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Unclogging emergency services
How technology can enable fast, cost-efficient, and high-quality care

What's at stake?

Health care providers can deliver accessible and affordable emergency care by combining traditional operational tools with new technologies

Health care reform has expanded coverage to millions of previously uninsured individuals. Emergency Departments (EDs) across the country are facing an increased flow of newly insured patients, who rely on EDs as their primary source of care. EDs are the first avenue of care when there is an actual or perceived need for immediate clinical attention. If you or a loved one has a broken bone or chest pain, you are likely to seek accessible care, most likely in a nearby ED. However, consumers often use EDs not only to seek emergency care, but also after-hours primary care. This has likely been a result of a combination of factors including inadequate access to primary care physicians to accommodate the increased patient demand and the need for easily accessible care.

The right care in a timely manner can mean the difference between life and death. A large number of low-acuity visits (i.e., flu or non-urgent behavioral health support) can divert crucial resources from EDs, affecting their ability to care for patients that may need more advanced and urgent care. Today, health care consumers in the U.S. wait on average 24 minutes in the ED before being seen by a doctor and spend more than two hours in the department before being discharged.[1] The wait time can be considerably longer for tertiary hospitals in crowded urban areas. Effectively managed EDs are a major portal of entry for high-acuity inpatient admissions requiring multi-disciplinary care, which are a significant source of revenue for many hospitals. ED congestion may adversely impact profitability of other specialties as such high-acuity patients are diverted to competing facilities.

The aging population, rise of consumerism, and emphasis on accountability and bundled payments will make it imperative for emergency care facilities to adapt and evolve. Under such

The clogging of Emergency Departments can adversely affect the care continuum by reducing inpatient admissions and transfers, threatening revenue, and operational viability of all dependent specialties.

circumstances, can new technology be a game-changer and enable more efficient and effective ED care? No, not yet. Targeted adoption of technologies such as telehealth and real-time assessment of incoming patients (e.g., connected ambulances), can enable health care organizations to improve patient throughput and reduce readmissions. These technologies can be used with other traditional operational and strategic levers to enhance ED care delivery. The organizations that revamp their workflows to provide streamlined care delivery across the entire spectrum of care will likely be better positioned to deliver efficient and effective emergency care services to their communities.

86 percent of emergency physicians surveyed expect visits to the ED to increase over the next three years.
— 2014 online poll by American College of Emergency Physicians (ACEP)[2]
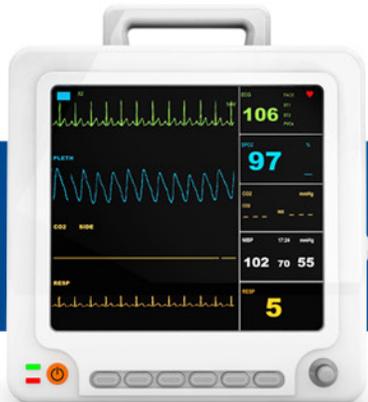
Instant Insights

Solving your most pressing business challenges starts with knowing the landscape. Instant insights offers you a digest of vital knowledge and practical steps you can take now.

Our take

Current and future trends are driving the transformation of emergency care

In the last few years, the emphasis on operational efficiencies has helped organizations reduce ED wait times as they tackle the challenges of maintaining quality and operational viability while maximizing utilization of resources. Traditional operational tools (see Figure 1) such as demand-driven staffing and performance metrics focusing on the quality and quantity of patient visits can help EDs make better staffing decisions based on patient intake and acuity of cared population. These tools are often crucial in managing patient flow and streamlining emergency care delivery.

However, various trends are reshaping emergency care, from influencing where patients seek care when faced with an urgent or emergent situation to determining the way critical care is delivered.

Drivers of change

Increased demand for care
The increased demand for ED care is being driven by the surge in newly insured patients post-reform. Reduced financial barriers and unveiling of unmet demand among the newly insured is likely to increase the volume of ED visits in the short term. Previous experiences in Massachusetts[3] and Oregon[4] have shown that the number of ED visits increased post-reform. Due to smaller eligible provider networks and longer delays in scheduling appointments with primary care clinics, many newly insured consumers are increasingly

Consumers are willing to try new options such as clinics in retail stores, convenient care centers, telehealth, and mHealth.

— Deloitte Review, Issue 16, 2015[5]

turning to EDs to access immediate and convenient primary care. This growth in demand is likely to continue until consumers are educated on alternate sites for primary care.

The aging population is expected to significantly increase demand for emergency care as the elderly are more likely to suffer from chronic conditions and require more frequent emergency admissions. By 2025, the overall U.S. population is expected to grow by 10%, while the population aged 65 years and over is projected to grow by almost 46%.[6]

According to estimates, these changes in demographics may drive up demand for emergency care by more than 12% by 2025.[7] Specific populations such as psychiatric patients have also grown in demand as ED physicians are increasingly spending more time on these patients.[8] With the increased emphasis on timely psychiatric care, EDs will continue to remain an important avenue for behavioral health support. Correspondingly, virtual consultations by mental health providers are also likely to increase.

Figure 1
Traditional operational tools to help optimize emergency services

	Joint practice governance	Throughput	Staffing management	Performance scorecard
Approach elements	Establish a collaborative governance structure to manage operational improvement, quality of care, and cost savings	Evaluate the patient flow from the Emergency Department to the inpatient floors or through the treat and release process	Assess staffing practices and develop future state staffing schedules that align staffing to volume	Collect and analyze productivity and quality metrics to evaluate the performance of ED operations and quality
Application	• Engage key stakeholders and leadership to support operational improvement initiatives • Create a "Patient First" model of care supporting efficiency in the ED and throughout the patient experience • Leverage technology and data systems to drive outstanding patient care, performance, and innovation	• Evaluate front desk and triage process • Analyze patient flow processes (i.e. lab turn around time, imaging, etc.) • Measure patient experience (door to doc, doc to treat or release) • Apply the Deloitte ED Leading Practice Model (LPM) to ED Operations • Analyze operations and costs	• Evaluate staffing schedules, skill mix, and staffing ratios • Revise staffing policies and guidelines and standardize processes • Refine productivity metrics that are tracked	• Assess current quality and safety metrics reported • Analyze and refine quality metrics used for decision-making • Engage key stakeholders at the ED Manager, Director and Senior Leadership level to support the performance targets • Refine performance targets and expectations

Rise of health care consumerism

The advances in mobile technology have enabled consumers to quickly and conveniently access services through their phones across industries such as banking (depositing a check) or ordering cleaning services. Nearly two-thirds of Americans use smartphones and almost two-thirds of these users have used their smartphones to search for health information.[9]

Even though more than half of the smartphone users have indicated willingness to use technology such as video-conferencing for health care consultations,[10] the establishment of such initiatives is not significant. However, as patients and their caregivers become more empowered, educated, and proactive in seeking health care information, the demand for easily accessible services is expected to grow at an exponential rate.

Shortage of providers

The rise in demand for care is outstripping the supply of skilled physicians and leading to a projected shortfall of nearly 90,400 physicians by 2025.[11] A significant portion of this shortfall is due to higher attrition rates of emergency physicians who have a stressful work environment and long hours.

Improved utilization and productivity through demand-based staffing models and the use of physician extenders may partly offset the shortfall. EDs in non-urban areas or remote cities will likely continue to feel the strain with a limited supply of trained physicians and rising costs to recruit and retain these physicians.

Focus on outcomes and satisfaction

The post-reform changes in reimbursement models and the increased need for accountability have emphasized care outcomes across health care. Even in emergency settings, better outcomes on an initial visit are a major driver of not only revenues under the bundled payment models, but also brand perception. Long ED wait times have adversely impacted patient satisfaction. As organizations continue to explore ways to engage their communities under the accountable care model, patient satisfaction will play a key role in building stronger provider-patient relationships, in turn driving patient compliance resulting in better outcomes.

Evolution of the market in response to change

The continual growth in ED patient visits along with potential shortage of providers, and evolution of consumer savviness have contributed to a health care environment that demands a more integrated and unique approach to patient care. Providers can "decompress" the ED waiting room by leveraging technology to help improve throughput and providing alternatives to the traditional ED visit.

Emphasis on integrated care

Health care facilities and providers are searching for ways to streamline care delivery through well-integrated processes and technical collaboration among providers across the continuum of care — from transfer in ambulances to transitional care post-discharge. On average, Americans spend more than one and a half hours waiting to be transferred to an inpatient unit once a decision for admission has been made.[12] This wait is often due to delays in processing, lack of available beds, or unprepared receiving staff. The resulting handoffs are often uncoordinated and unnecessarily time consuming. Patients often receive little to no attention while awaiting transfer to an inpatient unit or facility.

Providers are realizing that since EDs contribute almost half of the inpatient admissions,[13] an enhanced integration is critical as it can positively impact outcomes, improve patient satisfaction, and help optimize profitability under the value-based care model.

Emergence of urgent and retail care

Along with the rise in health care consumerism there has also been a growth in the use of urgent care clinics, either free-standing or associated with ED. These facilities are becoming a key alternative to ED care with patient throughput times of less than 60 minutes in 84% of cases.[14] Contractual challenges with ED operations have hindered expansion of on-site urgent care centers, but the growing consumer preference for rapid care is driving many consumers to the urgent care centers. Retail clinics associated with pharmacy chains, grocers, and retailers are also offering consumers with a faster alternative for primary care. These clinics have introduced tools that aim to improve the patient experience including convenient scheduling, electronic records, and virtual consults.

As free-standing urgent care centers and retail clinics proliferate, health systems operating without a retail strategy integrated with EDs and inpatient specialties will likely see a reduction in volume of inpatient admissions. Since free-standing urgent care centers are not integrated into the accountable care model, their rise in popularity can reduce visibility into a patient's condition and impact the maintenance of population health.

Specialization of emergency care

Many organizations, particularly academic medical centers, are distinguishing themselves in the market through development of "Centers of Excellence" that focus on specific specialty areas of emergency care such as geriatrics, pediatrics, neurology, etc. The increased specialization is aimed at recruiting and retaining talent in targeted specialties while reducing costs through improved operational management of more profitable resources. For patients, these centers can often provide high quality of care with better outcomes. Organizations which have not selected specialty areas for emergency care based on their demographics will likely see a reduction in volume of these profitable cases.

The path forward

Technology and the future of emergency services

From need for care to discharge, emergency services can be assessed as a spectrum comprising of four key stages:

- *Pre-ED response* — the moment a consumer or a caregiver perceives the need for care to transit to the nearest ED

- *In-ED care* — the care delivered within the ED premises

- *Care during transfer* — the support provided while awaiting transfer to another facility

- *Transitional care* — the care delivered at and after discharge to reduce readmissions

The trends in emergency services have made it imperative for health care organizations to assess their care delivery across the emergency care spectrum.

Many technological innovations in portable equipment, electronic data maintenance, data analytics, telehealth, and care coordination can help decompress EDs by more effectively tackling low-acuity cases. Combined with traditional operational tools such as demand-driven staffing models, these innovations can enhance ED triage, patient throughput, and transfers while improving patient outcomes and satisfaction. They can also serve to improve patient access to care in a convenient and affordable manner while helping to reduce overall cost burden for the community.

Addressing urgent or emergent need before reaching the ED

Nursing triage phone lines, websites, and applications can enable the patients to search for the closest and most appropriate center for care based on their need. These support systems can also help allay patient and caregiver anxiety while awaiting transfer to an ED or urgent care facility.

The evolution of mobile diagnostic smartphone attachments and ultra-portable consumer multi-diagnostic equipment capable of assessing vitals, imaging, and urinalysis may enable enhanced remote triage while the patient is at home. The widespread adoption of remote monitoring can also enable care providers real-time access to key patient vitals and enable them to detect emergency needs using predictive algorithms even before the patient or caregiver actually perceives it.

Streamlined network connectivity is already enabling diagnosis and triage while the patient is in transit to a health facility. Ambulances fitted with portable diagnostic equipment ranging from an ECG to a CT scanner, staffed by trained non-physician practitioners can help identify the need for specific care, share information with providers at the receiving health facility, and ensure patient transport to the appropriate facility whether it is for cardiac or stroke care.

Figure 2
An illustrative example of the future of emergency services
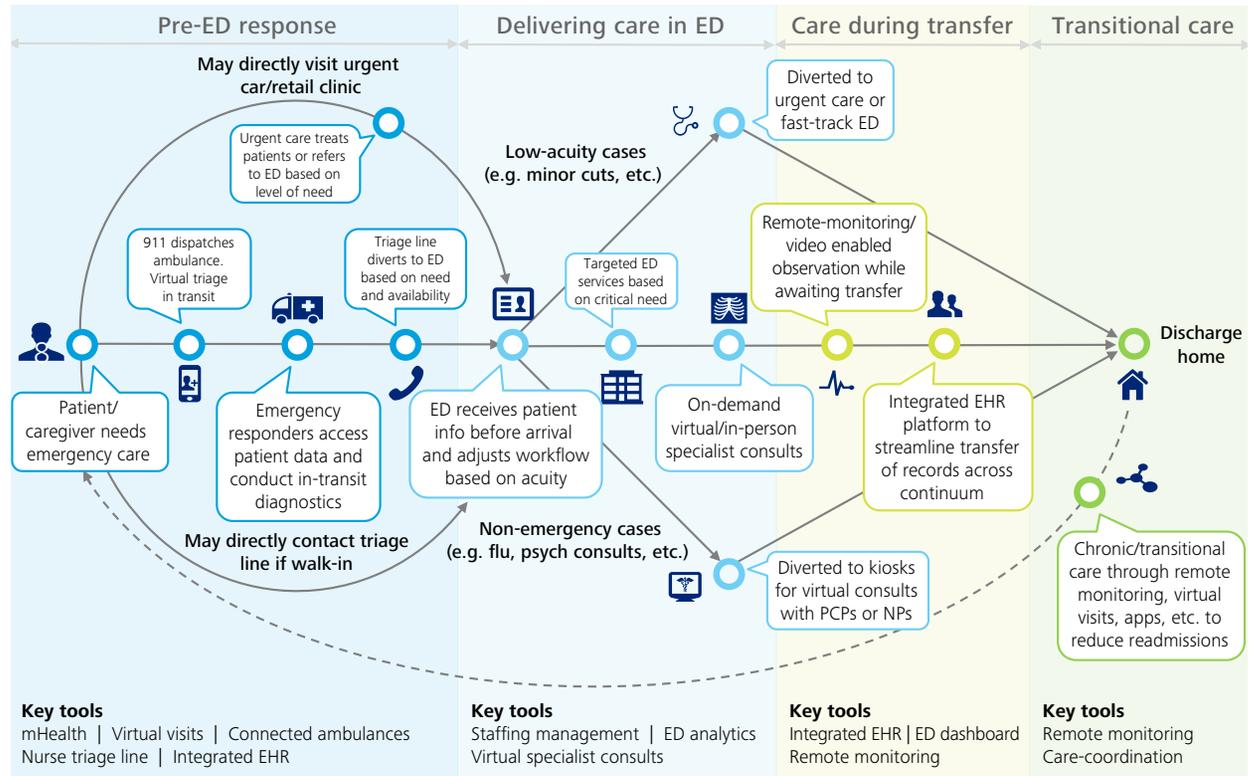
Delivering care in ED

As the number of ED visits grow, it will be challenging for providers to deliver optimal care for each of their patients while avoiding backlogs and maintaining flow. Adoption of predictive modeling for staffing and clinical effectiveness protocols will help ensure delivery of quality and efficient care with optimal resources. Real-time monitoring of operational metrics such as incoming patient transfers, length of stay and triage acuity can help ED managers of tomorrow to ensure a seamless flow and experience across their ED.

Ensuring efficient transition and transfer

Improving patient flow within the emergency department is often dependent on the throughput of the entire hospital. ED managers need increased visibility into the status of beds across the hospital so that patients can be transferred and admitted efficiently. In the future, EDs should able to use data analytics and algorithms to identify and manage patients who are likely to need multi-disciplinary care.

Specialized observation units equipped with tele-monitoring equipment and integrated with rest of the health facility can enable better care for patients awaiting transfer or inpatient admission. The trained providers will be able to monitor and manage patients virtually while collaborating with their peers in other specialties for a smooth transition.

Reducing readmissions through continued care post-discharge

Integrated systems across the ED and rest of the specialties can enable timely discharge. Lack of appropriate patient instructions at discharge are major issues that can lead to treatment/follow-up non-compliance and readmission to the ED. Transitional care teams can collaboratively work with providers in EDs and other specialties relevant to a patient's condition to improve the discharge experience. They can help deliver the right education about treatment to the patient and their caregivers, assist in scheduling follow-up visits and even follow-up through a video-consult or home-visit at predefined intervals.

Technology can be a major boon for these transitional care teams as they can use mobile technologies and remote monitoring equipment to assess patient vitals virtually, detect anomalies, and initiate changes in planned treatment to reduce chances of readmission. Predictive analytics and machine learning using data from EHRs as well as patient wearables can enable providers to categorize patients based on their likelihood for admission to ED. It can allow providers to make real-time changes to a patient's treatment based on the response to a particular medication or protocol and allocate resources as needed. Such dynamic post-emergency care can help reduce morbidity and mortality rates while improving patient satisfaction as patients can continue to live in the comfort of their own homes with their families.

Figure 3
Examples of new tools in emergency services

mHealth
Mobile apps that consumers can use before and after using emergency services. Examples include online wait times or mobile registration and check-in. This can expedite the pre-ED process

Virtual consult
Remote consultation can allow consultation when resources such as a psych consult are not available in house

Remote monitoring/tele-ICU
Remote monitoring allows for "virtual transfers" allowing other clinical providers outside of the Emergency Department to care and monitor the patient

ED analytics
Real time and predictive analytics can streamline care by helping clinicians understand demand as well as probability of admission

Tele-ambulance
Tele-ambulance can improve early care of a patient even before the patient enters the emergency room

Care-coordination
Improved integration in services outside the emergency department via technology interfaces can help ensure EDs get the timely patient data they need during critical times

Critical success factors

Adoption of new business models which involve virtual health technologies is more likely to be effective if these models cater to the unmet needs of the providers and health care consumers. It is vital to keep in mind that each consumer is different, and service offerings should be tailored to the individual consumers' needs. Success of such initiatives likely depends upon several key factors, which may include engagement of stakeholders, appropriate technologies, sustainable financial models, and leadership support.

Stakeholder engagement

The effectiveness of newer emergency care models significantly depends on the perception of health care consumers on its utility and efficacy. Stakeholder engagement is a continuous process of involvement of both consumers and care providers at various stages of adoption of these models. Need-based selection of models, change management, and promotion of awareness is necessary to maintain a high degree of engagement with relevant stakeholders.

Health care consumers can be segmented into various groups based on their involvement in their own health and well-being as well as their comfort with the use of technology for health care. Care models should be selected based on an analysis of consumer needs and a roll-out strategy customized according to the most relevant consumer segment(s) to be targeted. In addition to patients, a high level of provider engagement is critical to enhance adoption of new models of care and effectively integrate them into established health care delivery systems. The right model can significantly improve existing care workflows, improve flexibility, and enhance overall work satisfaction. Communicating change, provider training on new platforms, and their active involvement in the integration is essential. As opposed to a singular service delivery approach, models which take into account the needs of various types of health care consumers and providers are more likely to be effective in the long-term.

Appropriate technologies

Various telehealth tools have proved to be very effective in assessing and treating patients, but health systems need to actively engage in development of workflows and algorithms that can enable them to take care of the patient using the right set of tools. Besides establishing a best-fit for care, the right tools are those which align with the overall business model. This can be done using technology rationalization based on a foundation of analytics and scenario analysis, to match scale and scope of the care delivery center with the right technologies. To help leverage newly adopted systems, provider training, adoption metrics and program monitoring and review should be outlined in the early stages of planning to measure outcomes.

Sustainable financial models

A key concern of many health care delivery networks evaluating newer technologies is profitability and financial sustainability, stemming primarily from a lack of awareness about the regulatory support available and reimbursement scenario. Some direct cost benefits of programs like telehealth in rural areas are more evident, but others are not as visible upfront. As of 2014, 43 states in the US provide some form of Medicaid reimbursement for telehealth services.[15] Yet another avenue that care deliverers can approach is partnership with insurance companies. In more affluent communities, a planned concierge based service may be offered to targeted demographics.

Leadership support

Effective transformation of emergency services, whether through traditional tools such as volume-based staffing or strategic initiatives such as advanced observation units using remote monitoring, often relies on significant investment and process changes across the continuum of care. Support from senior leadership of organizations is crucial in bringing various stakeholders to collaboratively create a sustainable and efficient model of emergency care in sync with organizational priorities and goals.

The bottom line

Comparable to other segments of health care, the continuously evolving trends will require emergency services to adopt solutions that can help them keep up with consumer demand. The increasing volume of patients in EDs combined with a shortage of skilled providers will push many EDs to look beyond their walls to continue to deliver quality care at lower costs.

Emergency care is no longer confined to the emergency department. The empowerment of patients as health care consumers will continue to drive them to alternate models to seek urgent or emergent care, whether it is in an urgent care center, retail clinic, or through telehealth.

Technology improvements can help emergency departments with this evolution. While the mission of EDs and the distinct care that EDs offer is not expected to change, technology can offer and accelerate care and quality. On the road to operational transformation, health facilities should revisit their traditional perception of EDs as an operating loss. Technology-enabled EDs with well-designed workflows can empower health systems to deliver on-demand care at lower costs, while improving inpatient transfer of patients requiring enhanced care.

The current tools such as staffing management and performance scorecards will likely continue to be a staple in helping to improve emergency department care and efficiency, whether it is before entering an ED, during care delivery within an ED, or transfer and discharge from an ED. Newer technology-enabled tools such as predictive ED analytics, connected ambulances, etc. can be harnessed alongside leading practices to deliver the right care at the right time. These tools can help enhance resource utilization across the spectrum of care as health systems continue to explore integration of various systems, patient data, and workflows.

Advisor
Randy Bush
Principal
Deloitte Consulting LLP
jrbush@deloitte.com

Authors
Debbie Hunt, RN
Specialist Leader
Deloitte Consulting LLP
dehunt@deloitte.com

Saurabh Vyas, MD
Manager
Deloitte Consulting LLP
sauvyas@deloitte.com

Oliver Chu, RN
Manager
Deloitte Consulting LLP
ochu@deloitte.com

Melissa Lee
Senior Consultant
Deloitte Consulting LLP
melilee@deloitte.com

Thea Creado, MD
Consultant
Deloitte Consulting LLP

References

[1] ProPublica ER wait watcher (https://projects.propublica.org/emergency/)
[2] ER Visits Up Since Implementation of Affordable Care Act — American College of Emergency Physicians (ACEP) 2014 online poll
[3] Emergency Visits Up in Massachusetts After Reforms Enacted — News@JAMA (http://newsatjama.jama.com/2014/03/20/emergency-visits-up-in-massachusetts-after-reforms-enacted/)
[4] Medicaid Increases Emergency-Department Use: Evidence from Oregon's Health Insurance Experiment — Science (published on 17 January 2014)
[5] Rising consumerism: Winning the hearts and minds of health care consumers — Deloitte Review Issue 16 (http://dupress.com/articles/consumerism-health-care/)
[6] The Complexities of Physician Supply and Demand: Projections from 2013 to 2025 — IHS Inc. (March 2015)
[7] The Complexities of Physician Supply and Demand, HIS Inc. (March 2015)
[8] Emergency Visits Up in Massachusetts After Reforms Enacted, News@JAMA
[9] Pew Research Center, April, 2015, "The Smartphone Difference" (http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/Reference)
[10] Deloitte 2012 Survey of U.S. Health Care Consumers
[11] The Complexities of Physician Supply and Demand, HIS Inc. (March 2015)
[12] Emergency Visits Up in Massachusetts After Reforms Enacted, News@JAMA
[13] The Evolving Role of Emergency Departments in the United States. — RAND Study (May 2013)
[14] Urgent Care Association of America (UCAOA) 2013 Survey
[15] State coverage for telehealth services — NCSL 2014 (http://www.ncsl.org/research/health/state-coverage-for-telehealth-services.aspx)

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