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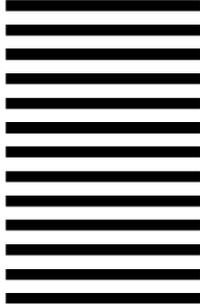
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in Integrated Healthcare Delivery

APRIL 2014

Aligning the Continuum of Care

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Talks to the World**

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Innovative Partnership
Breaks the Cycle of

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02.05.2014

Hospital Update



Patient admitted to the ED with chest pains.

02.08.2014

Pharmacy Update



Patient refilled his prescription on time.

02.10.2014

Cardiologist's Update



Patient missed scheduled monthly check up appointment.

02.14.2014

EMS Update



Patient called 911 after sudden rise in blood pressure.

WHEN INFORMATION IS INTERCONNECTED GREAT THINGS HAPPEN

Community resources are the backbone of **Mobile Integrated Healthcare**. But with so many different types of agencies, medical providers, service systems and ancillary programs, communication between these entities has become a barrier to the development of MIH.

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Messenger

e-Bridge is a suite of HIPAA secure mobile telemedicine solutions providing virtual presence, images and data. Connecting disaster response, healthcare in the field and home, with physicians in the hospital or on the go.

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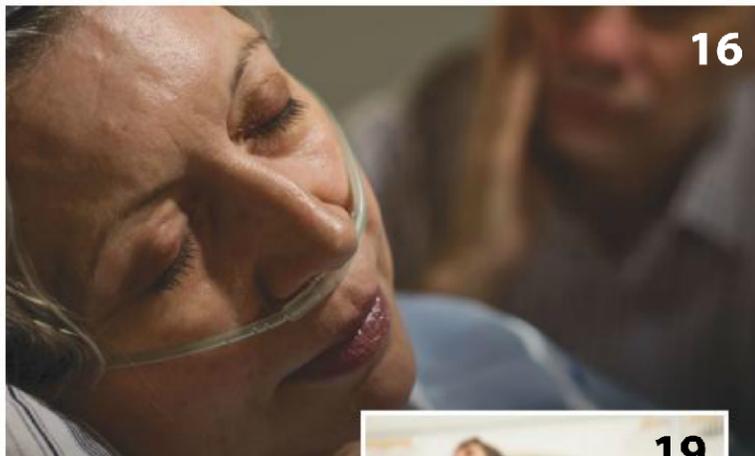
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IDA M. ANDROWICH
PhD, RN-BC, FAAN, Professor of Nursing and Business, Loyola University Chicago

FAYE W. BRYANT
BSN, RN, Acadian Ambulance
Clinical Services Administrator

DANIEL J. CASTILLO
MD, MBA, Medical Director, Division of Healthcare Quality Evaluation

JOHN MEZO
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Envisioning an Integrated Healthcare Future

The world of healthcare is changing. Regardless of opinions of the Affordable Care Act and its inherent benefits and challenges, one thing is clear: We cannot continue on the current path. Within the next 20 years, healthcare costs in the United States are anticipated to account for 25% of the gross domestic product. It is estimated that up to one-third of the dollars spent on healthcare are spent on duplicative or needless assessments, studies and interventions. Thus, there is an opportunity to reduce cost while improving quality of service. This concept is perhaps best captured by the Institute for Healthcare Improvement Triple Aim: Better health, better healthcare and reduced costs.

These changes in healthcare are needed and long overdue. Indeed, there is an incredible opportunity to return the focus of healthcare to the patient via integration of healthcare providers, the intelligent use of data and an outcomes orientation. Ideally this new healthcare landscape will allow for time-appropriate and needs-matched care for all of our patients. This includes primary, secondary, tertiary and quaternary prevention strategies, as well as appropriate response to time-critical injuries and illnesses. We do not (and should not) enter

into this season of change with cost reduction as the primary focus; rather, we know that if we accomplish our goal of high-quality, patient-focused care, we will enjoy the remarkable side effect of cost reduction.

Knowing what is right and making it so are clearly two different enterprises. We are very pleased to launch *Integrated Healthcare Delivery*. This journal endeavors to provide a forum for innovation and a communication portal for those wishing to translate the best science into an integrated, patient-focused environment. Throughout the articles and other content of this journal, it is our commitment to remain patient-centered and outcomes-driven, rather than focused on a single dimension or profession of the healthcare experience. Our goal is to become the interprofessional destination of choice for concepts and studies related to integrated healthcare delivery. Rigorous scientific studies are always welcome, but so are manuscripts describing novel strategies, pilot projects, preliminary experiences, and unique approaches to integration of care across disciplines and spanning professions.

We look forward to an incredible, integrated future. 🏠



Eric Beck, DO, NREMT-P,
Associate Chief Medical
Officer, American
Medical Response and
Evolution Health



Jeff Beeson, DO,
Medical Director,
Emergency
Physicians Advisory
Board, Ft. Worth, TX



Brent Myers,
MD, MPH, FACEP,
Medical Director,
Wake County EMS
System, NC



PUBLISHER

Scott Cravens, EMT-B • 800/547-7377 x1759
Scott.Cravens@IHDelivery.com

ASSOCIATE PUBLISHER - CENTRAL & MID-WEST

Deanna Morgan • 901/759-1241
Deanna.Morgan@cygnus.com

EDITORIAL DIRECTOR

Nancy Perry • 800/547-7377 x1110
Nancy.Perry@IHDelivery.com

MANAGING EDITOR

Teresa McCallion • 206/335-1118
Teresa.McCallion@IHDelivery.com

ASSOCIATE EDITORS

John Erich • 800/547-7377 x1106
John.Erich@cygnus.com

Jason Busch • 800/547-7377 x1397
Jason.Busch@cygnus.com

Heather Caspi • 800/547-7377 x3495
Heather.Caspi@cygnus.com

PRODUCTION SERVICES REPRESENTATIVE

LuAnn Hausz • 800/547-7377 x1616
LuAnn.Hausz@cygnus.com

SENIOR ART DIRECTOR

- PUBLIC SAFETY & SECURITY
Bobbi Buroz • 800/547-7377 x1559
Bobbi.Buroz@cygnus.com

AUDIENCE DEVELOPMENT MANAGER

Sharon Haberkorn • 800/547-7377 x1648
Sharon.Haberkorn@cygnus.com

BUSINESS DEVELOPMENT MANAGER

- WEST COAST
John Heter • 503/889-8609 • Fax 240/823-0243
john.heter@cygnus.com

BUSINESS DEVELOPMENT MANAGER

- NORTH EAST
Cheryl Kaufman • 781/816-3772
Cheryl.Kaufman@cygnus.com

BUSINESS DEVELOPMENT MANAGER

- SOUTH EAST
Ann Romens • 800/547-7377 x1366
Ann.Romens@cygnus.com

ADMINISTRATIVE ASSISTANT

Michelle Endres • 800/547-7377 x1612
Michelle.Endres@cygnus.com

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The way we deliver healthcare outside of the hospital is rapidly changing. Forward thinking practitioners are collaborating with other providers to improve the patient experience while decreasing costs. If you are an executive or medical director who seeks to thrive in the new integrated healthcare paradigm, then join the conversation by subscribing to *Integrated Healthcare Delivery*, and find out how your peers are already improving outcomes with greater efficiency.

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Physio-Control Acquires Sansio to Expand Data Solutions Portfolio

Merger represents major step forward in Physio's integrated data strategy

Physio-Control, Inc., a provider of emergency medical response technologies has entered into a merger agreement with Duluth, MN-based Sansio—a provider of software-as-a-service (SaaS) solutions for the EMS and home healthcare markets.

Physio-Control has offered clinical data and quality improvement tools for many years, from the cloud-based LIFENET system for clinical information collaboration between hospitals and EMS agencies to CODE-STAT data review software for post-event analysis. Sansio has been a pioneer in the development of cloud-based software-as-a-service solutions, such as the HealthEMS ePCR (electronic prehospital

care report), that help healthcare providers improve clinical, operational and financial performance.

“Data acquisition, movement and analysis have become essential to our customers. While our existing data solutions are industry-leading, we believe now is the right time to invest to expand our portfolio and take a much stronger position in this area of our business,” said Brian Webster, president and CEO of Physio-Control. “We envision a future with tighter integration between data systems and medical devices, the seamless movement of data between EMS, hospitals and the home, and system-level analytics that will drive improvement in clinical and operational performance for our customers. We have been very impressed with the talent of Sansio’s

team, as well as their extensive pipeline of new products so we are eager to kick off this partnership.”

“Joining with a world market leader like Physio-Control will give us tremendous ability to expand our healthcare solutions,” says Dale Pearson, CEO of Sansio. “Our data platforms are extremely complementary and Physio-Control’s broad customer base and distribution reach will allow us to focus our attention on bringing our next generation of products to market. Combined, these two industry-leading companies will deliver very powerful solutions for our home health and EMS/fire customers.”

For more, see www.physio-control.com; www.sansio.com.

MedStar Mobile Healthcare Partners With Home Health Provider

Collaboration is designed to help patients access timely care and remain in the home

Klarus Home Care and MedStar Mobile Healthcare have entered into a partnership for services to help Klarus meet patient needs for immediate medical care and help ensure the patient’s medical needs are met in the home environment, circumventing unnecessary trips to the emergency room. The cost of services provided by MedStar is absorbed by Klarus Home Care.

Under this unique program, a Klarus clinician can utilize MedStar’s mobile healthcare paramedics (MHPs) to assess a patient’s needs in the home as a routine service 24 hours a day. Additionally, the addresses of

Klarus Home Care patients who reside in the MedStar service area are registered in the MedStar 9-1-1 computer aided dispatch (CAD) system so that if the Klarus patient calls 9-1-1, a MedStar MHP can respond along with emergency medical service personnel. While on scene, MedStar will provide feedback to the Klarus team to mutually determine the most appropriate resource for the patient’s immediate medical needs.

“We are very excited about partnering with MedStar on this program and believe that the high-level emergency resources offered by MedStar will strengthen our ability to more effectively and efficiently respond to patient needs by providing diag-

nostics and treatment in the home while preventing defaults to care in an emergency room setting which is significantly more costly and taxing for our patients,” explains Klarus administrator Dan Bruce.

This program, believed to be the first of its kind in the nation, is another step in the evolution of emergency medical service providers becoming more integrated into the healthcare system using mobile healthcare resources to meet the needs of patients in the local community. It was officially launched on February 1.

For more, see www.klarushomecare.com; www.medstar911.org.

By Teresa McCallion, EMT-B, Managing Editor

Using Technology to Reinvent the House Call

Adjusting the response for low-acuity 9-1-1 patients

In the old days when physicians made house calls, they often had the advantage of knowing their patients. They were familiar with their past medical history, medications and test results because they had been their sole medical provider.

Although this model is a good one, it's been impractical in the modern world—until now. Last year, True North Health Navigation launched a first-ever mobile emergency medical unit with access to patient medical information provided through the Colorado Regional Health Information Organization (CORHIO).

True North designed the program to address a specific population—low-acuity 9-1-1 callers, with the goal of easing overwhelmed emergency departments and lowering healthcare costs. Since September 1, 2013, dispatchers in south metro Denver alert the True North staff, which responds with a South Metro Fire Rescue medic unit to calls that meet specific criteria.

While en route, True North responders—primarily emergency department physicians and nurse practitioners—are able to access the patient's medical history, including recent treatments and medications, via CORHIO's Web-based health information exchange application. The secure network is linked to the medical records systems of hospitals, laboratories, physicians and other healthcare providers throughout Colorado.

The mobile medical units are equipped with a variety of medical supplies, medications and a certified lab that can process blood and urine tests on scene. Responders are ca-

pable of providing advanced medical treatments, including suturing, splinting and catheter replacement.

"Essentially we've reinvented the house call so that we can properly treat urgent and semi-emergent medical conditions right in the patient's own home," says True North co-founder and Chief Executive Officer Mark Prather, MD.

While this is similar to other community paramedic programs, there are differences.

"We felt more comfortable trying to take the ER to the patient. To make an impact, we need to diagnose and prescribe," he says.

dose of antibiotics can be administered, if necessary—all without leaving the comfort of the patient's own bed.

The program has also partnered with free-standing imaging centers that provide test results to the mobile medical unit's providers' iPads. All patient records are posted to the health information exchange and available to all the other participating practitioners.

"We have the operations piece down, the key now is to work on the payer model," Prather says. In the Denver area, an ambulance transport costs roughly \$1,000. The ER charges

"To make an impact, we need to diagnose and prescribe."

Up to this point, the types of patients to be seen have been narrowly selected.

"We wanted to make sure we were seeing the right patients and not stepping on toes," Prather says. "We see a couple of patients per day, but that's on the slower side."

The program has recently expanded to include assisted living centers and workers compensation patients.

Because the mobile medical unit is equipped with a lab, the physician-responder will be able to diagnose and treat patients at assisted living centers for a variety of ailments, particularly falls. Tests for urinary tract infections and even sepsis can be performed on scene. Thanks to a partnership with Walgreens, a first

around \$2,200. Of that, \$200–\$300 goes to the physicians. The cost of this alternative model is approximately \$800 per patient, with \$500 going to the fire department and the rest to the physician.

The fire department also saves money in the response. Typically, even low-acuity calls receive a fire apparatus with four firefighters and an ambulance staffed with two paramedics. The program now requires only the ambulance to be dispatched with the mobile medical unit, in the event the call was mistriaged or the patient wishes to be transported to the hospital.

"The nice thing about this system is that even if [patients] call 9-1-1, they still get the care they need," Prather says. "We've adjusted the response." 🏠

Now Is the Time: Data Needs for Improving the Health of the Population

Today we have the vision and understanding of what healthcare should look like.¹ We have innovative mobile technology.² We have creative models for care delivery.³ However, we still need to develop metrics that will ensure we can reliably and validly demonstrate improved health and cost-effective care⁴—a much greater challenge.

If we cannot do this, do it soon and do it well, we will lose what may be our best opportunity to make a real difference. It won't be easy. Yet it is a time when, in the immortal words of Pogo, "We are confronted with insurmountable opportunities," and the time is ripe to document the effectiveness of those care models that actually improve

the health of the population.

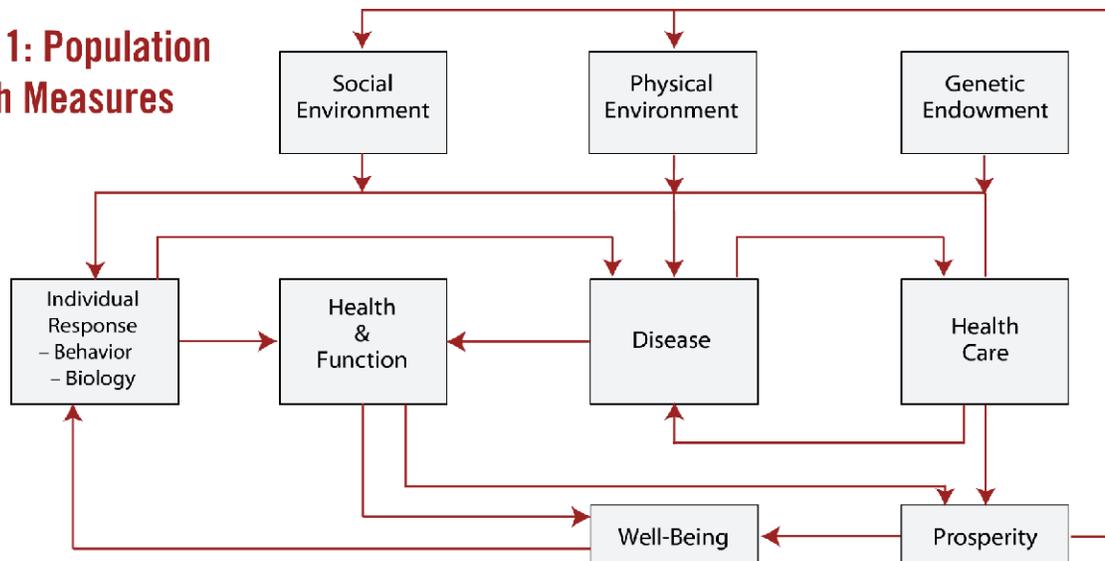
So, what is the vision? The "Triple Aim"—improved population health through an improved care experience at a reduced or reasonable cost—has been broadly accepted as a framework for the U.S. National Quality Strategy. The Institute for Healthcare Improvement (IHI), in its guide to measuring outcomes, has outlined both measurement principles and procedures organizations can use. These include the need to: 1) define the population; 2) obtain data over time; 3) distinguish between outcome and process measures, and between population and project measures; and 4) understand the value of benchmark or com-

parison data. The data obtained from the use of solid measures will allow an organization to be confident the care it delivers remains on track with its goals.

This data can also provide information needed to truly become a "learning" organization. A learning organization is one that has the ability to both be informed by the outcomes of its past care and to enable that to improve its future care. A learning focus allows an organization to provide care that is increasingly based on the Institute of Medicine's (IOM) six fundamental dimensions of safety, effectiveness, timeliness, efficiency, equity and patient-centeredness.

The IHI also outlines a model

Table 1: Population Health Measures



of population health that can be used by an organization as a starting point to determine which specific measures will best assess its progress in meeting the Triple Aim. This framework for measurement⁵ provides causal pathways and a guide to integrating measures. For example, population health is assessed by using mortality measures, common health and functional status and demographic measures (see *Table 1*). There are many existing measures of health. Each organization will need to determine which are most congruent with its data collection capabilities and populations. The patient experience is frequently measured using surveys that generally focus on the extent to which the care provided met the six IOM dimen-

Sadly we have yet to leverage these devices to improve care on a broad basis. Barriers to date include cost, insufficient information on the business case for the use of these devices, and limited understanding and data to determine which patients, conditions and situations represent the most effective use of mobile health (mhealth) applications. Consequently, a part of our measurement agenda needs to be centered on a solid understanding of the optimal use(s) of these developing and exciting new methods.

We do not lack innovative technology. Eric J. Topol, MD, U.S. cardiologist, geneticist, researcher and founder of the Cleveland Clinic Lerner College of Medicine, has described a number of mobile health tech-

and some newer models such as those of the American Academy of Ambulatory Care Nursing (AAACN), the BOOST Project (www.hospital-medicine.org/BOOSTCA), hospice revocation avoidance (MedStar Mobile Healthcare) and fall response (Wake County EMS); see *Table 2*.

We do not lack promising models of care. There are untold instances of unnecessary pain, expense and flawed care delivery that resulted from our poor past performance in integrating patient care and communicating as patients

moved from one setting to another. Now that we have recognized the great need for improved communication and the involvement of a variety of providers—including physicians, nurses, nurse practitioners, pharmacists, EMTs and paramedics, dietitians and social workers—the use of interprofessional teams and mobile surveillance will assume a greater role in care. With the ubiquitous nature of health information technology, we are increasingly able to ensure that the right provider, the right information and



Ida M. Androwich

Ida M. Androwich, PhD, RN-BC, FAAN, is a professor of nursing (and business) at Loyola University Chicago and teaches graduate courses in Healthcare Informatics, Systems, Outcomes Performance Management and Population-based Infection Control. In 2008, she was named Loyola's Graduate Faculty Member of the Year. She has published and presented nationally and internationally in the area of healthcare informatics. In addition, she has had funded research related to national efforts to standardize healthcare vocabularies and has consulted in informatics, terminology and evaluation on federal and foundation grants.

If we cannot do this, do it soon and do it well, we will lose what may be our best opportunity to make a real difference.

sions. Finally, the cost of care is typically measured as cost per patient/member per month or as use of high-cost services (inpatient or outpatient).

Our ability to provide care with innovative mobile applications has never been greater. Currently there are numerous monitoring devices on the market that allow care providers to have remote access to their patients and these patients' conditions. Health information technology (HIT) has allowed us to be creative, yet safe in our surveillance.

nologies that allow for patient involvement and partnerships with providers.⁶ He asserts that in a best case, we become "digital doctors," capable of partnering with patients to leverage existing mobile technology.

We also have an improved understanding of the previously poor coordination that had been a hallmark of care transitions. Using this knowledge, we have developed new models that improve integration of care across the care continuum. These models include, at a broad level, patient-centered medical homes

Table 2: MIHP Models

Mobile Integrated Healthcare Examples of MIHP		EMS	Call Center	Hospital	Primary Care	Mental Health/Detox	Cardiology	Pharmacy	Telemonitoring	Assisted Living	Hospice
American Medical Response Arlington, TX	Reducing CHF readmissions	◆		◆	◆						
	Decrease utilization of EMS by high utilizers	◆		◆	◆						
University of Chicago Medicine Chicago, IL	Reducing CHF Admissions	◆		◆	◆		◆	◆	◆	◆	
	Reducing Hospice Revocation	◆			◆						◆
MedStar Mobile Healthcare Fort Worth, TX	Decrease utilization of EMS by high utilizers	◆	◆	◆	◆						
	Reducing CHF readmissions	◆	◆	◆	◆		◆				
	Decrease utilization by patients who fall	◆	◆	◆	◆						
Wake County EMS Raleigh, NC	Decrease utilization by patients with substance abuse and mental illness	◆	◆	◆		◆					
	Reducing CHF, AMI, COPD, and pneumonia readmissions	◆		◆	◆		◆				

the right care decisions combine, at the right time, to serve our patients safely and effectively.

However, we must develop methods and metrics to demonstrate the value of both the mhealth applications and the newer and creative care models. Healthcare outcomes expert Alfred Lewis, in his 2012 book, *Why Nobody Believes the Numbers: Distinguishing Fact from Fiction in Population Health Management*, argues we have done a poor job measuring the impact of most population health programs. So poor, in fact, that the inherent flaws in most measures are caus-

ing losses in credibility, and valuable resources are being diverted wastefully to support programs with little or no claim to improved care. Consequently, if we are to attain our vision of the Triple Aim, each organization that seeks to “move the needle” on population health must absolutely ensure they are adequately informed on what they need to be measuring.

Barriers to rigorous measurement have included poor understanding of what specific measures are needed, limited standardized data and data definitions, lack of clarity in measurement methods and

limited common measures of various population outcomes. These have prevented us from collecting and analyzing appropriate, valid and reliable metrics. Examples of specific measures are included in the IHI measurement document. If the needed baseline data is not currently being collected, it must be. If an organization does not currently have the knowledge resources to develop and execute a sound measurement plan, it will need to develop a strategy for obtaining these resources. The IHI guide is a good starting point and lists a variety of other resources. 🏠

REFERENCES

1. Stiefel M, Nolan K. A Guide to Measuring the Triple Aim: Population Health, Experience of Care, and Per Capita Cost. IHI Innovation Series white paper. Institute for Healthcare Improvement. Retrieved Feb. 18, 2014 from www.ihl.org/resources/Pages/IHIWhitePapers/AGuidetoMeasuringTripleAim.aspx.
2. University Hospital Consortium (UHS), Annual Meeting, 2013.
3. Beck E, White L, Goodloe J, Myers B, et. al. Improving population health through innovative alignment of existing mobile health infrastructure. Poster presented at the American Public Health Association Annual Meeting, Boston, MA, Nov 2013.
4. Lewis A. *Why Nobody Believes the Numbers: Distinguishing Fact from Fiction in Population Health Management*. Hoboken, NJ: John Wiley & Sons. 2012.
5. Evans RG, Stoddart GL. Producing health, consuming health care. *Soc Sci Med*. 1990; 31(12):1347-63.
6. UHC Annual Conference 2013—Eric Topol Highlights. Retrieved Feb. 18, 2014 from www.uhc.edu/55554.htm.

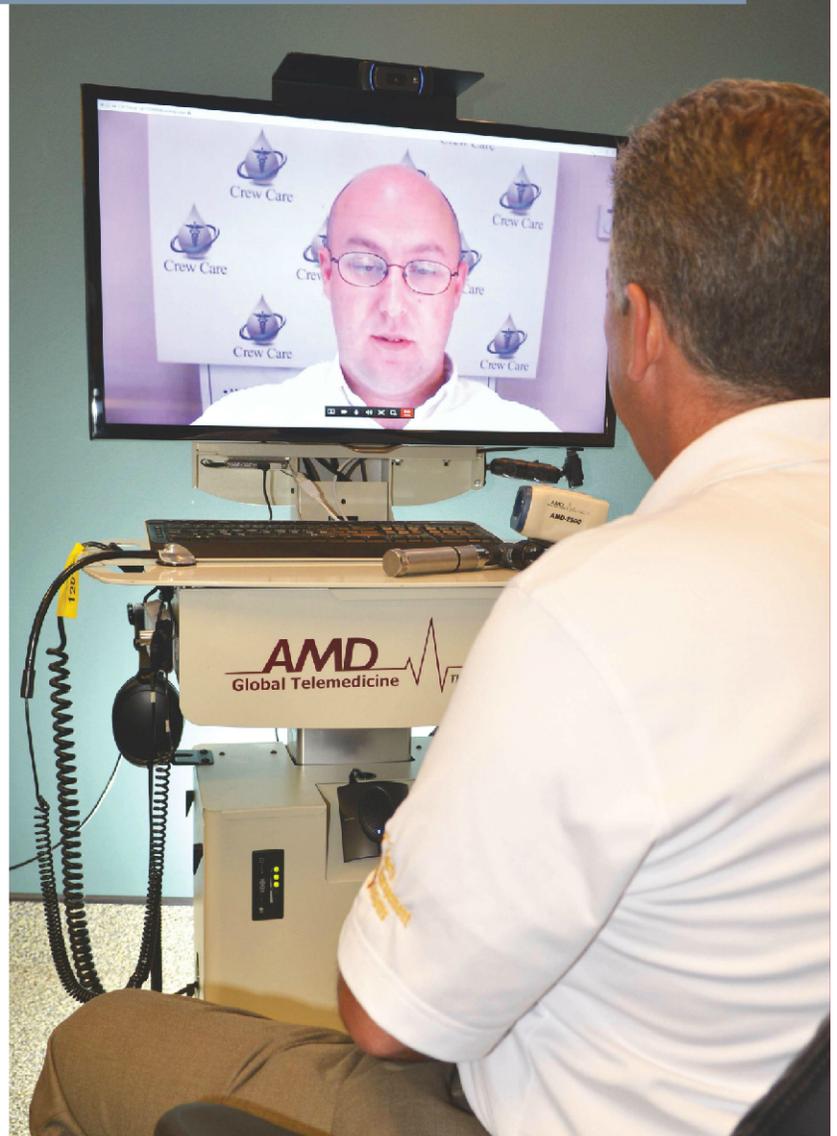
Remember as a child watching television shows about the future, thinking how cool it would be if we could see someone while talking to them on the telephone, like on *The Jetsons*... or if someone could wave a wand over an abdomen to diagnose appendicitis, like *Bones* did to Captain Kirk. With current inventions like Skype and ultrasound technology on cell phones, these dreams are now a reality and these tools can serve as a resource to provide medical care to an increasing population.

It's estimated that the baby boomers coming of age and the implementation of the Affordable Care Act will add approximately 61 million people to the medical-needs population over the next 10 years. This growth brings challenges such as an increase in patients with falls, chronic conditions, high readmission rates and supply-versus-demand issues.

Chronic conditions are very expensive for health-care systems in general, due to the lengths of stay and high readmission rates. The national average for all Medicare readmission rates is 19.6% with some diseases averaging as high as 26.9%. Supply-versus-demand issues include stagnation of the traditional source of direct care workers, women between the ages of 25–53. It is projected that this age group will only increase by 1% instead of the 34% required to meet the rising demand.

The most efficient way to combat these challenges is with the assistance of technology. By accurately aligning the technology with patient needs, proper care can be administered with favorable outcomes.

Our company has taken a proactive approach by adding technology to its services that highly impacts the communities we serve. The Acadian Companies, headquartered in Lafayette, LA, began operations in 1971 as Acadian Ambulance Service in response to a sudden crisis brought on by federal regulations and the swift departure of funeral homes from the ambulance transportation field. Acadian Ambulance began operations with two ambulances and eight paramedics. More than four decades later, Acadian spans the globe and has grown to more than 4,000 employees. It now consists of six subsidiaries that offer medical, safety, monitoring, transportation and educational services: Acadian Ambulance, Air Med, Executive Aircraft Charter, National EMS Academy, Safety Management Systems and Acadian Monitoring Systems. Two of these sub-



Telepresence of Medicine: South Louisiana Talks to the World

Meeting patient needs with the right technology can lead to favorable outcomes

sidiaries provide technology that impacts direct patient care outside of the traditional EMS setting. Acadian Monitoring Services (AMS) and Safety Management Systems (SMS) focus on different spectrums of care and have significant effects on the lives they touch.

Technology can be divided into numerous categories. A general way to separate technology types is by their functionality. Those of specific interest in providing direct patient care are medical alert systems, telemedicine and telehealth.

Unfortunately, the lack of acceptance of technology is greatest in the group that requires it the most. A recent study by AARP showed that 34% of all adults over the age of 65 have an impairment that limits one or more basic physical activities, and that one out of three in this age group will fall each year.

Acadian Monitoring Services enhances quality of life through innovative and progressive technologies. AMS provides medical alert systems, GPS fleet and asset tracking and management, advanced video security systems, access control systems, and security and fire alarm monitoring to clients and customers nationwide. AMS offers medical alert systems through its Acadian On Call division. No matter the type of emergency—whether it is a fall, seizure, stroke, heart attack, fire or burglary—help is just the push of a button away. These medical alert systems consist of three components: a small medical alert button that is usually worn as either a pendant

around the neck, on the wrist like a watch or clipped to the waist; a medical alert base station that functions as a two-way speaker phone; and a monitoring center that responds 24/7 when the button is pressed.

When activated, the medical alert base station will automatically call the monitoring center that has access to the subscriber's medical information, history and contact list. The dispatcher will then communicate with the subscriber and evaluate the situation. If it is determined that help is needed, the dispatcher will send EMS, fire, police or rescue.

Each of AMS' three UL-listed, bidirectionally redundant cen-

Unfortunately, the lack of acceptance of technology is greatest in the group that requires it the most.

tral stations monitor calls 24 hours a day, 365 days a year. All have earned the coveted "Five Diamond" certification from the Central Station Alarm Association. This certification is awarded only to central stations that meet or exceed best practices on equipment, redundancy, staffing and protocols. All of AMS' dispatchers are highly qualified, EMD-certified EMTs and paramedics, trained in assessing the situation, pre-arrival instructions and getting help right away. The training our medical monitoring dispatch-

ers receive meets and exceeds criteria set forth by the National Association of EMS Physicians.

Our staff provides customers with:

- Immediate professional emergency assistance;
- Confidence and security;
- Comfort from the anxiety of living alone;
- An enhanced quality of life;
- Information to maintain their independence;
- Peace of mind for the customers' loved ones.

The mission of the caring, compassionate professionals who work in our central stations is to quickly assess the situation and calmly deliver pre-arrival instructions as needed, following any custom instructions customers may specify.

Technology drives Acadian Monitoring Services but also drives another division, Safety Management Systems, which can provide medical care in remote locations across the globe.

SMS utilizes technology for patient care by offering telemedicine and telehealth services to its remote onshore and offshore clients. While telemedicine and telehealth are very similar in nature in that they both provide healthcare at a distance and through information technologies, telemedicine focuses more on curative aspects while telehealth can encompass curative aspects as well as preventive.

Telemedicine and telehealth include an advanced videoconference system that allows for virtual examinations so employees can be examined, diagnosed and treated by a variety of medical professionals no matter

Faye W. Bryant

Faye W. Bryant, BSN, RN, is clinical services administrator at Acadian Ambulance.



where they are in the world.

Whether the situation is emergent or minor, patients have 24/7 access to multiple board-certified physicians, specialists, highly trained nurses and other physician extenders. Medical professionals can perform examinations, conduct diagnostic testing and follow the improvement of treated conditions.

The FDA-approved telemedicine unit projects high-resolution images in real time for accurate assessment. Using two-way video, the physician conducts visits between workers and remote paramedics. Virtual medical tools contribute to accurate examinations. With a special electronic stethoscope, the physician can listen to the heart, lungs and abdomen. An otoscope enables a view inside the ears, nose and throat, while a high-resolution camera magnifies the skin for examination. Remote lab analyses can be conducted on the unit with the use of a handheld clinical blood analyzer called i-STAT.

Proactive health programs are only a call away with science-driven and personalized wellness plans available through SMS' telehealth system. Nurses, both registered and practitioner, provide instructions through health assessments for each individual patient. Exercise regimens, sleep and stress management, tobacco cessation and supervision for chronic condi-

tions such as diabetes and high blood pressure can be managed thousands of miles away.

A portable emergency medical card is personalized with each patient's health information. The information on the card is stored on a secured server and updated remotely.

By bringing critical components of healthcare together, SMS is investing in advancing healthcare and reducing unnecessary transports and evacuations. Telehealth will increase patient access, quality of care, chronic disease management, health and wellness, and the retention and recruitment of skilled labor by keeping workers well.

When used in a patient's home for management of chronic illnesses, telehealth has been proven to be an effective tool. One of the largest studies using telehealth in this manner was conducted by the Veterans Health Administration (VHA). Although it is an older study, the results were so impressive that it led to the full implementation of a telehealth program in most of their congestive heart failure (CHF) clinics in the VHA system. The two-year study included 795 veterans with complex chronic diseases, mainly CHF. The results were overwhelming, with a 63%

reduction in hospital admissions and 60% reduction in hospital bed days of care. Even though other studies since then have had similar results, the technology is still underutilized. This is mainly due to lack of reimbursement and the cost of the equipment.

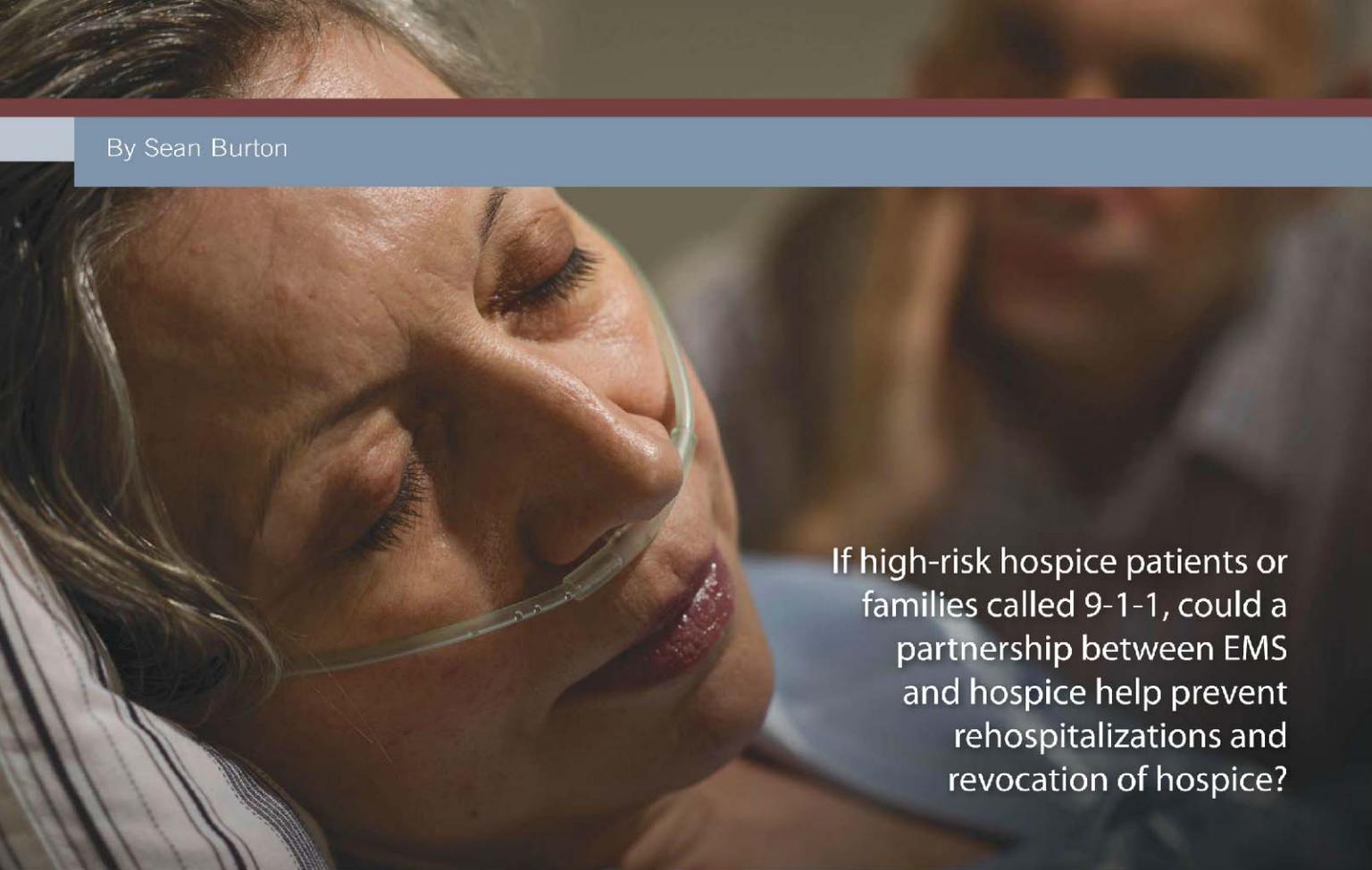
Medicaid in almost every state recognizes in-home remote telehealth monitoring; however, very few actually reimburse for the equipment or the monitoring. On a federal level, there have been numerous bills introduced that allow for the originating site as the home but, so far, none have passed.

There are other devices available to allow our patients to remain at home. These devices include large-button telephones and medication dispensing devices like MedReady. Medication dispensing devices serve as a reminder for those who are on a medication schedule.

With all the technology available, the key is to align the proper resources to the patient's need and to monitor that need for changes to confirm that the alignment remains the same. Companies like Acadian are taking a proactive approach to ensure that the services meet this criteria and more. 🏠

BIBLIOGRAPHY

- Meyer M, Kobb R, et al. Virtually Healthy: Chronic Disease Management in the Home. *Disease Management*, 2002 June; 5(2): 87-94.
- Projected Future Growth of the Older Population. Administration on Aging, www.aoa.gov.
- Falls Among Older Adults: An Overview. Centers for Disease Control (CDC), www.cdc.gov.
- Occupational Projections for Direct-Care Workers 2006–2016. PHH, www.phinational.org.
- Boomers Turning 65. AARP, www.aarp.org.
- MEDPAR. Centers for Medicare & Medicaid Services, www.cms.gov.
- Acadian, www.acadian.com.
- Acadian Monitoring Services, www.acadianmonitoringservices.com.
- Safety Management Systems, www.safetym.com.



If high-risk hospice patients or families called 9-1-1, could a partnership between EMS and hospice help prevent rehospitalizations and revocation of hospice?

Innovative Partnership Breaks Cycle of Rehospitalization in Hospice

Hospice care is focused on the palliation of serious and terminally ill patients' pain and symptoms. While the concepts of hospice care have been around for hundreds of years, many people are still unsure about what hospice care actually entails.

The Medicare hospice benefit was established in 1982 to ensure patients in their last six months of life would have access to high-quality palliative care provided by a multidisciplinary team. Since then, the hospice industry has expanded. The National Hospice and Palliative Care Organization reported more than 1.5 million people received care from

hospice in 2012. This care is focused on the patient and family, supported by a team of clinicians and services primarily delivered in a patient's home. Hospice care can also be delivered in any setting from hospitals to nursing homes.

Even with hospice's focus on supportive care to terminally ill patients at the end of life, some enrollees leave hospice

before death in search of therapies that may prolong survival. Approximately 15% of hospice enrollees leave hospice care alive. Certain types of patients may be more likely to withdraw to seek life-prolonging therapies, and it is important for hospice providers to adequately assess the revocation risks.

In order to understand some of the difficulties that face hospice programs in the United States, one must understand the Medicare hospice benefit. Patients must have a prognosis of six months or less to live

to receive hospice care under the Medicare hospice benefit. Care is reimbursed on a per diem basis, and inpatient care is restricted to pain and symptom management that cannot be managed in another setting. The level of care provided also depends upon criteria that must be met. Care levels can range from scheduled home visits to around-the-clock nursing in the home or a healthcare setting.

The hospice provider becomes the recipient of the Medicare benefit and therefore is the payer if care outside of hospice is received. A single 9-1-1 call and transport to an emergency department by ambulance places a substantial financial strain on hospice providers. Charges from an ED visit and hospitalization for care can exceed \$10,000, for which the hospice provider is responsible. Enrollees may revoke the hospice benefit at any time by simply signing a document, following which their traditional Medicare benefits are restored. The revocation process is similar for Medicaid and most private insurers. These rehospitalizations and revocations are often predictable but most hospice providers lack the external partnerships to break the cycle.

In addition to understanding how cultural preferences for end-of-life care may influence decisions to withdraw from hospice, another important consideration is what happens to those who leave hospice. Most patients are referred to hospice shortly before death, when life-prolonging therapies, even if used, may not be effective. Many patients are referred

to hospice by clinical care providers who have not fully explained what hospice care is. Others remain in denial of what their clinical status truly is and are not ready to accept it.

MedStar Mobile Healthcare in Fort Worth, TX began initiatives in 2009 to reduce unnecessary ambulance transports and direct patients who call 9-1-1 with low-acuity complaints to a more appropriate location for care than an ED. At the same time, Vitas Hospice of North Texas was developing an assessment tool to help identify patients and families at high risk for rehospitalization or revocation. A meeting between MedStar and Vitas started a partnership that continues to grow.

Vitas was aware of the success MedStar was having with its mobile health paramedic (MHP) program, and asked: If high-risk hospice patients or families called 9-1-1, could a partnership between EMS and hospice help prevent rehospitalizations and revocation of hospice?

Vitas' assessment tool identifies patients and family at high risk for revocation. The first high-risk indicator is a patient receiving aggressive therapies that may result in a hospice discharge. The second indicator is patients having a high-risk diagnosis like COPD, end-stage AIDS or being a pediatric patient. Finally, if there is a history of calling 9-1-1, these patients are recognized as high-risk during the admission process and are referred to the MedStar program.

The criteria are often obvious. From an EMS perspective, families are the most common callers to 9-1-1 in the hospice setting. Reasons for calling are often related to conditions normally associated with the medical diagnosis or even end-of-life situations. If the family calls the hospice provider and they are immediately available, hospice responds and is able to provide the needed care and comfort to the family. However, when families are scared, or uncomfortable with the estimated time of arrival of the hospice provider, they may call 9-1-1. Most EMS providers lack the special training to intervene in these difficult situations. Most often, EMS simply fulfills the family's request and transports the patient to the ED.

Patients at medium risk for rehospitalizations and revocation of hospice include those with a newly diagnosed condition, those who have declined (or their family has declined) a DNR, those who lack appropriate family care or support at home, and those who have controversy or disunion in the family concerning hospice.

When patients and families at risk are identified, a referral is made from Vitas to MedStar. The MedStar MHP schedules a home visit to meet with the patient and their family. The MHP provides a non-emergency phone number that is answered in the MedStar call center by the emergency medical dispatcher. The patient's address is also flagged in the computer aided dispatch system. In the event that a 9-1-1 call is received from that address, an alert is given

to the 9-1-1 call taker notifying them that a program hospice patient is at that address.

If a call comes in on a non-emergency number and the call taker identifies no emergency, the MHP is dispatched to respond alone. If a medical emergency is identified or the caller is unable to verbalize the need, a traditional 9-1-1 response is dispatched, which includes ambulance, fire department first responders and the MHP. MedStar then notifies the Vitas call center of the situation so they can dispatch staff to the home and evaluate the situation.

The goal of the program is to keep the patient enrolled in hospice while helping to meet the patient's and family's needs. The MHP also has a protocol to utilize the hospice care pack, which includes pain medication and often a sedative, until the hospice nurse arrives.

Since the program started in early 2013, Vitas has referred 112 patients to the program. MedStar enrolled 97 of the 112. Some were excluded due to being outside the MedStar service area, and some died prior to the initial visit. Of those enrolled, 57 (58.8%) have completed the program and 24 (21.4%) are still active. One had a significant improvement in clinical status

and was discharged from hospice. Eleven (11.3%) revoked hospice, which was an improvement from the number expected. There have been 11 9-1-1 calls from enrolled patients. Five of those were transported; three were taken to the ED and two were directly admitted to an inpatient hospice bed. Vitas is reimbursing MedStar for enrolling patients, on a fee-for-service basis.

The preliminary data show this program has decreased the expected rehospitalization and revocation of high-risk hospice patients. Families have been extremely satisfied with the program. Those who have needed to utilize the MHP have voiced their comfort in knowing there was someone there when the hospice provider was delayed.

Vitas is looking to expand this program into other areas. Current limitations are primar-

ily focused around the 9-1-1 call. Newer, remote monitoring devices may help overcome the 9-1-1 call limitations. If patients or families have problems, activating the remote system will provide a direct connection to the communications center without the need to make a phone call. Partnerships between MedStar and other EMS providers will be the key in those expanded service areas.

With changes in healthcare upon us, we must look to new, innovative delivery models and partnerships. This hospice revocation prevention program is an example of how two healthcare delivery companies whose practices only cross in the worst of times can create a partnership that improves not only our practices, but the experience of patients and their families in one of the most difficult times. 🏠



Sean Burton

Sean Burton is the clinical programs manager of the mobile integrated health and critical care programs at MedStar Mobile Healthcare in Fort Worth, TX. Sean began his career in EMS 18 years ago, coming to MedStar in 2001. During this time he has functioned as a primary paramedic, field training officer, operations supervisor and as the clinical quality coordinator. Sean was the recipient of an EMS Top 10 Innovators award in 2012 for his work with the MedStar Mobile Healthcare team. He is a national speaker and published author on mobile integrated healthcare programs. Sean is a critical care certified paramedic with an Associate of Science degree from the United States Air Force.

BIBLIOGRAPHY

- Blackhall LJ, Frank G, et al. Ethnicity and attitudes towards life-sustaining technology. *Soc Sci Med*, 1999 June; 48(12): 1,779–89.
- Carlson MD, Herrin J, et al. Impact of Hospice Disenrollment on Health Care Use and Medicare Expenditures for Patients With Cancer. Annual Meeting of the Academy Health Association, June 8–10, 2008.
- Casarett DJ, Crowley RL, et al. How should clinicians describe hospice to patients and families? *J Am Geriatr Soc*, 2004 Nov; 52(11): 1,923–8.
- Danis M, Garrett J, et al. Stability of choices about life-sustaining treatments. *Ann Intern Med*, 1994 Apr; 120(7): 567–573.
- National Hospice and Palliative Care Organization. NHPCO Facts and Figures—2013 Finding. www.nhpco.org.
- Teno JM, Clarridge BR, et al. Family perspectives on end-of-life care at the last place of care. *JAMA*, 2004 Jan; 291(1): 88–93.

Flipping Healthcare Through the Triple Aim

It is time for
a new system of
healthcare where the
patient's needs come first

In December 2013, Institute for Healthcare Improvement Chief Executive Officer Maureen Bisognano took the stage for her opening keynote and began telling stories of people who were flipping the model of how we treat the health needs of our community. She challenged us to think differently, to focus on the patient's perspective and try to accomplish what they were striving to achieve. The audience was humming with excitement and left the great hall asking, "How do we do that?"

Medicine has been going through an interesting transformation. It hasn't been beautiful like a butterfly, but more awkward and uncertain like puberty. We've watched an industry built without a system's view of the patient that said, "When you get sick, come on in and we'll try our best," turn into one that said, "Yes, we want to be patient-centered."

Now it's time to deliver highly reliable, evidence-based

care, that begins with the patient's health and experience at the forefront—all provided at the most reasonable cost.

The IHI Triple Aim and System-Level Measures

The Triple Aim was developed at the Institute for Healthcare Improvement with the intent of improving care through the focus on three dimensions: Population health, experience of care, and per capi-

ta cost.¹ The following describes each of the three dimensions.

Population Health: Achieving results requires improving healthcare outcomes (i.e., mortality and health/functional status), reducing disease burden and limiting risk status for a defined population.

Experience of care: Defined as a portfolio of goals that include the Institute of Medicine (IOM) Quality Chasm aims: safe, effective, timely, efficient, equitable and patient-centered care bundled with the aim of creating patient satisfaction.²

Per capita cost: In parallel to the other two aims, this is a consciousness of the significant cost inequality of our healthcare system. The reduction of cost per member of the population

per month is key. Understanding hospital and emergency services use rates can be informative.

The three dimensions provide a framework for improvement and support when developing system-level measures with clear aims.

Population Segmentation

While our intent is to develop systems that serve our entire population, we need to segment out a sample of that population in order to test ideas and learn with the intent of building systems and processes that eventually serve all. The following is how population segmentation might work in a community.

Defining a sub-population:

Look within the population you serve and identify a segment with higher-than-average usage and/or higher costs. These may be people who have fallen through a gap in the current healthcare delivery system—for example, homeless citizens with psychiatric needs.

Stratify by similar needs:

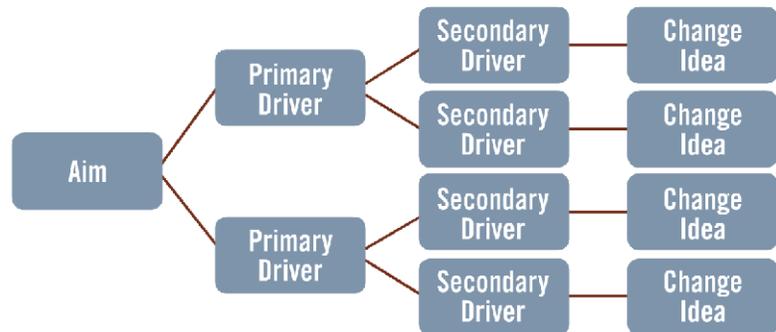
Instead of stratifying based on condition, consider shared needs like access to medication, shelter or nutrition.

Interventions: Develop ideas to test rapidly on a small scale. Some interventions may be successful and some may not, but all should support the aim of developing knowledge and ideas. The intent is to act on one in order to learn for the population.³

Developing a Portfolio of Projects

Improvements rarely occur through one intervention. Breakthrough improvement is

Figure 1: Driver Diagram



the result of a portfolio of interventions that achieves clearly-charted aims executed using the scientific method. The process of segmenting the population, understanding needs and implementing potential interventions can enable development of a visual display of your theory for system change. It can be helpful to use a tool like a driver diagram (see *Figure 1*) to present your theory for change.⁴

Chartering Projects

Project success requires thoughtful planning and execution. Before initiating any project in your portfolio, answer these questions:⁵

- What are we trying to accomplish? What is the aim of this project? What will you improve? For whom? By how much? By when? For example, the aim for a project might be to assess 95% of homeless encounters at the shelter clinic for signs and symptoms of psychiatric symptoms by June 30, 2014.
- How will you know a change is improvement? What are the measures for the project? This requires a family of measures including outcome, process

and balancing measures, such as setting a specific percentage of homeless encounters to assess.

- What change can we make that will result in improvement? What changes to the process or system can we test and implement that will support improving process reliability and outcomes? For example, using a checklist for signs and symptoms of psychiatric illness.

The project charter should contain information about how the project will be staffed and what resources will be required, including who will be the project sponsor and the project lead. It's also helpful to sketch out a project plan of key activities and timelines so all involved can have a sense of the predicted execution framework and can prepare for successful completion.

Small-Scale, Rapid-Cycle PDSA Testing

Too frequently effort is wasted on planning and implementing a large-scale project without first gaining adequate knowledge about what works. Dr. W. Edwards Deming pro-

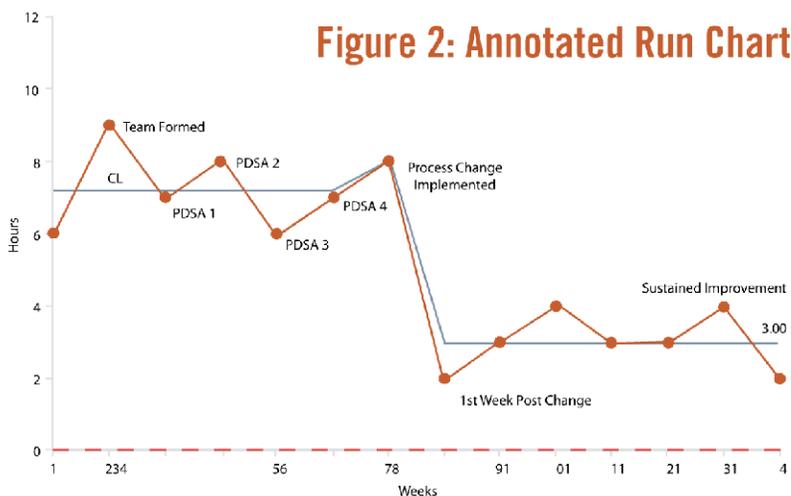
moted the use of the scientific method as a validated approach to test and learn. He encouraged using a modified method known as the “Plan, Do, Study, Act (PDSA) Cycle” as a way to test ideas, on the smallest scale possible (i.e., one patient).

The PDSA approach involves making a plan to test a change to a process and predicting what will happen. Then you do the test and observe what happens. After the test, time is set aside to compare your prediction with what you observed and study anything else you learned. The cycle is complete by deciding how to act on this information; for example, to abandon or adopt the idea or, in the majority of cases, adapt the idea based on what you learned. The last step is to test again.

Due to the small and rapid aim of PDSA tests, testing happens sequentially, continually building on the knowledge from the previous tests. The more you test, the more you learn.⁶

Implementation and Spread

Testing on a small scale acts as our learning lab until we find out if an intervention is effective and worthy of implementation and spread. Determining reliability requires measuring over time and displaying data in run charts (see *Figure 2*) with evidence that the process



has changed and the aim has been achieved. There is no use spreading something that you can't measurably show works.

Conclusion

The opportunity in your community to improve the care you deliver, the health of the population you serve and at a lower cost is immense. It starts with a focus on the patient and an eye on the aim. Taking a systems approach to testing

that learns what works is the method to achieving the goal.

It's not easy work and we don't know all of the answers, but collaboratively, those of us who work in this field can aspire to flip the model for integrated healthcare delivery. Bisognano knew we could. It can all start with just one small test of change. What can you test this week? 🏠



David M. Williams, PhD

David M. Williams, PhD, is an improvement advisor with the Institute for Healthcare Improvement and scholar-practitioner studying and enhancing prehospital mobile healthcare systems. His consulting practice, TrueSimple Improvement works in the North America, Europe and the Middle East.

Contact him at TrueSimple.com.



REFERENCES

1. Institute for Healthcare Improvement Triple Aim. Retrieved online March 6, 2014 at www.ihl.org/Engage/Initiatives/TripleAim/Pages/default.aspx.
2. Institute of Medicine (IOM). 2001. Crossing the Quality Chasm. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, D.C: National Academy Press.
3. Based on ideas developed from Tom Nolan, PhD, Associates in Process Improvement and senior fellow at the Institute for Healthcare Improvement.
4. Nolan TW. Execution of Strategic Improvement Initiatives to Produce System-Level Results. IHI Innovation Series White Paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2007. (Available on www.IHI.org)
5. Langley GJ, et al. The Improvement: A Practical Approach to Enhancing Organizational Performance (2nd Ed.). San Francisco, CA: Jossey-Bass, 2009.
6. Moen R, Norman C. Evolution of the PDCA cycle. 2006.



Breaking the Cycle of Overuse

How to ensure patients obtain the most appropriate form of care

Christian Hospital in St. Louis County, MO, is aiming to break the cycle of non-emergency use of their emergency department by addressing the root of patients' problems—via their EMS system.

In a program that launched February 3, 2014, designated 9-1-1 calls receive an advanced care paramedic who determines whether there is a true emergency at the scene. If not, the paramedic can choose to treat the patient at home, help

them get a same-day appointment with their primary care physician, or connect them to another appropriate resource. Paramedics can also provide vouchers for transportation to appointments.

Christian Hospital EMS Chief Chris Cebollero notes the program is not just about handing the patient a referral and saying good-bye; it's about taking that next step with the patient and facilitating their attainment of the most appropriate form of care.

He suggests the old models of EMS and ED care delivery are partly to blame for the cur-

rent cycle of overuse. People became accustomed to being taken to the hospital whether they needed it or not, because that was the system.

The stats show the problem with that approach. Since August, 600 utilizations of EMS or the ED in Christian's system came from just 22 patients. One patient alone used the system 150 times in a year.

"We precipitated this behavior; now we have the opportunity to rewrite history," says Cebollero.

How the Program Came About

One of the questions they asked, Cebollero says, was, "Were we doing the best for our patients?" The answer was "No."

Christian Hospital's ED is the busiest in the state of Missouri, he says, and sees 116,000 people per year, with 56,000 of those coming in for non-emergencies.

"We were just kind of putting a Band-Aid on their problem, and weren't helping their problem," he says.

Cebollero uses the example of a patient suffering breathing difficulty. Previously, a paramedic might have provided albuterol and the ED might have administered a steroid, but then no one was following up to make sure the patient's underlying health issue was being



addressed to prevent repeat incidents.

“We were part of the problem; we needed to do something different,” he says.

The program appears to be off to a successful start. In one week they had 170 patients triaged out of the ED, Cebollero says. The patients either went to their physician, chose to leave because they didn’t have a true emergency or were referred to the hospital’s temporary health resource center.

Health Resource Centers

A central part of the program involves temporary health resource centers at Christian Hospital and Northwest Healthcare. Patients can be brought there to get connected with partner organizations such as Planned Parenthood and Meals on Wheels.

These are not regular clinics; walk-up patients will not be accepted, and the goal is to close them after about one year, once the need has abated, so that people aren’t just shifted there from the ED.

“The folks who come are not coming forever,” Cebollero says. “If you come through, our goal is to set you up with a primary care physician.”

A Unique Program

Cebollero says this method of triaging callers out of 9-1-1 is an innovation that is unique in the U.S. It begins when dispatchers determine how to prioritize them and find that they fall under the “Omega” designation, which some other cities do as well, but then in this program, those patients can be treated and left at the scene when appropriate.

“Some say it’s a big liability that we leave people on the scene,” Cebollero says, but he



says that it isn’t because an ambulance and an advanced care paramedic still respond and utilize medical direction and training to determine an appropriate course of action.

He notes that it helped doing this as a hospital-based EMS system, whereas other systems would require EMS and hospital coordination. “I think it was a lot easier for us because we’re all-encompassed and housed together.”

As more hospitals look to triage people out, they’ll be looking to EMS for help, Cebollero says.

EMS will need to integrate with their health-care partners, he suggests, and continue to adapt as the landscape changes over the coming years. “Paramedics will be doing medicine in a scope they’ve never done before,” he says. “This is what the future of EMS looks like.”

Feedback

Christian Hospital officials have provided an overview of the program to community leaders and attended city council meetings, church group meetings, etc. to discuss it with the public. “We’ve heard no negative feedback at all,” he says—an amazing feat for any topic. The community is recognizing that this is a positive and necessary change that needs to be undertaken. 🏠

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Diagramming a Strategy for Mobile Integrated Healthcare Practice

Creating a framework for dialogue

Every mission needs a plan—a diagram of “X”s and “O”s that maps out goals and responsibilities. That was the idea behind an abstract, submitted by Eric Beck, DO, NREMT-P, Alan Craig, MScPI, ACP, Jeffrey Beeson, DO, RN, EMT-P, Scott Bourn, PhD, RN, EMT-P, and others, as part of a presentation to the American Public Health Association, at their annual meeting last year in Boston.

The mission is to promote a novel delivery strategy for an interprofessional practice of medicine called mobile integrated healthcare practice (MIHP), with the goal of serving a range of patients with 24/7, needs-based at-home integrated acute care, chronic care and prevention services. The abstract provides a guide that illustrates how healthcare agencies could leverage existing resources in new ways to accomplish this goal of patient-centered care.

According to Bourn, vice president of clinical practices and research at American Medical Response (AMR), the abstract led to a white paper titled “Mobile Integrated Healthcare Practice: A Healthcare Delivery Strategy to Improve Access, Outcomes, and Value.” The paper was published in the December 9, 2013, issue of *Modern Healthcare*.

“The white paper and the

abstract come from the same collaborative effort to better meet the needs of high-risk patients within the community,” says Bourn. He explains that they both came out of an

The idea is to break down barriers that have previously kept those medical professionals from working together.

initial dialogue to help frame broader issues between disparate medical professionals: public health and public safety, hospitals and acute care, as well as colleagues in technology and informatics. “The key is to create partnerships among healthcare professionals who

don’t typically talk [to each other] today,” says Bourn.

Both the abstract and the white paper were developed to work on different levels of detail to create a framework for various healthcare professionals and health delivery agencies. The purpose is to help them think about how they might create innovative projects together with existing resources given their community’s unique needs.

The idea is to break down barriers that have previously kept these medical professionals from working together. “MIHP is proposed as a restructuring of care, not a new way to spend additional healthcare money,” the authors note in the white paper. They stress that “this model must remain patient-centered, with an emphasis on ease of access to care, developing new non-traditional portals of entry, continuity of care and transparency. It is through the synergy of these attributes that care can be improved—safer, more timely, and of higher quality and satisfaction.”

They hope that any healthcare organization that is working to make this mission become a reality will use the diagram. 🏠

MOBILE INTEGRATED HEALTHCARE PRACTICE

Improving population health through innovative alignment of existing mobile health infrastructure

Eric Beck, DO, NREMT-P; Lynn White, MS, NREMT-P; Brent Myers, MD, MPH; Hawmwan Moy, MD, David Tan, MD, Scott Bourn, PhD, RN, EMTP; Alan Craig, MS, ACP, Edward Raehl, MD, and Joan Mellor

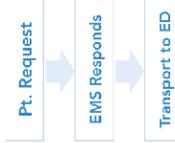
The Problem

- U.S. healthcare system often fails to achieve optimal health outcomes while generating exorbitant costs for patients, payors and society!
- Estimated \$750 billion -- 30% of U.S. annual healthcare budget -- wasted on unnecessary services, inefficient delivery, excessive administrative costs, and prevention failures²
- Patients, clinicians and payors frustrated by barriers to patient access, fragmentation of acute and chronic care, ineffective management of chronic illness, and complex, outdated reimbursement processes
- Renewed focus on "bringing healthcare to the patient" has underscored need for realignment of financial incentives and reimbursement policy³

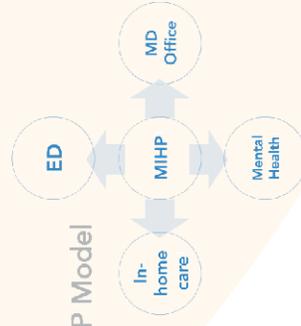
Proposed Solution

- Focus on patient-centered navigation and offer community-centered care by integrating existing infrastructure and resources, bringing care to patients through technology, communications, and health information exchange
- Define operations through community needs assessment tools
- Establish multiple community partnerships under active physician medical direction
- Improve access to care and health equity through 24-hour care availability
- Deliver evidence-based practice using multidisciplinary and interprofessional teams in which providers utilize the full scope of their individual practices.

Current State



MIHP Model

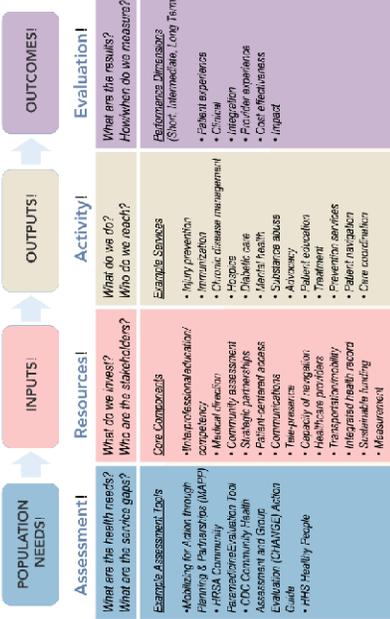


ESSENTIAL FEATURES OF MIHP!

- ✓ Provider education/competency
- ✓ Medical direction
- ✓ Community assessment
- ✓ Strategic partnerships
- ✓ Patient centered access
- ✓ Communications
- ✓ Tele-presence
- ✓ Capacity of navigation
- ✓ Healthcare providers
- ✓ Transportation/mobility
- ✓ Integrated health record
- ✓ Sustainable funding
- ✓ Measurement



MIHP Logical Model



Conclusion

- ✓ **A New Framework:** Mobile Integrated Healthcare Practice allows integrated, interprofessional care brought to patients in their homes.
- ✓ **A Locally Adaptable Construct:** This model is locally adaptable for both disease-specific interventions and the care of broader patient populations.
- ✓ **Multiple Benefits:** Framed by local needs analysis, a community-specific strategic plan, patient-centered metrics, and the cost-effective leverage of existing care resources, MIHP offers a novel approach to out-of-hospital care.

CONTACT!

Eric Beck, DO, NREMT-P
Eric.Beck@exhealth.net

Example MIHP Programs

Univ. of Chicago CHF Readmission Reductions Program, Chicago, IL
MedStar Mobile Healthcare Hospice Revocation Avoidance Program, Ft. Worth, TX
Wake County Senior Fall Response & Prevention Program, Raleigh, NC

References!
1. Center for Medicare and Medicaid Services. 3. Mullan K, Carr B. Realigning reimbursement...
2. High of the DOI report. The path to...
the journal of the American Medical...
commonly hearing health care services...
for patients. 10/15/15/15/15. 19th
2015/12/21.

Posthospital Community Health Worker Interventions

Abstract

Importance—Socioeconomic and behavioral factors can negatively influence posthospital outcomes among patients of low socioeconomic status (SES). Traditional hospital personnel often lack the time, skills and community linkages required to address these factors.

Objective—To determine whether a tailored community health worker (CHW) intervention would improve posthospital outcomes among low-SES patients.

Design, setting and participants—A two-armed, single-blind, randomized clinical trial was conducted between April 2011–October 2012 at two urban, academically affiliated hospitals. Of 683 eligible general medical inpatients (i.e., low-income, uninsured or Medicaid) screened, 237 individuals (34.7%) declined to participate. The remaining 446 (65.3%) were enrolled and randomly assigned to study arms. Nearly equal percentages of control and intervention group patients completed the follow-up interview (86.6% vs 86.9%).

Interventions—During hospital admission, CHWs worked with patients to create individualized action plans for achieving patients' stated goals for recovery. The CHWs provided support tailored to patient goals for a minimum of two weeks.

Main outcomes and measures—The prespecified primary outcome was completion of primary care follow-up within 14 days of discharge. Prespecified secondary outcomes were quality of discharge communication, self-rated health, satisfaction, patient activation, medication adherence and 30-day readmission rates.

Results—Intervention patients were more likely to obtain timely posthospital primary care (60.0% vs 47.9%), report high-quality discharge communication (91.3% vs 78.7%) and show greater improvements in mental health (6.7 vs 4.5) and patient activation (3.4 vs 1.6). There were no significant differences between groups in physical health, satisfaction with medical care or medication adherence. Similar proportions of patients in both

arms experienced at least one 30-day readmission; however, intervention patients were less likely to have multiple 30-day readmissions (2.3% vs 5.5%). Among the subgroup of 63 readmitted patients, recurrent readmission was reduced from 40.0% vs 15.2%.

Conclusions and relevance—Patient-centered CHW intervention improves access to primary care and quality of discharge while controlling recurrent readmissions in a high-risk population. Health systems may leverage the CHW workforce to improve posthospital outcomes by addressing behavioral and socioeconomic drivers of disease.

Bullet points

- Low-socioeconomic-status patients supported by community health workers are more likely to obtain timely posthospital primary care and less likely to have multiple 30-day readmissions.
- Health systems can leverage the CHW workforce to improve posthospital outcomes. 🏠

JOURNAL SOURCE

Kangovi S, Mitra N, Grande D, White ML, McCollum S, Sellman J, Shannon RP, Long JA. Patient-centered community health worker intervention to improve posthospital outcomes: a randomized clinical trial. *JAMA Intern Med.* published online February 10, 2014. <http://archinte.jamanetwork.com/article.aspx?articleid=1828743>.



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* Peter A Mearney, MD, et al., "CPR Quality: Improving Cardiac Resuscitation Outcomes both Inside and Outside the Hospital: A Consensus Statement from the American Heart Association," *Circulation*, June 25, 2013, Page 2

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