MATCHING COMMUNITY RESOURCES TO PATIENT NEEDS

The Chandler Fire Department is the flagship resource for the City of Chandler that is committed, not only to providing Emergency Medical Services, but to overall community health. This Community Health Service Delivery Model details the Department’s plan to leverage current resources to expand the response capabilities and better meet the expanding needs of the Citizens of Chandler in this rapidly changing health care environment. This paper discusses four specific areas: Prevention, Response, Patient Care Plan, and Patient Follow-up. Each section contains objectives and action items for complete implementation of the plan.
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Introduction

The City of Chandler Fire Department has been in the business of providing Fire Based Emergency Medical Services for 70 years. We have a history of embracing new opportunities for service delivery which includes being the first fire department in the East Valley to add Paramedics nearly 40 years ago. We believe the time has come to modify the Fire Department’s service delivery. This paper will introduce the Chandler Fire Department’s Community Health Service Delivery Model. This model will detail the expansion of service provision; leveraging existing resources to meet the changing health care needs of the community. The model also includes partnering with existing community providers to meet the tenants of the Patient Protection and Affordable Care Act (PPACA).

PPACA has many broad reaching goals with the main intent being an increase in the rate of health insurance coverage for Americans, increasing overall quality of health care, and reducing cost of overall health care spending in America. The latter goal would be obtained by increasing competition, regulations, and incentives to streamline the delivery of health care.

While not formally addressed in PPACA as a way to meet the goals mentioned above, we recognize the potential for Emergency Medical Services (EMS) to affect a large percentage of total health care expenditures. In 2010, the national health expenditures were nearly $2.6 trillion (Martin). Directly, EMS accounts for less than 1% of health care expenditures; however, there are considerable downstream health care costs associated with patients transported to emergency departments (System). Many of the patients seen by EMS fall into the following categories:

- Acutely Ill with serious and/or life threatening conditions
- Chronically Ill with poor disease management
  - Includes behavioral health patients with poor condition management
- System users who improperly access and/or over access the health care system

Often times these patients view EMS as their access point to the health care system. Once the current EMS system is activated, EMS providers are typically given two options with their patients:

1. Evaluate and/or Treat, followed by the patient refusing transport and signing a document attesting that the actions of the individual are in direct contrast to the EMS “medical advice”.
2. Evaluate, Treat and Transport the patient to the appropriate Hospital Emergency Room.

In reference to the group that chooses the 2nd option, we know that the ER is going to be the most expensive avenue to be seen by a Physician. We also recognize that the most expensive mode of transportation to the hospital is in the back of an ambulance. A reasonable conclusion would be using the current EMS system to access non-emergent care is an inefficient use of health care dollars. Although the EMS system only accounts directly for less than 1% of health expenditures, these patients are, either by choice or by necessity, utilizing the most expensive form of health care available, thus accounting for the inordinate effect on total health expenditures. Reengineering the EMS system to
include the broader perspective of Community Health is necessary to help ensure a more efficient use of health care dollars.

In March of 2013, the Chandler Fire Department management, in partnership with Labor, created nine EMS focus groups tasked with researching the following topics:

- Treat and Refer
- Community Paramedic Curriculum
- Fire Department Clinics
- Political Considerations
- Targeted Prevention Strategies
- Behavioral Health Emergencies
- Public Health vs. EMS
- Emergent EMS
- Data Collection and Implementation

These focus groups were directed by an EMS work group consisting of the designated leads from each focus group, the Fire Chief, and four members at large. The findings of the research conducted by the focus groups revealed many opportunities for change within the current service delivery system. Each group developed recommendations which were then evaluated based on the following criteria:

- Can we do it?
- Should we do it?

Challenging each recommendation using these two simple questions allowed the group to determine which recommendations to focus on to realize immediate and beneficial results. As was mentioned earlier, beneficial results would be increasing overall quality of health care while reducing cost to the health care system.

Figure 1 shows a basic flow chart of the current EMS delivery system, including the two limiting Patient Care Plan options currently employed by EMS. One of the main objectives of this paper is to demonstrate the benefits of leveraging the existing Fire Service Based EMS workforce to expand the service delivery options to improve patient care and outcomes while reducing health care costs.
Improving Quality of Care, Improving Community Health and Reducing Cost

“Improving the U.S. health care system requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care” (D. Berwick). As a significant cog in the system of gears that make-up the health care system, Fire Service Based EMS can positively impact these goals by implementing strategies and policies to meet the following objectives:

1. Dispatch an EMS response, including the units dispatched and the response mode that matches the needs of the patient(s).
2. Arrive at the patient’s side with the personnel, expertise, and equipment to meet the needs of the patient(s).
3. Give treatment and transport options that match the needs of the patient(s).
4. Follow up with patients after they have received the appropriate treatments and/or transportation to ensure they are educated and able to follow through with treatment plans. This includes ensuring their medication prescriptions are filled and followed, as well as ensuring they are connected with primary care when needed.
5. Coordinate with all levels of the Health care Community.

The key term utilized here is matching the health care to meet the needs of the patient. Fire Service Based EMS can work to better match those needs by addressing the four areas of the “Out of hospital” medical system:

Figure 2-Out of Hospital Medical System
The Traditional EMS Call

EMS Call Intake and Dispatch

As shown in Figure 1, the standard EMS call begins with a 911 call to a Primary Public Safety Answering Point (PSAP). Once the call is determined to be EMS in nature, it is transferred to a Call Taker in the appropriate Dispatch Center. The Call Taker utilizes existing algorithms to quickly interview the Caller and assign a Nature Code. The Nature Code categorizes the call by type and whether the medical need is advanced or basic. Once a Nature Code is assigned, the call is transferred to the Dispatcher, where EMS response units are dispatched. The response level is determined by two things:

1. The assigned Nature Code
2. The Business Rules that have been developed for the jurisdiction in which the EMS call occurs

There is an opportunity during this stage of the EMS call to improve the efficiency of resource assignment and utilization. However, this must be carefully designed to insure an absence of unintended consequences. This will be discussed in the Response section of this paper.

Patient Care Plan

Another opportunity for improvement occurs after the responding units make contact with the EMS patient. An assessment is done, treatment is initiated, and then a patient care plan is developed. The patient care plan that is initiated by the attending paramedic should have the ability to transition smoothly into the Physician’s care plan for the patient.

Currently, after initial EMS intervention, the development of the patient care plan is limited to two basic choices within the EMS system:

1. The patient is transported to the Hospital Emergency Room via Ambulance, or
2. The patient refuses transportation to the Emergency Room and then signs a form stating he or she is refusing further treatment and/or transportation against medical advice of the Paramedics and Medical Direction.

These two choices are limiting and often do not meet the needs of the patient.

In May and June of 2013, the Chandler Fire Department conducted a simple analysis of 185 EMS calls in selected response districts that gave a balanced demographic for the City. The results of this analysis suggested that 31% of EMS patients are not being delivered to the most appropriate health care facility matching their medical needs (Figure 3). Furthermore, if the patient is not delivered to the appropriate health care facility, then we can infer that one of two outcomes is occurring:

1. The patient is being over-treated, which results in overcrowding of emergency rooms and increased expense to the payer.
2. The patient is being under-treated, often resulting in worsening of the patient’s condition until treatment is sought again through the EMS system and then to the Hospital Emergency Room. Both of these outcomes adversely affect the quality and cost of health care for patients, payers, and the overall system.

**Patient Follow-up**

In addition to those areas mentioned above, the group has identified patient follow-up as an area of opportunity for improvement. Frequently, after a patient is released from an EMS call or from the hospital, they are given medical advice for follow-up care that may be followed poorly or not followed at all. As a result, a percentage of these patients will require EMS intervention and/or hospital intervention again. Fire Service Based EMS systems maintain a small army of Paramedics and EMTs that can be utilized to proactively follow-up with patients to help them stay on their care plans and to ensure they are connected to primary care. It is easy to visualize how a follow-up program, leveraging existing resources, can be an opportunity to align fire service based EMS with hospital readmission reduction goals to save health care money for payers and improve medical care for patients.

**Figure 3-Transport Option Study Results**
Response

As mentioned earlier, multiple events take place in the Dispatch Center that determines the initial assigned EMS response. The primary areas identified that could positively affect change are:

1- Adding accuracy to the Call Taker’s position when assigning Nature Codes  
2- Refining the jurisdictional Business Rules

The Call Taker

The Call Takers have extremely difficult jobs as they interact with the 911 callers and are responsible for assigning accurate Nature Codes. Often times, the 911 callers are calling with incomplete and/or inaccurate information. Additionally, they are often “wound up” when they call, which further complicates the interview process the Call Taker must complete. The Call Takers utilize algorithms to identify and assign a Nature Code to each call. As they go through the call algorithm with the caller, they immediately look for Advanced Life Support (ALS) indicators. ALS indicators are used to quickly identify critical calls and assign a Nature Code so the response can be dispatched. Although not always accurate, this system of quickly looking for ALS indicators reliably ensures adequate resources are sent on critical calls. The errors in the current system tend to “over dispatch” rather than “under dispatch” resources to an incident. The design of the system, to “over dispatching”, has a much lower liability than “under dispatching” but is potentially more costly.

The Call Takers are also working under a tremendous pressure to assign a Nature Code and send the call to a Dispatcher for immediate dispatch. While continuing to look for ALS indicators and quickly dispatch resources to critical calls is a priority, once an initial interview does not reveal any ALS indicators, there is an opportunity to slow down

![Alarm Processing Time Goals Based on Emergent Level of EMS Call](image)

Figure 4-Alarm Processing: Time/Urgency Curve
the response. At this point, the Call Taker can begin to focus less on speed and more on accuracy. An example of how this relationship between the Call Taker’s interview time and the urgency of the call is shown in Figure 4. By focusing on the accuracy of the less urgent calls, the Call Taker can better assure an accurate Nature Code is assigned. This helps to ensure the dispatched Response Level and Response Mode accurately match the needs of the patient(s). In the future, slowing the alarm processing time for non-emergent patients will allow for a smaller, more cost effective response.

One specific existing nature code that could be utilized more frequently with the longer more focused Call Taker interview is the NOSEND nature code. When this code is entered, actual physical EMS resources are not sent on the EMS call. In some EMS systems, this type of code is utilized on up to 30% of calls. In addition to the accuracy demands on the Call Taker, utilizing this type of nature code with some frequency will require a proactive Quality Assurance (QA) program to ensure it is used to match the needs of the caller correctly. Part of the future QA program for the NOSEND could include follow-up calls and/or scheduling a resource to meet with the caller, on a proactive, non-emergent time frame, to ensure their needs are being adequately met.

**Business Rules**

Business Rules are jurisdictional specific rules that detail the response levels and modes for each specific nature code. These can be comprehensively evaluated, based on historical data, to determine the most appropriate response is sent on each EMS call. Business Rules should be re-evaluated on a regular basis and be included in the QA program.
Response Objectives (1)

- **Objective 1.1 – Implement Priority Dispatch**
  - **Action Item 1.1.1** - Increase Call Taker assignment of Nature Code accuracy
  - **Action Item 1.1.2** - Create or identify “non-emergent” nature codes that would not fall under the 60-90 second alarm processing time (NFPA 1710 4.1.2.3.3)
  - **Action Item 1.1.3** - Create algorithm(s) for designation of “non-emergent with dispatch” and “non-emergent without dispatch”
  - **Action Item 1.1.4** - Develop 2 plans to further triage non-emergent calls
    1. The further triage occurs at the Phoenix dispatch center
       - Phoenix is already running one grant funded person in the dispatch center that will take behavioral calls. The Call Takers will send the BH call to her to slow down and determine if an engine needs to go or not. (BH, panic attacks...) She will coordinate directly with Magellan sometimes.
    2. The more detailed triage occurs at the Primary PSAP before transferring the emergent calls to Phoenix for dispatch
       - This option could be online only during peak hours to save cost
  - **Action Item 1.1.5** - Meet with Phoenix Dispatch to discuss potential changes to dispatch process
  - **Action Item 1.1.6** - Develop QA/QI program for priority dispatch system
  - **Action Item 1.1.7** - Review and change Chandler Business Rules
  - **Action Item 1.1.8** - Identify response resources that would match the needs of the non-emergent nature codes

- **Objective 1.2 – Propose changes to NFPA 1710 4.1.2.3.3 to add language to differentiate between emergent and non-emergent dispatch standards**
  - **Action Item 1.2.1** – Review current NFPA 1710 language and consider submitting recommended changes

- **Objective 1.3 – Revise Chandler Jurisdictional Business Rules**
  - **Action Item 1.3.1** – Review business rules and create new rules to roll out in phases
  - **Action Item 1.3.2** – Reduction of ambulance automatic dispatches to increase ambulance utilization to 90%
  - **Action Item 1.3.3** – Expand non-emergent responses (shift culture to default to non-emergent responses where emergent must be justified)
  - **Action Item 1.3.3** – Develop QA program for feedback on business rule change successes/failures (See AI 1.1.6)

- **Objective 1.4 – Dynamic Deployment**
  - **Action Item 1.4.1** – Develop peak-time deployment strategies
Patient Care Plan

As mentioned earlier, once the EMS system is alerted and a patient is located, the EMS crew and the patient have two basic options regarding the patient care plan. First, a patient elects to refuse further treatment and/or transportation and is required to sign an “Against Medical Advice” or AMA form, or second, to be transported by ambulance to the closest and/or most appropriate hospital emergency room (ER).

This document has already outlined the problems with these limited options. An EMS system designed to match the patient care plan to the needs of the patient requires additional options. Suggestions for this would include a “Treat and Refer” program and adding the capability to transport patients to destinations other than the ER. Some of the barriers to implementing these changes will be discussed in the following sections.

“Treat and Refer”

Typically, the patient decision to access health care through an ER is based on factors including insurance status, their perception about the urgency of their condition and the availability of health care resources. Some patients use the ER for primary care. Patients who access the ER for health care can be categorized as follows:

- Emergent
- Urgent
- Semi-Urgent
- Non-Urgent

In 2009-2010, measuring ER visits by adults aged 18-64 throughout the United States; only 12% were classified as emergent. Of the same group, 80% were classified as urgent or semi-urgent and 8% were classified as non-urgent (US Department of Health and Human Services). One could surmise from this data that 8% of those patients could, and maybe should, have accessed health care through an urgent care, clinic or primary care. On average, an ED visit costs seven times more than a community health center visit.

One program which could reduce unnecessary ER visits is Treat and Refer, which is treating the patient at the point of the EMS call, under approved medical direction, thus eliminating the need for transport. Historically, Treat and Refer programs have been frowned upon because of perceived potential litigious consequences and assumption of liability and arguably, the predominant fee for service health care reimbursement model. However, countries outside of the US have adopted protocols allowing medical treatment by an emergency services provider (often a paramedic) while the patient remains in place. Recommendations are then given to the patient to follow up with a medical provider or for self-care. In the UK, a study was done to determine the feasibility and efficacy of this type of program. They not only realized a reduction in ER visits resulting in a reduction of costs, but they also found that patients in the Treat and Refer program expressed higher levels of satisfaction with the care (H. Snooks).
A focus group evaluated and determined which current treatment protocols could be developed and adapted to a Treat and Refer program. Eligible patient populations were defined and parameters for release or refer criteria created. It was also determined that patient age and medical history will be important indicators of appropriateness when using these protocols. With the assistance and oversight of Medical Direction, protocols for Adults (between 15 and 65 years) and Pediatrics (between 2 and 14 years), within defined parameters, have been identified. These particular protocols were identified based on current practice, low patient risk and potential to significantly reduce ER transports. The protocols will be specific to the Chandler Fire Department under the medical direction of Dr. Joshua Zeidler, DO (Figure 5). They are as follows:

- **Adults** – Nausea/Vomiting/Flu-like Symptoms
- **Adults** – Allergic Reaction
- **Adults** – Respiratory Distress
- **Adults** – Altered Neurological Function (non-trauma)
- **Adults** – Pain Management
- **Pediatric** – Nausea/Vomiting/Flu-like Symptoms
- **Pediatric** – Allergic Reaction
- **Pediatric** – Respiratory Distress
- **Pediatric** – Pain Management
- **Behavior Health Management**

A critical aspect to the Treat and Refer program is the referral. Once a patient that meets the criteria has been treated, the Paramedic on scene will then follow a prescribed referral algorithm to ensure the patient care plan is complete and aligned with medical direction.

There are many advantages to having a Treat and Refer Program. In addition to the reduced ER transports and health care cost savings, the fire department would be an extension of the hospital, providing care and appropriate referral for those patients. A significant consideration to the proposed treat and refer system is to answer how the fire department could be reimbursed for the care provided. We anticipate as this system proves itself successful, it will naturally expand and the demand for these
services will grow (Clark). The ability to obtain reimbursement for the services provided will become increasingly important to ensure the financial burden is appropriately placed with the payers (ACO’s, Medicare, private Insurance...).

**Transport to Alternate Destinations**

Just as refusing transport to an ER may not match the health care needs of the patient, transporting only to an ER can result in this same failure. Often times, patients are transported to ER’s when they could receive appropriate treatment, at a lower cost, at an Urgent Care, Clinic, Behavioral Facility or even a Physician’s office. EMS is frequently used as access to primary care or even minor emergent care when other health care options or knowledge of options are limited.

The community knows that a 911 call will bring an immediate response that will help them find resolution to the immediate concern or problem. Unfortunately, for those patients requiring a higher level of medical care, transport destination options are limited by State Statute, Rule, and reimbursement. While reimbursement may seem self-serving, a closer study will reveal it to be a way to keep a fiscally healthy system while maintaining these evolving service roles.

Referring back to the transport options study results shown in Figure 3, one can surmise that approximately 66% of EMS patients require medical transport. To put this into actual numbers of patients, of the 185 patients involved in the study, 122 of them required transport to a medical facility. The patients in the study were transported to an ER. Of those 122, 37 could have been transported to a lower level of care, such as an Urgent Care or a Physician’s office. Review of the patient information by the Medical Director, Dr. Joshua Zeidler, revealed the need to evaluate the age of the patient, along with their presenting condition, in making the alternative transportation decision. In this study, eight of the 37 patients would have been recommended for ER transportation, based on including age in the algorithm, leaving 29 patients that could have been treated at a lower acuity medical facility.

Although the cost of an Emergency Room visit is difficult to estimate, due to the different tests that may be required, an average cost according to the Agency for Health care Research and Quality (AHRQ) in 2009 was $1,318.00 (Fay). The same article estimates an Urgent Care visit to be $155.00, with Primary Care Physician visits running approximately $100.00 (Fay). Matching the transport destination with the needs of the patient, as opposed to transporting all patients to an ER, can save the Health Care system between $1,163 and $1,218 per patient per visit. Using the data referenced in Figure 3 from 185 patients, increasing transport destination options to include a Physician’s office and/or an Urgent Care, could have saved the system over $34,000. Extrapolating this data over the course of a year, the health care cost savings in Chandler alone could be over $2.4 million, just by implementing alternate destination protocols.

In addition to the above savings, an Urgent Care or Primary Care patient could be transported in a vehicle other than an ambulance. This could result in increased savings of $500 per patient per transport, or approximately $18,500 considering the population from the study. Extrapolating this over the course of a year, in Chandler alone, could realize an additional $1 million of savings to the health care system.
The final population to be considered from the transportation option study would be the 5% that would have benefitted by a direct transport to a behavioral health facility. Typically, these patients are transported to an Emergency Room for “Medical Clearance” before then being transferred to a behavioral health facility. Ideally, these patients would be medically evaluated by a Paramedic in the field and then transported directly to the behavioral health facility. This patient interaction will require the Paramedic to work very closely with Medical Direction, actually being the eyes and ears of the Physician in the field. Innovations and advances in technology can allow Paramedics to communicate verbally and visually with the Medical Director from a patient’s bedside (telemedicine). Telemedicine could result in completely avoiding the Emergency Room visit while keeping the Physician clearly involved in the medical decision making. It is reasonable for the Physician to be remunerated for his/her service, and the Hospital to receive some remuneration for providing the facility and equipment for the communication between the Physician and the Paramedic to take place. If the Physician and the Hospital each received $250 remuneration, this could result in a savings of $818 per patient per interaction. The transport options study estimated 5% of the 185 patients could have used this type of interaction resulting in a total savings of $7,362. This could result in an annual savings to the system of nearly $550,000.

A comprehensive medical transportation system designed to match the transport option with the needs of the patient would have the capability to transport patients to Emergency Rooms, Urgent Cares, Behavioral Health Facilities, and Physician’s offices or clinics.

Savings to the health care system is only the secondary beneficiary of this type of transport option program. The primary beneficiary of this system is the patient. As patients are distributed properly to the health care facility that matches their needs, system demand is balanced. This reduces waiting times, especially in Emergency Rooms. Patient’s co-pays and deductible pays are less when treated outside of the Emergency Room setting and the patient’s treatment matches the patient’s needs.

Whether the patient is treated and referred or treated and transported to the appropriate health care facility, treatment and transportation that matches the needs of each patient benefits the entire system. Deploying these strategies will move us closer towards achieving the three objectives introduced earlier: “improving the experience of care, improving the health of populations, and reducing per capita costs of health care” (D. Berwick).

**Fire Based Community Health care Provider Programs**

Community Paramedic (CP) was initially termed in the 1970’s; however, the concept has recently grown in popularity and is currently being trialed in several areas of the United States. The concept of CP has its grass roots in rural primary care. A Community Paramedic is a provider that has additional education, allowing this paramedic to treat a patient with a broadened approach. This type of provider has the ability to connect resources and work within the continuum of care along with the patient’s Physician and the regional hospital. This model is being used to fill current gaps in health care for which a CP is specifically suited (Community Healthcare Emergency Cooperative).
It is important to note that the term *Community Paramedic* is more of a branding for the type of service provided, rather than a specific curriculum, certification or licensure. Curriculum for CP is varied and customized to meet the needs of the community wherein the program resides. There are some efforts currently to create a standardized curriculum; however we believe a more community centered approach to CP would be the preferred model to follow. A *Fire-Based Community Healthcare Provider Program*, as the title implies, provides public health services based on the needs of the community it serves and the services are rendered by a *Fire-Based Community Healthcare Provider*. This model uses existing EMS providers, and takes advantage of existing Paramedic curriculum and scope.

Currently, all Arizona State certified Paramedics have been trained to a National Standard Curriculum. Once trained, each candidate must successfully complete a National certification testing process. Upon completion, the candidate is then qualified to obtain an Arizona State Paramedic certification. Underneath the umbrella of the national scope or curriculum, the State of Arizona has written in Statute and Rule the scope or portion of the national curriculum it chooses to use. The State then has a standard approved scope and a “Special Training Required” approved scope (Figure 6).

The City of Chandler responds to a significant percentage of patients that would benefit from a *Fire-Based Community Healthcare Provider Program*. The City of Chandler Fire Department’s intent is to develop a Community Paramedicine program utilizing the current State approved scope of practice. The training for this program would focus on the expansion of the current paramedic knowledge without an attempt to develop a new certification level. By doing this, we can meet the objective of leveraging current resources to adapt to the changing health care needs while meeting the needs of the patient.

![Figure 6-Paramedic Curriculum Model](image)
Patient Care Plan Objectives (2)

- **Objective 2.1 – Implement Treat and Refer Program**
  - **Action Item 2.1.1** - Finalize “Treat and Refer” algorithms
  - **Action Item 2.1.2** – Develop Treat and Refer training module
  - **Action Item 2.1.3** – Develop referral forms in ePCR
  - **Action Item 2.1.4** – Establish reimbursement agreements for fire department services rendered with health care payers and/or hospitals

- **Objective 2.2 – Implement Alternate Transport Destination Program**
  - **Action Item 2.2.1** - Develop relationships with Urgent Care(s), Primary Care Physician(s), Patient Centered Medical Home(s) who are willing to participate in the alternate transport program.
  - **Action Item 2.2.2** - Develop alternate transport destination options/algorithms
  - **Action Item 2.2.3** - Develop behavioral health transport options plan utilizing Treat and Refer algorithm and findings from Jessica Katz on the various behavioral center intake policies.
    - Transport via Two-person response vehicle is likely to be successful rather than via ambulance
  - **Action Item 2.2.4** – Develop agreements with the health care system that allows entities other than ambulance companies to be compensated for services rendered
  - **Action Item 2.2.5** – Gain Department of Health Services approval for alternate transport destinations

- **Objective 2.3 – Develop and Implement a “No Transport” program for inappropriate frequent system users utilizing current DHS Transport Protocols (GD-106-PHS-EMS)**

- **Objective 2.4 – Establish Community Paramedicine Program**
  - **Action Item 2.4.1** – Identify full scope of practice and curriculum
    - Several studies support additional training for Paramedics to be successful in determining correct candidates for alternative transport considerations.
  - **Action Item 2.4.2** – Determine certification needs and identify DHS Statute or Rules issues.
  - **Action Item 2.4.3** – Gain DHS approval if needed
  - **Action Item 2.4.4** - Coordinate training with college if needed
  - **Action Item 2.4.5** – Implement training program
Patient Follow-up, “Out of Hospital” Care Program

A comprehensive patient follow-up program would meet the needs of at least two distinct patient groups:

1. Those patients who were treated on scene and not transported
2. Those patients who were transported to a health care facility
   a. This group could include patients treated in a hospital regardless of whether or not they accessed the 911 system prior to being treated in the hospital

Group 1 is a group of patients who, as a result of Chandler’s “Treat and Refer” program, were treated in the field and then not transported to any health care facility. Some of these patients, depending on their illness or injury, will require some type of follow-up to ensure they are not relapsing or that they are properly connected to a clinic or Primary Care office to receive appropriate ongoing treatment. This can happen in at least two ways. First, as indicated by the Paramedic on the electronic patient care report and as arranged by the Paramedic while on scene with the patient, a Nurse or Paramedic would make a phone call to the patient during a designated time frame. During this phone call, staff would briefly interview the patient with the following objectives:

- Ensure the patient’s illness/injury has not worsened
- Determine if the patient requires additional follow-up in person
- Ensure the patient is connected with the appropriate Clinic or PCP office for follow-up when needed

If the Paramedic or Nurse determines that the patient requires additional EMS intervention or follow-up, appropriate resources will be sent to the patient for evaluation.

Group 2 represents a population of patients that would typically not be seen again by EMS providers without activating the 911 system. Although EMS does not historically follow-up with patients after hospital discharge, this is an important population to begin considering for this type of proactive service. These patients, as with Group 1, would be entered into a follow-up program to help meet the objectives above. Group 2 participation would be determined by the hospital, based on disease processes, former readmission rates, and current patient needs. It is anticipated that a significant percentage of 30-day readmits can be avoided by implementation of this follow-up program.

Per PPACA, one incentive for hospitals to reduce readmissions is the introduction of strict financial penalties for readmissions that take place within 30 days of discharge. In addition to benefiting the patient, this type of follow-up program can promote stronger partnerships with hospitals as we assist with meeting their readmission reduction goals. The Fire Department is positioned extremely well to do this. Fire Service Based EMS has built a relationship of trust within the community. We work in the homes, schools, and work places of the citizens every day. Fire stations are distributed throughout the City and are staffed with Paramedics and EMT’s 24 hours-a-day, seven days-a-week. The existing
attributes of Fire Service Based EMS can provide an excellent workforce to partner with the health care community to optimize the out of hospital care of community members.

Providing this type of service is not new to the Chandler Fire Department. In 2004, the Department established a Crisis Response Unit (CR 288) in response to unmet needs recognized by firefighters and Department staff. Each day, Chandler fire fighters and police officers respond to emergencies where people need assistance beyond the scope of what fire fighters and police officers can provide. The CR 288 program is staffed to help meet those needs and connect citizens and patients to needed community resources.

The current CR 288 program consists of three full-time social workers, part time Master’s level staff, and approximately 40 student interns and volunteers. This program is staffed 24 hours per day, seven days per week, and responds to the following types of emergencies:

- Adult, child, and infant deaths
- Pediatric emergencies
- Drowning calls
- Serious medical emergencies
- Sexual assaults
- Structure fires
- Violent crimes
- Domestic violence
- Psychiatric emergencies
- Assist homeless
- Death notifications
- Traffic accidents
- Suicide completions, attempts, ideations
- Child or elder abuse, neglect, exploitation

This is an example of a program that exists to help community members beyond the crisis or the emergent need by connecting them to appropriate community resources in order to minimize the impact of the event and to avoid future crisis. This is done through resource referral, collaborative efforts with community agencies, and then following up with the patient to ensure their needs are being met. This follow-up can take place by phone or in person and may range from simply checking in on the patient, to meeting with them, helping them fill out applications and paperwork, even arranging for or providing transportation when needed. The CR staff will also call the community agency to inform them of the patient’s needs and to offer their assistance. This type of full service approach, although intensive on the front end, can save time and resources and improve patient outcomes.
Patient Follow-up Objectives (3)

- **Objective 3.1 – Implement a patient follow-up program**
  - **Action Item 3.1.1** - Develop patient follow-up protocols
  - **Action Item 3.1.2** - Develop dispatch Paramedic Triage line
  - **Action Item 3.1.3** - Utilize CR expertise to train follow-up line staff regarding connecting patients to existing community resources
  - **Action Item 3.1.4** – Utilize CR for follow-up
    - Develop process for flow of information from crews to CR – Incident Follow-up Request Form
    - Develop process for flow of information from patient follow-up line

- **Objective 3.2 - Develop hospital Re-hospitalization prevention/reduction program**
  - **Action Item 3.2.1** – Develop hospital relationship
  - **Action Item 3.2.2** – Develop MOU with Dignity Health for data sharing
  - **Action Item 3.2.3** - Develop capitated reimbursement program for re-hospitalization prevention/reduction program

- **Objective 3.3 – Develop a proactive out of hospital care program**

- **Objective 3.4 – Develop measures to evaluate patient follow-up program and out-of-hospital care program**
Prevention

Fire Departments have become experts in Fire Prevention. In fact, most departments have designated Fire Prevention Bureaus with the sole mission of prevention through inspection, code enforcement, fire investigation, and education. Similarly, as Fire Departments have become experts in EMS delivery, it is the intent of the Chandler Fire Department to become experts in Emergency Medical Prevention. Although the concept, in title, may seem new, the concept of prevention in public health is not new. Most major cities in the United States have Public Health Departments that have been developing and implementing prevention programs for years. In Arizona, due to State Statute, the Public Health Department functions at the County level. Maricopa County Department of Public Health (MCDPH) has a Community Action Plan designating five public health priorities (Maricopa County Department of Public Health and Arizona Department of Health Services). They are:

- Obesity
- Diabetes
- Lung Cancer
- Cardiovascular Disease
- Access to Health Care

While MCDPH has excellent programs, they lack the people in the streets to assist disseminating their information. In the MCDPH 2012 Community Action Plan they state, “Organizational participation from each sector of the community (Where We Live; Where We Work; Where We Learn; Where We Receive Care) is integral and essential to CHIP (Community Health Improvement Plan) development” (Maricopa County Department of Public Health and Arizona Department of Health Services). Fire Departments have personnel in the streets every day, meeting with and working with the public in the places where they live, work, learn, and even where they receive care. Firefighters are trusted, educated in medical care, and are typically excellent examples of fitness and wellness, all of which make Fire Service Based EMS an excellent resource of workers to partner with MCDPH.

In addition to the five public health priorities designated by MCDPH, listed below are additional diseases, conditions, and risk factors that could be addressed through targeted prevention activities:

- Poor nutrition
- Lack of physical activity
- Smoking
- Substance abuse
- Obesity
- Cancer
- Asthma
- Congestive Heart Failure
- COPD
- Hypertension
- Fall injuries
- End of Life issues

Approximately 80% of the Chandler Fire Department’s calls for service are health care related. Being involved in health related prevention and management activities are a natural fit which could improve
the overall health and wellness of the community and decrease overall health care expenditures for the tax payer. By developing cooperative programs with the local health care community, existing health care related support groups, businesses, school districts, and the individual patient (with their consent). The City of Chandler, through the fire department, has an excellent opportunity to utilize existing resources to have a positive effect on the growing health care challenges facing the community.

**Fire Department Clinics**

Recently the fire department has begun participating in clinic services held at the Chandler Christian Community Center. These clinics are very basic in nature and are typically staffed with a Certified Nursing Assistant. The fire department participation has been well received as a positive addition to the clinic in that:

- Many of these community members already recognize and trust the fire department members as health care providers.
- Having the fire department members present is beneficial to supplement the services already provided to help meet the growing demands on the clinics.

Currently, the Christian Center holds these types of clinics on Fridays, with the fire department participating on the 4th Friday of each month in what they are referring to as an *expanded* clinic.

As the Community Paramedic program matures, the Chandler Fire Department will be in a position to offer an even higher level of service to the community. Opportunities to partner with community organizations in providing or helping to provide these types of clinics can help to prevent non-emergent health care needs from becoming emergent.
Prevention Objectives (4)

- **Objective 4.1 – Develop robust EMS prevention program**
  - Action Item 4.1.1 – Detail scope of EMS prevention program(s)
  - Action Item 4.1.2 – Set specific goals for rehospitalization prevention/reduction
  - Action Item 4.1.3 – Set specific goals for frequent EMS system users
  - Action Item 4.1.4 – Develop Training Program for responders, utilize existing knowledge of CR managers to train and educate the responders

- **Objective 4.2 – Develop CFD Education program for Public Health Priorities**
  - Action Item 4.2.1 - Develop relationship with Maricopa Department of Public Health
  - Action Item 4.2.2 – Develop partnerships with local school districts to support existing health prevention programs or implement new cooperative programs

- **Objective 4.3 – Partner with local non-profits to deliver targeted health care prevention programs**
  - Action Item 4.3.1 – Work with Chandler Christian Community Center, ICAN, Boys and Girls Club etc.

- **Objective 4.4 – Develop home safety inspection program for elderly and/or infirmed**
  - Action Item 4.4.1 – Develop internal referral program aimed at recognizing and counseling citizens on home environment conditions that may negatively impact patient health condition

- **Objective 4.5 – Develop Fire Department Clinic Template**
Chandler Fire Department Re-Branding

The Nation started seeing professional, full-time paid fire departments organized in the mid 1800’s. Since that time, the breadth of emergency response from fire departments has grown tremendously. Departments that were initially organized for fire response, now respond to fire, medical, technical rescue, hazardous materials, and other types of emergency calls. While the roles have expanded, the department names have widely remained the same: The Fire Department.

Another way to consider a department name is as a department brand. The fire department brand is unique, in that it has been built up over the last 150 years of emergency responses and is nearly universally associated with the most positive attributes regardless of the municipality or district managing it. Although there are many benefits associated with the brand equity enjoyed by fire departments, the simplicity of the name itself breeds confusion as to the department’s role in the community. Conversely, a brand name that identified all of the fire department’s roles in a community would be lengthy and probably similarly confusing.

Nevertheless, fire departments throughout the Nation are recognizing the need for a name change that more correctly identifies their department’s roles and functions. Kevin Lane Keller, a professor of marketing at Dartmouth College in Hanover, N.H., describes a name change, or “rebranding as a part of repositioning without destroying existing brand loyalty” (Keller). Similarly, fire departments are now challenged with the development of a name that better reflects the service provided by the organization while maintaining the brand equity associated with the fire department.

As part of the rebranding effort, items such as department name, authority to operate, department responsibilities, and organization should all be evaluated.

Chandler City Code

Fire Protection:

There shall be a Fire Department, headed by a Fire Chief who shall be responsible for the direction of all firefighting, fire-prevention and emergency medical aid service activities of the City and be responsible for planning and developing programs to protect the life and property in the City from both natural and manmade emergencies.

Figure 7-Current Chandler City Code
Fire Department Re-branding Objectives (5)

- **Objective 5.1 – Chandler Fire Department re-branding**
  - **Action Item 5.1.1** – Develop new department name that more accurately reflects the scope of responsibility.
  - **Action Item 5.1.2** – Develop new department logo to include new name
  - **Action Item 5.1.3** – Develop marketing campaign and roll-out for name change

- **Objective 5.2 – Evaluate the Fire Departments authority to operate, organizational structure and responsibilities to provide community health services.**
  - **Action Item 5.2.1** – Evaluate the department’s authority to operate the services suggested within this plan and propose an Ordinance change to the City Code if needed.
  - **Action Item 5.2.2** – Evaluate the department’s organizational structure to support the services suggested within this plan and propose a structural change if necessary.
Conclusions

The citizens of Chandler, more than ever before, are facing a rapidly changing healthcare environment. An environment that requires appropriate healthcare access and follow through on Physician directed patient care plans. While we are seeing many healthcare providers and organizations working hard to predict and fill future healthcare needs, we can be sure of holes or service gaps in the system that will be stumbling blocks or even fail points of the community members as they try to meet their healthcare needs.

As stated before, the City of Chandler Fire Department is committed to overall community health. The Community Health Service Delivery Model outlined in this document shows where and how Fire Service Based EMS can be a public resource to community members in filling these healthcare service gaps.

In the wake of a public outcry for more efficient and accountable use of public resources, the Chandler Fire Department is seeking to expand beyond its traditional Fire Department Emergency Response Model. Our vision is for Fire Service Based EMS to be viewed and utilized in an expanded role through the implementation of this Community Health Service Delivery Model. Focusing on Prevention, Response, Patient Care Plans and Patient Follow-up will ensure all community members benefit from an improvement in the delivery of care, improved health at a reduction in overall healthcare cost.
Appendix

Chandler Fire Department EMS Work and Focus Group Membership

EMS Workgroup
Fire Chief Jeff Clark – Co-Chair
L493 Trustee Jeff West – Co Chair

Membership: Scott Wall, Darren Nissen, Suzanne Vargo, Val Gale, Tom Dwiggins, Keith Hargis, Keith Welch, Tim Klug, Phil Gaiser, Damian Gomez, Josh Whitney, Jessica Westmiller, Dr. Josh Zeidler

Treat and Refer Focus Group
Suzanne Vargo - Lead
Membership: Avery Armstrong, Britt Burns, Cody Townsend, Paul Merrill

Community Paramedic Curriculum
Keith Hargis - Lead
Membership: Casey Lopez, Trianna Dowrick, Jim Spengler, BJ Wade, Martin Hernandez

Fire Department Clinics
Jeff West - Lead
Membership: Jordon Miller, Casey Johnston, Adam McGeorge, Kent Keller, Adrian Thomas, Damian Gomez, Brandon Lenox

Political Considerations
Scott Wall - Lead
Membership: Shelby Bennett, Duke Burks, Carter Unger, Brandon Johnson

Targeted Prevention Strategies
Darren Nissen - Lead
Membership: Dan Goldstein, Eric Kemp, Tommy Sagnella, Ken Jackson, Jason Underwood

Behavioral Health Emergencies
Jessica Westmiller - Lead
Membership: Dan Glen, Scott Cowden, Ronnie Wetch, Brigid O’Neil, George Pastore

Public Health vs. EMS
Tom Dwiggins – Lead
Membership: John Lerew, Jason White, Allen Blaine, Steve Nicoll, Scott Chapman, Shane Kelber

Emergent EMS
Val Gale – Lead
Membership: Josh Stoltz, Blas Minor, Chad Goswick, Bo Jenkins

Data Collection and Implementation
Keith Welch - Lead
Membership: Chris Savage, Sylvia Chacon, Sam Ebersole, Carlos Vargas, Billy Evans
Bibliography


**Glossary**

**Call Taker** – This person is the initial point of citizen contact in the fire department dispatch center. He/she is responsible to quickly interview the patient and use algorithms to assign nature codes to the call.

**Business Rules** – Business Rules are Response Levels that are assigned to various Nature Codes, based on the jurisdiction of the EMS call.

**Nature Code** – As calls are quickly triaged in the dispatch center by Call Takers, they are assigned a Nature Code. This Nature code is used to assign units to the call based on pre-determined Business Rules.

**Response Level** – Response Level refers to the number and types of apparatus and crews assigned to a specific call. This may be changed by the Dispatch Center or First Responders as additional information is obtained.

**Response Mode** – Response Mode refers to the urgency of the response. For purposes of this paper, only two Response Modes are used, **Code 2** or non-emergent (no traffic preemption or warning devices) and **Code 3** or emergent (full traffic preemption with warning lights and sirens).