

Arizona MIH/CIP Data Crosswalk Project

Manuscript by Taylor A. George MHS, NR-P*

Submitted for Publication September 2016

A special thanks and great appreciation to:

Matthew Eckhoff MPH, Les Caid MSL, Melanie Mitros PhD,**

and all of the Arizona Fire and EMS agencies who provided collaborative input.

*Taylor George is a Doctoral Student and Research Associate at The University of Arizona College of Public Health; as well as a Paramedic and former EMS Administrator

**Matthew Eckhoff is the Community Integrated Paramedicine Program Director for the Rio Rico Medical & Fire District; Les Caid is the Chief Officer of the Rio Rico Medical & Fire District; Melanie Mitros is the Director of Strategic Community Partnerships at Vitalyst Health Foundation

Table of Contents

Executive Summary.....	3
Background and Introduction.....	4
Arizona MIH/CIP Programs.....	5
Arizona MIH/CIP Data Crosswalk.....	5
Arizona CIP Data Collection Methods and HIE Implications.....	6
Arizona CIP Data Metrics Collected and Outcomes Measured - Overview.....	7
Arizona CIP Data Metrics Collected and Outcomes Measured - Discussion.....	8
National MIH/CP Outcome Measures Project.....	11
Conclusion.....	12
Table 1 - Survey Data General Overview.....	14
Table 2 - Detailed Data Collection Metrics.....	15
Figure 1 - EMS & Arizona HIE.....	16
Figure 2 - Design of a Triple Aim Enterprise.....	17
References.....	18

Executive Summary

Arizona is on the front line of the national Mobile Integrated Healthcare (MIH) movement with approximately 30 Community Integrated Paramedicine (CIP) programs statewide (including those in development), a number that seems to be growing almost every day. Early results of Arizona's community paramedicine programs show promise in achieving the 'Triple Aim' of healthcare reform: costs are going down, patient satisfaction is going up, and the overall health of the communities' populations is improving.

The Crosswalk Project (this publication) is intended to identify currently-collected data elements and assess common themes and core metrics among Arizona's CIP programs while also identifying gaps in data collection; with the goal being an actionable document that can be used as an advocacy tool to promote uniform core data collection among Arizona's CIP programs.

To initiate the Crosswalk Project, an electronic survey was distributed to Arizona Fire/EMS agencies with some type of involvement in CIP. Agencies were asked to provide information regarding (a) CIP Program Type, (b) Data Collection Methods, (c) Data Metrics Collected, and (d) Outcomes Measured. Of those contacted, 27 agencies participated, with 16 of those 27 indicating current/ongoing CIP programs. Results of this survey can be seen in the attached Tables, with detailed analysis and discussion found throughout this document. A review of this information will show the lack of standardization in Arizona CIP data - with a wide variety of metrics collected and fluctuation in collection practices between Arizona CIP programs.

We posit that in order to achieve functional sustainability and self-sufficiency in the new world of Value-Based Purchasing, all of the state's CIP programs should move towards the collection of standardized data sets and standardized outcomes measurements. These data sets and outcomes measurements should be a combination of state/region-specific metrics combined with consensus-based metrics that include the national MIH/CP Outcome Measures Project, as well as Centers for Medicare and Medicaid Services (CMS) Quality Measures, Institute of Medicine (IOM) Quality Domains, Institute for Healthcare Improvement (IHI) Triple Aim Measures, and other relevant validated patient-centered health outcomes evaluative tools. All data sets and outcomes measurements should be targeted evaluation metrics used to show alignment with and achievement of the IHI Triple Aim.

Background and Introduction

In the modern healthcare landscape, innovation and integration are key to achieving the Triple Aim¹ of (1) improving the health of populations, (2) improving the patient experience of care, and (3) reducing and/or controlling per capita cost. In no other corner of healthcare are these efforts more apparent as in Emergency Medical Services (EMS) systems. The Fire/EMS industry is transforming itself in a revolutionary manner, transitioning from a pure "you call, we haul" emergency response model into a comprehensive system of Mobile Integrated Healthcare² (MIH) - taking a patient-centered approach to delivering a wide range of health services in the out-of-hospital environment with full coordination of a vast array of health and social services entities.

On the national stage, customized MIH programs have been developed to serve community-specific needs across the country and have proven to be "successful" when looking at projected financial metrics (primarily *cost avoidance*) and operational outcomes (such as decrease in ambulance utilization). For example, a modelled high-frequency user program in Fort Worth, TX resulted in a significant decline in ambulance and emergency department use over a one year period, resulting in a charge decrease of \$1.9 million and a freeing-up of ~14,000 bed hours;³ a modelled mental health and substance abuse alternative destination program in Wake County, NC resulted in freeing 2,400 emergency department bed hours within the first six months of program implementation by transporting 167 patients to more appropriate facilities;⁴ and a modelled full-spectrum comprehensive system in Reno targeted frequent users, alternative destinations, and a nurse triage line, with 18 months of preliminary data suggesting that the program has reduced the number of unnecessary emergency department visits by 1,795, reduced unnecessary ambulance transports by 354, and prevented 28 hospital readmissions - altogether totaling approximately \$7.9 million in charge avoidance and saving a projected \$2.8 million in Medicare payments.⁵

But the question remains: What is the long-term impact of these programs and how does the Fire/EMS industry create MIH sustainability and self-sufficiency? Up to this point, many - if not most - major MIH programs have been grant-funded or self-funded with limited timelines and/or pilot phases. At some point these financial streams will end, but the transformative MIH programs should not. In order to move forward, the MIH movement must become a standardized practice that is outcomes-oriented in-line with the evolving healthcare industry. It will no longer be enough to simply monitor financial and operational implications, we *must* show our impact on patient-specific health outcomes that influence the population health status while subsequently proving that our delivery mechanism(s) enhance the patient experience and reduce total cost.

Arizona MIH/CIP Programs

Arizona is on the front line of the national MIH movement with approximately 30 Community Integrated Paramedicine (CIP) programs⁶ statewide (including those in development), a number that seems to be growing almost every day. In February 2016, St. Luke's Health Initiatives (now Vitalyst Health Foundation) published a Policy Primer⁶ that reviewed the backgrounds and operational priorities of our state's 6 largest programs (Buckeye, Chandler, Mesa, Rio Rico, Scottsdale, and Tempe). The conclusionary statement of the primer summed-up our state's efforts well: *"Early results of Arizona's community paramedicine programs show promise in achieving the 'Triple Aim' of healthcare reform. Costs are going down, patient satisfaction is going up, and the overall health of the communities' populations is improving"*.

Arizona MIH/CIP Data Crosswalk

The Arizona MIH/CIP Data Crosswalk Project (this publication) is not simply a re-hashing of the generalized program attributes discussed in the aforementioned policy primer; instead, we will be diving deep into the primer's conclusionary statement - examining what it means when we say *"results"*, and discussing the implications for sustainability and self-sufficiency. The Crosswalk Project is intended to identify currently-collected data elements and assess common themes and core metrics among Arizona's CIP programs while also identifying gaps in data collection.⁷ The goal of this publication is to be an actionable document that can be used as an advocacy tool to promote uniform core data collection among Arizona's CIP programs.⁷

To initiate the Crosswalk Project, an electronic survey was distributed to Arizona Fire/EMS agencies via a private MIH/CIP contact list maintained by Vitalyst Health Foundation and Rio Rico Medical & Fire District. Agencies were asked to provide information regarding (a) CIP Program Type, (b) Data Collection Methods, (c) Data Metrics Collected, and (d) Outcomes Measured. While an attempt was made to include all Arizona agencies involved in CIP in any capacity, not all agencies responded to the survey questionnaire. Of those contacted, 27 agencies participated, with 16 of those 27 indicating current/ongoing CIP programs. Results of this survey can be seen in the attached Table 1 - Survey Data General Overview.

For those respondents that indicated current/ongoing CIP programs, a request was sent to the agency point of contact to provide detailed information (to include forms, specific metrics, etc.) relating to data collection practices. This information was requested in order to compile a listing of line-item metrics being collected by programs across the state. Of those 16 agencies, 7 responded with the

requested information prior to the established deadline. Research staff performed an analysis of all documentation received and aggregated it into the attached Table 2 - Detailed Data Collection Metrics.

For validity's sake, it is important to note that not all agencies contacted actually participated; and that not all agencies who participated were able/willing to share/disclose all requested information. As such, the associated analysis and following comprehensive report could only include the information that was received; thus, we acknowledge the fact that there may be programs and/or specifics that we are not aware of and/or were not able to take in to account.

Arizona CIP Data Collection Methods and HIE Implications

As can be seen in Table 1 - Survey Data General Overview, 7 different data collection platforms are employed by the participating agencies who indicated current/ongoing CIP programs. Of the 14 agencies who indicated current/ongoing CIP programs and who provided information for this category: 9 agencies utilize one of five commercial EMS-based Electronic Patient Care Report (ePCR) platforms [64.29%]; 2 agencies utilize commercial clinical practice Electronic Health Records (EHR) [14.29%]; and 3 agencies utilize paper reports that are later entered into a proprietary in-house database [21.43%].

Of those agencies utilizing an ePCR suite, Zoi has the highest frequency with 4 agencies using; followed by ImageTrend and Zoll, each with 2 agencies using; and ESO Solutions with 1 agency using. Zoi, ImageTrend, and Zoll all offer CIP -specific applications for enhanced data collection;⁸⁻¹⁰ while ESO is currently in transition from a traditional ePCR platform to a full EHR.¹¹ The key distinction between traditional EMS ePCR platforms and an EHR or ePCR with CIP widget is the user interface and record-keeping design being patient-centric with the latter two, versus incident-centric with the former.¹⁰ In the landscape of CIP, the ability to maintain patient-centric electronic data is key to integrated service delivery; with *integration* being used to describe the programmatic ability to interface with other health services databases - such as hospitals, primary care offices, mental/behavioral health facilities, etc. All of the reviewed EHRs and ePCRs with an CIP widget claim the ability to be fully integrated into the care spectrum;⁸⁻¹³ however, based on our interpretation, those platforms that are EMS/ CIP -specific appear to maintain the greatest spectrum of interoperability and boast the widest array of Health Information Exchange (HIE) applications for our industry.

HIE allows for secure real-time electronic transmission of health-related data across multiple organizations and charting platforms, providing more effective continuity of care and data sharing.¹⁴ To achieve this level of interoperability, it is important that CIP programs verify that their electronic data collection platforms are "HL7 Compliant"¹⁵, meaning that the platform is able to *translate* its electronic

data into the latest version of electronic health language for distribution to outside platforms. All of the reviewed EHRs and ePCRs with an CIP widget claim this capability. As the CIP movement continues to advance, HIE capability will play a vital role in our industry's ability to achieve the Triple Aim¹, as well as our industry's ability to fully integrate into the Arizona HIE Strategic Plan.

While states across the country are in various stages of HIE development and EMS data integration, in 2011 the Arizona Governor's Office of Health Information Exchange (GOHIE) established a strategic plan¹⁶ with a vision to "*implement a sustainable statewide Health Information Exchange (HIE) that enables the sharing of health care data across organizational boundaries to improve patient safety, security, quality, and cost*". As of this writing, the Arizona HIE captures ~90% of hospital discharge data and continues to build its infrastructure for the integration of community providers, with 3 Fire-based EMS agencies already linked and many others interested.¹⁷ Per Arizona HIE staff, there are a variety of benefits for EMS/ CIP providers, including: (a) improved utilization of the 911 system by way of communication with a patient's primary care provider or linkage to appropriate navigation resources; (b) supporting coordination of post-acute care; (c) ability to use patient health information to support patient management during out-of-hospital encounters, including primary care information, discharge instructions, and pharmacy information; (d) ability to communicate in a secure manner with a patient's health care providers; and (e) bidirectional linkage of EMS/ CIP and hospital outcome data (see Figure 1 - EMS & Arizona HIE).^{17,18} In addition, the power of HIE can also be harnessed to identify likely candidates for CIP enrollment via monitoring of patient and population health data; such as is successfully being accomplished in Maricopa County by the Health Services Advisory Group (HSAG) in partnership with local Fire/EMS agencies.¹⁹

Arizona CIP Data Metrics Collected and Outcomes Measured - Overview

As can be seen in Table 1 - Survey Data General Overview, agencies were asked to indicate which general categories of data metrics that they currently collect and monitor. Of the 14 agencies who indicated current/ongoing CIP programs and who provided information for this category: 10 indicated collection of patient referral information [71.43%]; 14 indicated collection of patient demographic information [100%]; 11 indicated collection of patient satisfaction information [78.57%]; 11 indicated collection of medication adherence information [78.57%]; 5 indicated collection of pre-enrollment healthcare utilization information [35.71%]; 11 indicated collection of enrollment period healthcare utilization information [78.57%]; and 4 indicated collection of post-enrollment healthcare utilization information [28.57%].

As can be seen in Table 1 - Survey Data General Overview, agencies were then asked to indicate which general categories of outcomes measures they currently collect and monitor. Of the 16 agencies who indicated current/ongoing CIP programs and who provided information for this category: 13 indicated collection of EMS system utilization rates [81.25%]; 9 indicated collection of hospital readmission rates [56.25%]; 11 indicated collection of customer satisfaction information [68.75%]; 9 indicated collection of cost of care information [56.25%]; and 11 indicated collection of patient outcomes information [68.75%].

For those 16 agencies that indicated current/ongoing CIP programs in the general survey, a direct request was sent to the agency point of contact to provide detailed information (to include forms, specific metrics, etc.) relating to data collection practices. 7 agencies responded with detailed information prior to the established deadline and these results can be seen in Table 2 - Detailed Data Collection Metrics. A review of this table will show the wide variety of metrics collected and the fluctuation in collection practices between agencies.

Arizona CIP Data Metrics Collected and Outcomes Measured - Discussion

The goal of the Crosswalk Project is the compilation and analysis of Arizona CIP programs' data collection metrics and outcomes measures. We posit that in order to achieve functional sustainability and self-sufficiency in the new world of Value-Based Purchasing,²⁰ all of the state's CIP programs should move towards the collection of standardized data sets and standardized outcomes measurements. These data sets and outcomes measurements should be a combination of state/region-specific metrics combined with consensus-based metrics that include the national MIH/CP Outcome Measures Project,²¹ as well as Centers for Medicare and Medicaid Services (CMS) Quality Measures,²² Institute of Medicine (IOM) Quality Domains,²³ Institute for Healthcare Improvement (IHI) Triple Aim Measures,²⁴ and other relevant validated patient-centered health outcomes evaluative tools. All data sets and outcomes measurements should be targeted evaluation metrics used to show alignment with and achievement of the previously-discussed Triple Aim¹.

In order to mold Arizona's CIP programs into a fully-functioning Triple Aim Enterprise²⁵ (see Figure 2 - Design of a Triple Aim Enterprise), we must begin by defining what "*quality*" means to our industry and our patients. We think it is fair to say that our industry's meaning of quality should be equivalent to that of the rest of healthcare - in that outside of system performance metrics and measurements of projected cost avoidance (historical MIH/CIP data capture), we must truly begin to focus on the health outcomes of individual patients and community populations combined with their

experience of care. At our core, Arizona's CIP programs combine health care, public health, and social services while impacting individuals/families, primary care, integration, cost reduction, and prevention / health promotion - all of the key tenants of a successful Triple Aim Enterprise.²⁵ We just need to hone our system-level quality metrics in order to *prove* it. We believe that Arizona's CIP programs are on the right path and we look to continue towards achieving 100% core data capture in all data collection categories and outcomes measurements discussed throughout this publication (and as seen in the attached tables).

Patient Referral Information and Patient Demographics are necessary for identifying our patients and for understanding where they are coming from and why - in this sense, we can better identify some of the root-causes of our patient care interactions while maintaining a point of contact for future follow-up, with both the individual patient and the source(s) that referred them. This helps provide loop closure for our care cycle.

Collection of Medication Adherence information should be performed for all patients enrolled in CIP programs, as this information directly ties to the Aims¹ of Population Health and Per Capita Cost. Medication Adherence is defined as "*the patient's conformance with the provider's recommendation with respect to timing, dosage, and frequency of medication-taking...*".²⁶ In essence, CIP programs should be verifying that patients are following the pharmacological plan of care as prescribed by their physician(s). The Centers for Disease Control and Prevention (CDC) estimate that 20%-30% of prescriptions are never filled; and that of those filled, ~50% of patients do not adhere to full continuity.²⁶ This can be inferred to have a possible direct causal relationship with decompensating health status and/or exacerbation of health conditions leading to EMS/ CIP patient contact;²⁷ thus medication adherence is equivalent to preventative measures for our industry. In addition, verifying medication adherence can also impact projected cost reductions as non-adherence is estimated to cost ~\$2,000 per patient²⁶ in annual physician visits. It is important to note that Medication Adherence *is not* Medication Reconciliation. Medication Reconciliation refers to the process of avoiding inconsistencies in pharmacological therapy across multiple providers and transitions in care, thus acting to prevent adverse drug events.²⁸ Medication Reconciliation includes an in-depth review and comparative analysis of medications; and as such, should only be performed by a physician or pharmacist. For further information regarding Medication Adherence and Medication Reconciliation, Arizona CIP programs can contact Dr. Kelly Boesen with the Arizona Poison and Drug Information Center (AzPDIC).²⁹ AzPIC provides services to all 14 Arizona counties outside of Maricopa, and is currently providing ongoing medication management support to patients enrolled in Santa Cruz County CIP programs.³⁰

While a majority of Arizona CIP programs indicated collection of CIP Enrollment Period Healthcare Utilization Information, less than half of the agencies collect Pre-Enrollment and/or Post-Enrollment Healthcare Utilization Information. It is important for all agencies to collect all 3 phases of utilization data in order to longitudinally track/compare usage rates before, during, and after enrollment - thus possibly verifying the impact of CIP programs on access/usage of care. Agencies can look to simply track: (a) number of EMS calls; (b) number of ED visits; (c) number of inpatient admissions; and (d) number of PCP visits - looking at 6 months pre-enrollment, during the course of enrollment, and 6 months post-enrollment. In addition to simple rates of utilization, these metrics factor heavily into cost of care projections - be it cost avoidance or cost effectiveness (avoiding unnecessary ambulance transport and ED visits, avoiding hospital readmission penalties, administering medications in-home rather than in-hospital, etc.). As such, Healthcare Utilization Information directly ties to the Aims¹ of Population Health and Per Capita Cost.

Patient Satisfaction / Customer Satisfaction information is also necessary for all CIP programs to capture because these data metrics directly impact the Aim¹ of Experience of Care. The only true way to collect this metric is to directly ask patients (or their caretaker/family) about their experience(s) with CIP programs. This can be achieved on an episodic basis or at the conclusion of the full enrollment period. In the brick and mortar healthcare environment, patient satisfaction is not only tied to 25% of reimbursement under Value-Based Purchasing for FY2016,³¹ it has also been shown to correlate with patient outcomes.³² According to IHI, Experience of Care should be measured via (a) standard questions from patient surveys; and/or (b) set of measures based on key IOM dimensions.^{23,24} Of the 7 agencies that provided detailed information to the Crosswalk Project, 4 indicated the use of follow-up patient surveys. Upon review, these surveys appear to meet the minimums established by IHI; however, we would like to note that Mesa Fire & Medical Department appears to be the only participating agency using an EMS/ CIP -based version of the standardized HCAHPS survey (Hospital Consumer Assessment of Healthcare Providers and Systems)³³ promulgated by CMS. HCAHPS is a validated patient experience surveillance tool that is currently tied to hospital reimbursement; and as such, we believe this to be an invaluable tool for CIP programs to measure Experience of Care because findings can be interpreted synonymously with hospitals, further integrating our care methodology into the greater healthcare landscape.

Last, but definitely not least, and arguably more important than all - Patient Outcomes. This is what we are here for... This is what our industry was founded on... *Improving and Saving Lives*. While almost 70% of participating agencies with current/ongoing CIP programs indicated collection of Patient

Outcomes information, with only 7 agencies providing limited detailed information upon request, it is difficult to fully determine the level and specificity of patient outcomes tracked. Patient Outcomes should ideally refer to changes in patient health/functional status as a result of enrollment in an Arizona CIP program - which directly corresponds with the Aim¹ of Population Health. Per IHI,²⁴ Population Health should be measured via: (a) validated health evaluation tools, such as SF-12,³⁴ HRQOL-14,³⁵ DQOL-B,³⁶ Minnesota Living with Heart Failure Questionnaire,³⁷ etc.; (b) composite health risk appraisal score; (c) disease burden, incidence, and prevalence; and (d) mortality. For our purposes, this can be condensed-down to the need to collect pre- and post- enrollment disease-specific biometric/vitals data and disease-specific quality of life data along with the previously discussed healthcare utilization information metrics. In brick and mortar institutions, direct/specific patient outcomes measures constitute 40% of reimbursement under the Value-Based Purchasing model for FY2016.³¹ At this time, based on the limited information received, it appears that Rio Rico is the only agency monitoring disease-specific patient outcomes utilizing validated measurement tools. *We posit that the primary driver in MIH/CIP sustainability and self-sufficiency will be showing that we can directly impact disease-specific patient/population-level health outcomes at a reduced per capita cost.*

National MIH/CP Outcome Measures Project

The National MIH/CP Performance Measures Project is a national consortium of administrative and clinical experts involved in MIH programs across the country who have come together to "*describe performance measures which encourage achieving the optimum sustainability and utilization of patient centered, mobile resources in the out-of hospital environment and achiev[ing] the Institute for Healthcare Improvement's Triple Aim*".²¹ Active project participants from Arizona include: Arizona Department of Health Services; Chandler Fire, Health, & Medical Department; Mesa Fire & Medical Department; The University of Arizona; and Vitalyst Health Foundation (formerly St. Luke's Health Initiatives) - with Dr. Gary Smith of Mesa Fire & Medical being a member of the *Core Measures Mastermind Group*.³⁸ The prime driver of the project is the development of uniform measurement tools in order to build an evidence base for sustainability.³⁹ Arizona CIP programs should strive to model their minimum core data metrics off of those provided by this consortium.

The National MIH/CP Performance Measures Project has created a publically-accessible MIH Measurement Strategy Overview⁴⁰ that clearly defines 44 MIH program measures. 18 of the measures are considered "Core Measures" and are defined as "*essential for program integrity, patient safety, and outcome demonstration*"; 4 of the measures have been identified by the Center for Medicare and

Medicaid Improvement as "*the four primary outcome measures for healthcare utilization*"; 4 of the measures are considered "*mandatory to be reported in order to classify the program as... bona-fide MIH...*"; and the remaining 18 measures have been identified by active MIH programs as being of "*highest priority to their healthcare partners*".⁴⁰

Based on the limited detailed data received from Arizona CIP programs as part of the Crosswalk Project, it is difficult to evaluate our state's adherence to these consensus measures. As such, a truly valid exhaustive detailed review and comparison with the National MIH/CP Performance Measures Project is unable to be completed at this time. That being said, a general high-level analysis revealed the following discussion points.

9 of the 18 *Core Measures* fall under the domains of *Utilization* and *Cost of Care* - focusing on (a) ambulance transports, (b) ED visits, (c) hospital admissions/readmissions, and (d) the projected cost savings associated with all of the above.⁴⁰ An additional 5 of the 18 *Core Measures* fall under the domain of *Quality of Care & Patient Safety* - focusing on (a) primary care utilization, (b) care plan development, and (c) adverse outcomes.⁴⁰ As discussed in the previous section, while ~80% of Arizona CIP programs monitor EMS utilization, only ~55% monitor hospital admission/readmission and/or cost of care (see Table 1); and it appears that only 2 agencies specifically monitor primary care utilization (see Table 2). However, it is possible that agencies are monitoring these metrics as part of Healthcare Utilization Information (see Table 1), although only 4 agencies [25%] indicated monitoring all three phases of pre-, during-, and post- enrollment Healthcare Utilization Information - for which primary care, EMS, and hospital utilization fluctuations would also be associated. On a more positive note, out of the 7 agencies that provided detailed information to the Crosswalk Project, 5 appear to monitor care plan development and goals [71.43%] (see Table 2); but of concern is the fact that none of the 16 Arizona CIP programs appear to *specifically* track adverse outcomes as a result of CIP program intervention - although this could simply be a matter of adverse outcome monitoring being combined with Healthcare Utilization Information.

Conclusion

In the modern healthcare landscape, innovation and integration are key to achieving the Triple Aim¹ of (1) improving the health of populations, (2) improving the patient experience of care, and (3) reducing and/or controlling per capita cost. Arizona CIP programs are well on their way to successfully demonstrating their impact in those domains; however, work still remains to be done regarding data collection and outcomes measurements. We posit that in order to achieve functional sustainability and

self-sufficiency in the new world of Value-Based Purchasing,²⁰ all of the state's CIP programs should move towards the collection of standardized data sets and standardized outcomes measurements. These data sets and outcomes measurements should be a combination of state/region-specific metrics combined with consensus-based metrics that include the national MIH/CP Outcome Measures Project,²¹ as well as Centers for Medicare and Medicaid Services (CMS) Quality Measures,²² Institute of Medicine (IOM) Quality Domains,²³ and Institute for Healthcare Improvement (IHI) Triple Aim Measures²⁴. Moving forward, we must show our positive impact on patient-specific health outcomes that influence the population health status while subsequently proving that our delivery mechanism(s) enhance the patient experience and reduce total cost. Then, and only then, will Arizona CIP programs have achieved sustainability and self-sufficiency.

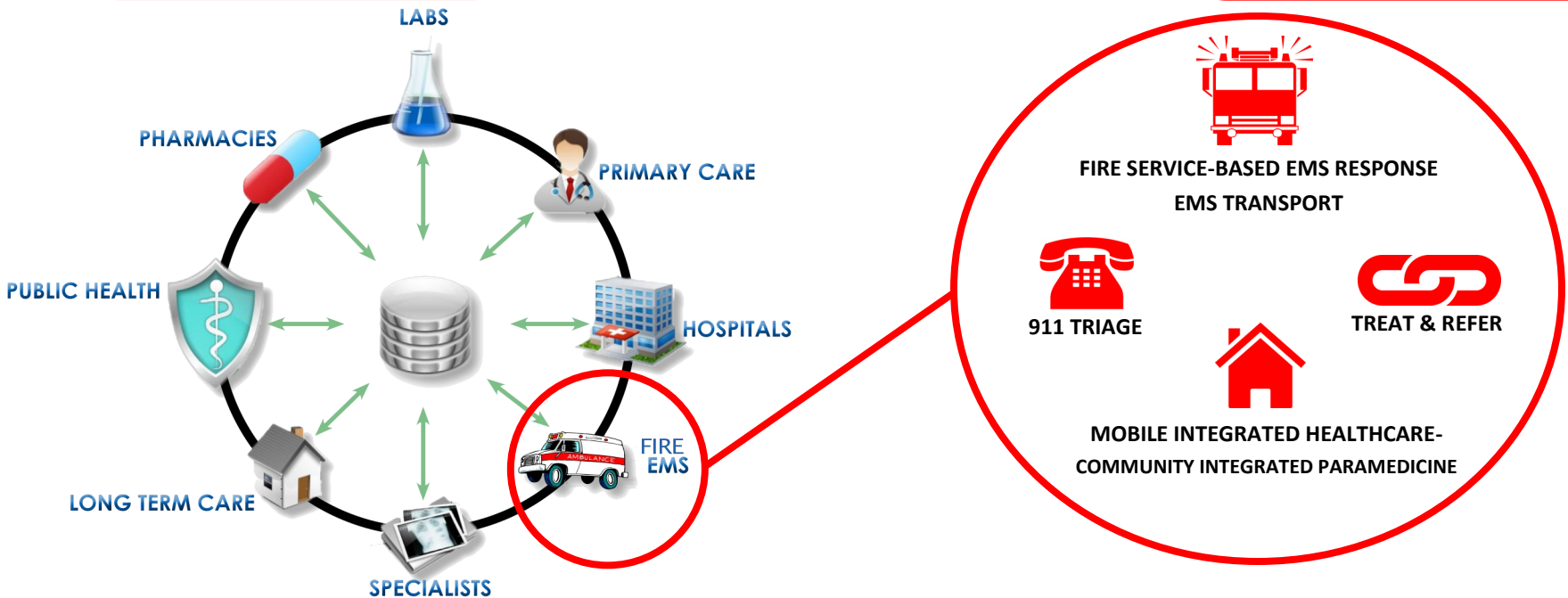
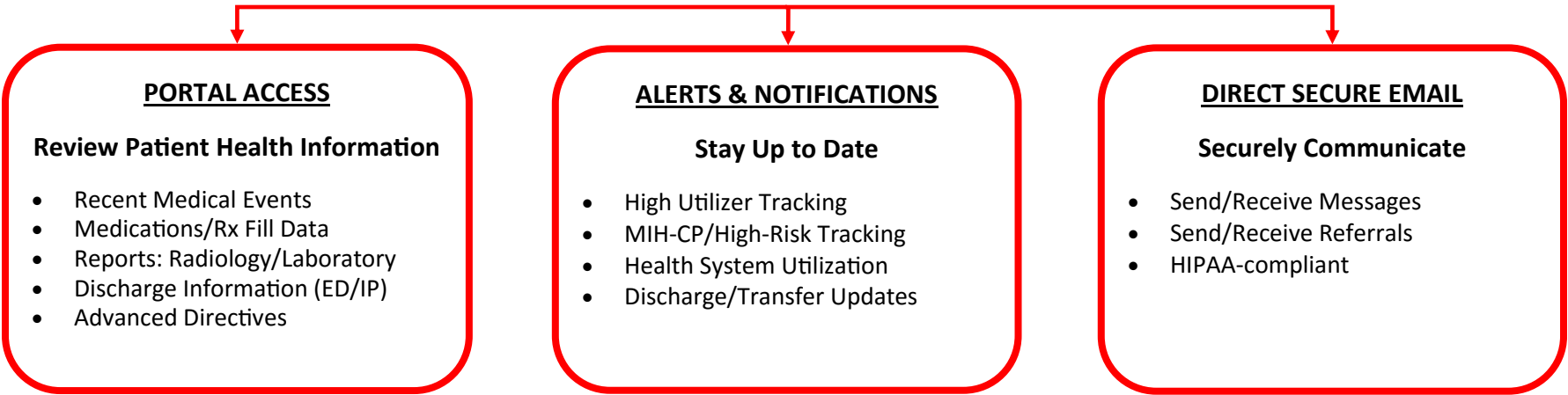
TABLE 1 - SURVEY DATA GENERAL OVERVIEW

		Crosswalk Project Agencies with CIP/MIH Programs (including those in development)																											
		Avra Valley Fire	Buckeye Fire	Bullhead Fire	Central Arizona Fire	Chandler Fire	Colorado City Fire	Copper Canyon Fire	El Mirage Fire	Florence Fire	Golder Ranch Fire	Goodyear Fire	Green Valley Fire	Guardian Med Transport	Mesa Fire	North County Fire	Peoria Fire	Prescott Fire	Rio Rico Fire	Somerton - Cocopah Fire	Sun City Fire	Suprise Fire	Timber Mesa Fire	Tucson Fire	Verde Valley Ambulance	Verde Valley Fire	Yarnell Fire	Yuma Fire	
Program Type(s)	None - N/A - Not Provided - In Development			X	X		X	X		X						X	X	X			X							X	X
	High Frequency 911 Utilizer Management	X				X			X			X			X				X	X				X	X				
	Readmission Avoidance Model	X	X								X	X		X	X				X	X			X		X	X			
	911 Triage / Alternate Response Model					X			X						X						X				X				
	Other MIH Model (i.e. NP/PA, Psych, etc.)												X		X					X		X							
Data Collection Method(s)	None - N/A - Not Provided - In Development															X		X		X			X					X	X
	ESO Solutions ePCR									X												X							
	High Plains ePCR						X																						
	ImageTrend ePCR			X	X			X																		X	X		
	MediTouch EHR														X														
	Practice Fusion EHR												X																
	Zoi ePCR		X			X						X		X			X					X							
	Zoll ePCR	X										X																	
Paper (later entered into proprietary database)								X											X					X					
Data Collected	None - N/A - Not Provided - In Development			X	X			X	X							X		X			X		X					X	X
	Healthcare Utilization Info (Pre-Enrollment)													X			X		X	X				X	X				
	Healthcare Utilization Info (During Enrollment)	X	X								X		X	X		X		X	X		X		X	X	X	X	X		
	Healthcare Utilization Info (Post-Enrollment)													X		X		X						X	X				
	Medication Adherence	X	X			X					X	X		X	X		X		X	X					X	X			
	Patient Demographics	X	X			X	X				X	X	X	X	X		X		X	X		X		X	X	X	X		
	Patient Referral Info		X			X	X	X			X		X	X			X		X	X					X	X	X		
	Patient Satisfaction Info	X	X			X					X	X	X	X	X		X		X						X	X			
Outcome(s) Measured	None - N/A - Not Provided - In Development			X	X				X							X		X			X								X
	Cost of Care (Specific)	X				X					X		X	X	X		X		X	X		X							
	Customer Satisfaction	X	X			X		X			X	X	X	X	X		X		X					X	X				
	EMS System Utilization	X				X	X		X		X	X	X	X	X		X		X	X		X		X	X		X		
	Hospital Readmission Rates	X	X					X			X	X			X	X		X		X	X						X		
	Patient Outcomes (Specific)	X	X			X		X			X				X	X		X		X	X		X	X	X				

Fire Service/Emergency Medical Services (EMS) & the Health Information Exchange (HIE)

Through connection to the HIE, fire-service based and other EMS providers may strengthen health system partnerships to transform the way patient care is delivered. HIE tools support fostering increased communication among providers and patients, improving the ability to access and analyze information, and reducing healthcare costs.

Select HIE Tools to Help Meet the IHI Triple Aim:



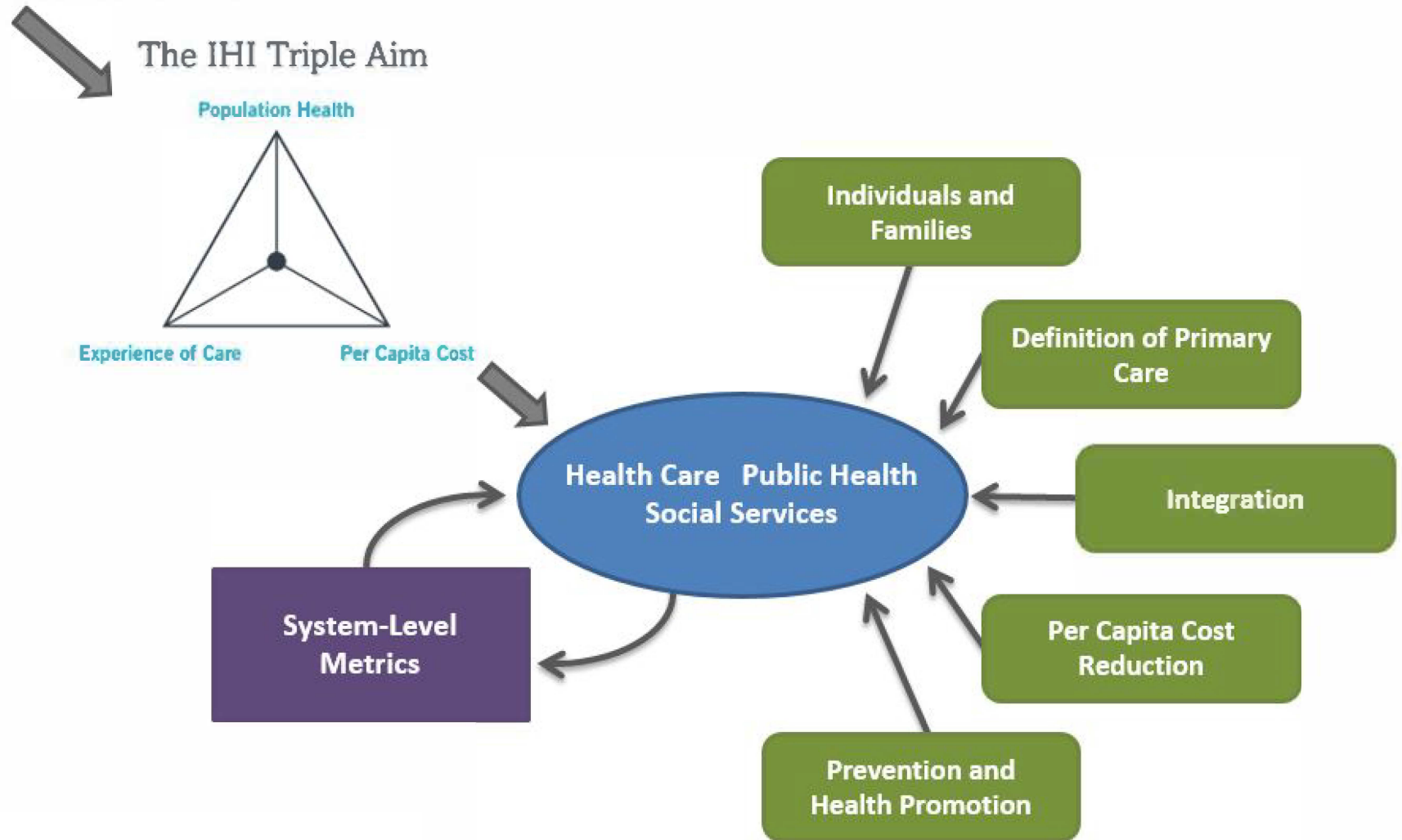
Arizona Health-e Connection is a public-private partnership that improves health and wellness by advancing secure and private sharing of electronic health information.

A statewide non-profit, AzHeC drives the adoption and optimization of health information technology (HIT) and health information exchange (HIE).

George TA. Arizona MIH/CP Data Crosswalk Project. 2016.

FIGURE 2 - DESIGN OF A TRIPLE AIM ENTERPRISE²³

Define "Quality" from the perspective of an individual member of a defined population



References

1. The IHI Triple Aim. Institute for Healthcare Improvement website. Published 2012. Accessed 03 Aug 2016. <http://www.ihl.org/engage/initiatives/tripleaim/pages/default.aspx>
2. What is MIH-CP. National Association of Emergency Medical Technicians website. Published 31 Jan 2016. Updated 05 May 2016. Accessed 03 Aug 2016. https://www.naemt.org/docs/default-source/community-paramedicine/MIH_Vision_02-06-14.pdf?sfvrsn=8
3. Zavadsky M. Trained paramedics provide ongoing support to frequent 911 callers. MedStar 911. Published 13 Jun 2015. Accessed 03 Aug 2016. http://www.medstar911.org/Websites/medstar911/files/Content/1089414/MedStar_AHRQ_Profile_2015.pdf
4. Advanced Practice Paramedics. Wake County Government. Published 01 Oct 2012. Accessed 07 Oct 2015. <http://www.wakegov.com/ems/about/staff/Pages/advancedpracticeparamedics.aspx>
5. Choi BY, Blumberg C, Williams, K. Mobile integrated healthcare and community paramedicine: An Emergency Medical Services Concept. *Annals of Emergency Medicine*. 2016; 67(3): 361-366.
6. St. Luke's Health Initiatives (now Vitalyst Health Foundation). *Fired Up: Community Paramedicine Models Blaze a Trail for Healthcare Delivery Reform*. Arizona Health Futures; Feb 2016.
7. Rio Rico Medical & Fire District. Email communication sent from Matt Eckhoff to Arizona MIH/CIP partners. 16 Jun 2016.
8. Zoi - The Clinical Excellence Information Standard. Starwest Tech International website. Published 2014. Accessed 03 Aug 2016. <http://www.starwesttech.com/zoi/>
9. Community Paramedicine / Mobile Integrated Healthcare. ImageTrend website. Published 2015. Accessed 03 Aug 2016. <http://www.imagetrend.com/solutions-mobile-integrated-healthcare-community-paramedicine/>
10. EMS Mobile Health for Community Paramedicine. Zoll website. Published 2015. Accessed 03 Aug 2016. <https://www.zolldata.com/ems-mobile-health/>
11. Electronic Health Record. ESO Solutions website. Accessed 03 Aug 2016. <http://www.esosolutions.com/our-products/product-suite/ehr/>

12. MediTouch EHR. HealthFusion website. Published 2015. Accessed 03 Aug 2016. <https://www.healthfusion.com/ehr-software/>
13. Drive Better Care More Efficiently. PracticeFusion website. Published 2016. Accessed 03 Aug 2016. <http://www.practicefusion.com/electronic-health-record-ehr/>
14. Health Information Exchange. HealthIT website. Updated 05 Jun 2014. Accessed 03 Aug 2016. <https://www.healthit.gov/HIE>
15. About HL7. Health Level Seven International website. Published 2016. Accessed 03 Aug 2016. <http://www.hl7.org/about/index.cfm?ref=nav>
16. Governor's Office of Health Information Exchange. *Arizona Health Information Exchange Strategic Plan*. State of Arizona; 03 Mar 2011: CFDA# 93.719.
17. Arizona HIE staff. Email communication relayed to author via Matt Eckhoff. 03 Aug 2016. Sourced from: http://azhima.org/annualmeeting/wp-content/uploads/2016/04/AzHeC-Spitzer-Presentation-FINAL_6-16-16_v2.pdf
18. Emergency Medical Services and the Health Information Exchange infographic. Arizona Health-e Connection staff. Email communication relayed to author via Matt Eckhoff. 21 Aug 2016.
19. Health Services Advisory Group CMS Desired Outcomes presentation. Health Services Advisory Group staff. Email communication relayed to author via Matt Eckhoff. 16 Aug 2016. Sourced from: <http://www.azpha.wildapricot.org/Resources/Documents/Barb%20Averyt-%20AZPHA-%20Public%20Health%20Association%20Final.pdf>
20. Hospital Value-Based Purchasing. Centers for Medicare and Medicaid Services website. Updated 30 Oct 2015. Accessed 04 Aug 2016. <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/hospital-value-based-purchasing/index.html?redirect=/hospital-value-based-purchasing/>
21. MIH-CP Outcome Measures Project. MedStar Mobile Healthcare website. Published 2016. Accessed 04 Aug 2016. <http://www.medstar911.org/mih-cp-outcome-measures-project>
22. Quality Measures. Centers for Medicare and Medicaid Services website. Updated 14 Feb 2016. Accessed 04 Aug 2016. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/index.html?redirect=/QualityMeasures/03_ElectronicSpecifications.asp

23. Understanding Quality Measurement. Agency for Healthcare Research and Quality website. Published 2012. Updated 2012. Accessed 04 Aug 2016. <http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/chttoolbox/understand/index.html>
24. IHI Triple Aim Measures. Institute for Healthcare Improvement website. Published 2016. Accessed 04 Aug 2016. <http://www.ihl.org/engage/initiatives/tripleaim/pages/measuresresults.aspx>
25. Design of a Triple Aim Enterprise. Institute for Healthcare Improvement website. Published 2012. Accessed 04 Aug 2016. http://www.ihl.org/Engage/Initiatives/TripleAim/PublishingImages/IHI_DesignofTripleAimEnterprise.JPG
26. Medication Adherence Presentation. Centers for Disease Control and Prevention website. Published 27 Mar 2013. Accessed 04 Aug 2016. <https://www.cdc.gov/primarycare/materials/medication/docs/medication-adherence-01ccd.pdf>
27. Brown MT, Bussell JK. Medication adherence: WHO cares? *Mayo Clinic Proceedings*. April 2011; 86(4): 304-314.
28. Medication Reconciliation. Agency for Healthcare Research and Quality website. Updated Mar 2015. Accessed 04 Aug 2016. <https://psnet.ahrq.gov/primers/primer/1/medication-reconciliation>
29. Arizona Poison and Drug Information Center staff. Email communication relayed to author via Matt Eckhoff. 18 Aug 2016. Sourced from: <http://www.firehouse.com/article/12189548/fire-based-ems-the-shift-toward-community-integrated-paramedicine>
30. Arizona Poison and Drug Information Center CIP partnerships. Email communication relayed to author via Matt Eckhoff 09 Aug 2016. Sourced from: <http://azpoison.com/>
31. US Department of Health and Human Services. *Hospital Value-Based Purchasing Fact Sheet*. ICN 907664. Published Sep 2015. Accessed 04 Aug 2016. https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/Hospital_VBPurchasing_Fact_Sheet_ICN907664.pdf
32. Morris BJ, Jahangir AA, Sethi MK. Patient satisfaction: An emerging health policy issue. *AAOS Now*. Jun 2013. <http://www.aaos.org/AAOSNow/2013/Jun/advocacy/advocacy5/?ssopc=1>

33. HCAHPS: Patient's Perspectives of Care Survey. Centers for Medicare and Medicaid Services website. Updated 25 Sep 2014. Accessed 04 Aug 2016. <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-instruments/HospitalQualityInits/HospitalHCAHPS.html>
34. 12-Item Short Form Health Survey. Rand Corporation website. Accessed 04 Aug 2016. http://www.rand.org/health/surveys_tools/mos/12-item-short-form.html
35. CDC HRQOL–14 Healthy Days Measure. Centers for Disease Control and Prevention website. Updated 26 May 2016. Accessed 04 Aug 2016. http://www.cdc.gov/hrqol/hrqol14_measure.htm
36. Burroughs TE, Desikan R, Waterman B, Gilin D, McGill J. Development and validation of the diabetes quality of life brief clinical inventory. *Diabetes Spectrum*. Jan 2004; 17(1): 41-49.
37. Minnesota Living With Heart Failure Questionnaire. US Department of Veterans Affairs website. Published 10 Nov 2004. Accessed 04 Aug 2016. http://www.queri.research.va.gov/chf/products/hf_toolkit/Minnesota-HF-Questionnaire_Rector.pdf
38. MIH Measures Team. MIH-CP Outcome Measures Project website. Published 01 Apr 2016. Accessed 04 Aug 2016. http://www.medstar911.org/Websites/medstar911/images/MIH_Measures_Team_as_of_April_2016.pdf
39. Measuring the Effectiveness of Mobile Integrated Healthcare Programs. MIH-CP Outcome Measures Project website. Published 2015. Accessed 04 Aug 2016. http://www.medstar911.org/Websites/medstar911/images/MIH_Measures_Overview.pdf
40. Mobile Integrated Healthcare Program Measurement Strategy Overview. MIH-CP Outcome Measures Project website. Published 08 Apr 2016. Accessed 04 Aug 2016. http://www.medstar911.org/Websites/medstar911/images/MIH_Metrics_for_Community_Health_Interventions_-_Post_Comments_Revision_CLEAN_4-8-16.pdf