destination
Eliminating catchment areas (transport to closest, most appropriate)
Adding more Trauma Centers
Having fewer Trauma Centers
More inclusive trauma triage criteria policy
Other (please specify below)

46. Please list any other opportunities you would like to note:

47. Rank the **THREATS** of the current Trauma System, with 1 being the threat you think is most important to address. Use the drag and drop feature to re-arrange. You will be able to provide additional comments or suggestions at the end of this section. *

Allowing paramedics to pick the destination

Eliminating catchment areas (transport to closest, most appropriate)

Adding more trauma centers

Having fewer trauma centers

Trauma triage criteria is too inclusive

Other (please specify below)

48. Please list any other threats you would like to note:

49. Is there anything else in the Trauma Center Catchment Area Designations that you would like to improve or change? Please explain. *

APPENDIX I: COUNTY OF SAN DIEGO POLICY S-415

 County of San Diego EMS A Division of San Diego County Fire	MEDICAL CONTROL		S-415
	BASE HOSPITAL CONTACT/PATIENT TRANSPORTATION AND REPORT – EMERGENCY PATIENTS		
	Date: 7/1/2018		Page 1 of 5

I. PURPOSE

To identify conditions under which Emergency Medical Technicians (EMTs), Advanced EMTs (AEMTs), and Paramedics shall, when encountering an emergency patient, contact a Base Hospital for notification, medical direction, or to give report; or (for EMTs), contact a receiving hospital to verify appropriate transport destination and give report.

-
- II. AUTHORITY:** Health and Safety Code, Division 2.5, Sections 1797.88 and 1798; California Code of Regulations, Title 22, Section 100170; and California Civil Code Section 25.8.
-

III. DEFINITION(S)

Aid Unnecessary: Calls in which the person whom 9-1-1 was called does not meet the definition of “emergency patient”.

Call Cancelled: Calls to which Emergency Medical Services (EMS) personnel were responding but the response was cancelled prior to encountering an emergency patient or potential patient.

Designated Decision Maker (DDM): An individual to whom a person has legally given the authority to make medical decisions concerning the person’s health care (i.e., a parent, legal guardian, an “attorney-in-fact” through a Durable Power of Attorney for Health Care (DPAHC), or an “agent” through an Advance Health Care Directive).

Elopement: The departure from the scene of a patient in which the patient has refused to comply with established procedures for refusing care or transportation.

Emergency Patient: Any person for whom the 9-1-1/EMS system has been activated and who meets the following criteria:

1. Has a chief complaint or suspected illness or injury
2. Is not oriented to person, place, time, or event
3. Requires or requests field treatment or transport
4. Is a minor who is not accompanied by a parent or legal guardian and is ill or injured, or appears to be ill or injured

Initial Notification: A brief communication by the field personnel to provide the acuity, age, gender, and chief complaint of the patient to the Base Hospital to assist in determining appropriate patient destination. This communication is intended to verify resource capability and availability of the facility that will receive the patient.

Minor: A person under the age of 18 and who is not emancipated.

Radio Report: A verbal report given to the Base Hospital MICN when there are data fields that do not electronically transfer upon download in real time to the Base Hospital.

1. Local Emergency Medical Services Information System (LEMSIS) Radio Report - A modified verbal report given to the Base Hospital Mobile Intensive Care Nurse (MICN) when connectivity allows data to be electronically transferred in real time to the Base Hospital
 - a. Computer Aided Dispatch (CAD) incident number
 - b. Age
 - c. Gender
 - d. Estimated weight (if pertinent)
 - e. Patient complaint(s), including duration of complaint
 - f. Anticipated destination facility and reason for destination
 - g. Estimated time of arrival
 - h. Any information that would affect hospital bed/triage assignment (infectious disease, spinal motion restriction, any anticoagulant use)
 - 1) Any time that a LEMSIS user does not have connectivity, the provider must provide a Standard Radio Report to the Base Hospital MICN
2. Standard Radio Report – A problem-oriented verbal communication which includes:
 - a. CAD incident number
 - b. Age
 - c. Gender
 - d. Estimated weight (if pertinent)
 - e. Initial acuity
 - f. Patient complaint(s), including duration of complaint
 - g. Mechanism and cause of injury (if pertinent)
 - h. Pertinent history, allergies, medications, including all anticoagulants
 - i. Vital signs
 - j. Field treatment and response
 - k. Anticipated destination facility and reason for destination
 - l. Any information that would affect hospital bed/triage assignment (infectious disease, spinal motion restriction, and anticoagulant use)
 - m. Estimated time of arrival

Release: A call outcome that occurs when the patient and the EMS personnel (including the Base Hospital if a base was contacted) agree that the illness/injury does not require immediate treatment/transport via emergency/9-1-1 services and the patient does not require the services of the prehospital system.

IV. POLICY

- A. EMT – Hospital contact is required for all patients who are transported to the Emergency Department of a hospital.**
 - 1. EMT shall contact the intended facility as soon as possible to verify their destination and to provide a complete patient report.
 - 2. EMT shall contact a base hospital:
 - a. If they have a question regarding the appropriate treatment or disposition of any patient.
 - b. Have administered IN naloxone and/or epinephrine by auto-injector.
 - c. Obtained an abnormal blood glucose result as defined in S-123 Altered Neurologic Function-Non Traumatic (adult), S-161 Altered Neurologic Function (pediatric) or “low”.
 - d. A designated trauma center for those patients who meet trauma center criteria (see County of San Diego, Emergency Medical Services (CoSD EMS) Policy T- 460 “Identification of the Trauma Center Candidate Patient”).
 - e. UCSD base for those patients meeting Burn Center criteria (see CoSD EMS Policy S-124 “Burns”).
 - f. Sharp Memorial for pediatric patients who meet trauma center criteria (see CoSD EMS Policy T-460 “Identification of the Trauma Center Patient”).
- B. Paramedics and AEMTs – Base Hospital contact and a radio report are required in the following situations (except in cases of elopement – see Section II.A. of this policy):**
 - 1. Any emergency patient transport by Paramedics or AEMTs including transports by paramedic ambulance to a Basic Life Support (BLS) destination following downgrade to BLS.
 - 2. Any emergency patient treatment involving medications and/or Advanced Life Support (ALS) skills (except 3-4 lead electrocardiogram (EKG) monitoring and/or initial blood glucose within normal limits. 12 Lead EKG requires base contact).
 - 3. Any emergency patient assessment involving abnormal vital signs, or an altered level of consciousness.
 - 4. Any suspicion that the emergency patient (or DDM) is impaired by alcohol or drugs.
 - 5. The emergency patient/DDM is unable to comprehend or demonstrate an understanding of his/her illness or injury.

6. The emergency patient meets criteria as a trauma center patient (see CoSD EMS Policy T-460 "Identification of the Trauma Center Patient").
 7. The emergency patient is > 65 years of age and has experienced an altered/decreased level of consciousness, significant mechanism of injury, or any fall.
 8. An emergency patient who is a minor is ill or injured, or is suspected to be ill or injured.
 9. Whenever Paramedics or AEMTs have a question regarding appropriate treatment or disposition of the patient.
- C.** Any other communications between the patient, DDM, family member, or caregiver and prehospital personnel regarding refusal of care or care that is in variance with San Diego County prehospital treatment protocols or CoSD EMS Policy S-414 "Do Not Resuscitate" (DNR) (such as an Advance Health Care Directive, Living Will, Comfort Care communication, verbal notification from family member or caregiver, DPAHC without attorney-in-fact present, etc.), shall immediately referred to the Base Hospital for evaluation. The Base Hospital shall evaluate this information and determine the plan of treatment and transport for the patient.
- D.** Treatment and transport decisions for emergency patients in involuntary or protective custody (i.e., under arrest by law enforcement, placed on a "5150" hold, or serving a prison term) are to be made by the authority under which they are being held.
- E.** Paramedics and AEMTs shall contact a Base Hospital as soon as possible to verify destination. Paramedics and AEMTs will first attempt to call their regularly assigned Base Hospital, unless the emergency patient meets one of the following criteria:
1. Adult Trauma – For all adult emergency patients who appear to meet trauma center patient criteria in CoSD EMS Policy T-460 "Identification of the Trauma Center Patient", the first attempt shall be the trauma base in the catchment area of the incident.
 2. Pediatric Trauma – The first attempt shall be to contact Sharp Memorial which is the designated pediatric trauma base for pediatric trauma center patients (see CoSD EMS Policy T-460 "Identification of the Trauma Center Patient").
 3. Burns – The first attempt shall be to contact the UCSD base for all emergency patients that meet burn center disposition criteria (see CoSD EMS Policy S-124 "Burns").
- F.** For each Base Hospital contact, a standard radio report or LEMSIS radio report shall be provided to the MICN as soon as reasonably possible for all transported emergency patients to help receiving facilities prepare and ensure a smooth transition of patient care.
- G.** MICNs shall relay patient information received from the patient report to the appropriate receiving facility personnel.

H. Treatment and/or transport of a minor:

1. Treatment or transport of a conscious minor who is ill or injured, or suspected to be ill or injured, shall be with the verbal consent of the natural parent, legal guardian, or any adult authorized in writing by the legal guardian pursuant to Section 25.8 of the California Civil Code.
2. Treatment or transport of a conscious minor who is ill or injured, or suspected to be ill or injured, where the natural parents, legal guardian, or authorized person(s) are not present, will be under the direction of the Base Hospital.
 - a. Transport shall be to the most accessible, appropriate receiving or specialty care center.
3. Treatment or transport of a minor who is unconscious or suffering from a life-threatening disease, illness, or injury in the absence of a natural parent, legal guardian, or authorized person may be initiated without parental consent.

I. Base Hospital contact is NOT REQUIRED for individuals who meet the following criteria:

1. Obvious death (see CoSD EMS Policy S-402 "Prehospital Determination of Death")
2. Discontinuation of Cardiopulmonary Resuscitation (CPR) with a DNR, Physician's Order for Life Sustaining Treatment (POLST) with DNR order, or DPAHC with written DNR or attorney-in-fact on scene (see CoSD EMS Policy S-414 "Do Not Resuscitate")
3. Release of a minor on scene who is neither ill nor injured, nor suspected to be ill or injured, may be permissible without Base Hospital contact if:
 - a. Parent or legal guardian so requests **OR**
 - b. A responsible adult other than the parent or legal guardian (i.e., school nurse, law enforcement, or person of similar standing) so requests
 - c. The field EMT, AEMT, or Paramedic shall document the circumstances and identification of the person accepting responsibility for the minor.
4. Patients who wish to be released and do not meet Base Hospital contact criteria.
5. Dispatched as a BLS call where ALS treatment or intervention has not been initiated, nor anticipated nor indicated.

APPENDIX J: KEY TERMS AND DEFINITIONS

ALS – Advanced Life Support; commonly referring to a transport unit crew consisting of an EMT and a Paramedic, a first response or supervisory vehicle staffed solely by a Paramedic, or patient care provided by a Paramedic.

Ambulance – A transport unit providing BLS or ALS level of care.

Analysis – Referencing this project, its Scope of Work, and the consulting firm’s research, findings, and recommendations; may also reference this document (in the appropriate context and as applicable); synonymous with the use of Study throughout the document.

BLS – Basic Life Support; commonly referring to a transport unit crew consisting of two EMTs, or patient care provided by an EMT.

BSH – Base station hospital; hospital designated to provide on-line medical direction, quality assurance, education to EMS system paramedics

BSHS - Base station hospital system; components include BSHs, satellite hospitals, EMS first responders, ambulance service providers, and County EMS Office.

County – In appropriate context and when capitalized, refers to San Diego County as either the government body or its geographic boundaries.

eBHR – Electronic base station hospital record; electronic record made on each ALS BSH contact by paramedics to MICNs at BSH

EMS – Emergency Medical Service; commonly referencing an ambulance transport agency with 9-1-1 dispatched emergency response responsibilities but may include other agencies like first responder (only) services.

EMT – Emergency Medical Technician; EMTs provide BLS care and is assigned with another EMT or paired with a paramedic and assist with ALS care.

MICN – Mobile Intensive Care Nurse; specialty training and certification for RNs regarding EMS system operations, policies, and protocols, allowing MICNs to provide patient guidance and medical direction to paramedics.

PAC – Prehospital Audit Committee; committee responsible for quality assurance and quality improvement activities.

Paramedic – Defined by CA statute as an Emergency Medical Technician-Paramedic, EMT-P, paramedic or mobile intensive care paramedic means an individual whose scope of practice to provide advanced life support with another EMT or paramedic.

RCS – Regional Communications System; is the County radio system consisting of radio transmitting and receiving equipment, network infrastructure and software connecting paramedics to BSHs.

Report – Referencing this document.

Study – Referencing this project, its Scope of Work, and the consulting firm’s research, findings, and recommendations; may also reference this document (in the appropriate context and as applicable); synonymous with the use of Analysis throughout this document.

TCCAD – Trauma center catchment area designation

APPENDIX K: REFERENCES

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