

# Enhancing Patient Care and Care Coordination using Event Notification Systems

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## ABSTRACT

Event notification systems (ENS) are being deployed to provide timely alerts to participating providers when their patients are being admitted, discharged or transferred (ADT) from participating hospitals. Hospitals and health information exchanges (HIE) are implementing ENS in an effort to reduce costly hospital readmissions and to improve the overall quality of patient care through improved care coordination. Today, there are numerous ENS actively facilitating care coordination across the country. For those participating providers and hospitals, coordination has been significantly improved and hospital readmissions have been reduced. Furthermore, patients and clinicians report improved patient care and care coordination, and report higher levels of patient satisfaction. Despite reported success, the application and implementation of ENS vary across the country. Some of the variability stems from the challenges that are inherent to the design of the ENS. These challenges, discussed herein, require careful consideration in order to fully realize ENS benefits.

## KEYWORDS

ADT Messaging, Cost Containment, DHIN, Electronic Health Records, ENS, Florida HIE, Health Information Exchange, HIE, Hospital Readmissions, MiHIN, Patient Matching, Patient Panel

## EXECUTIVE SUMMARY

Event notification systems (ENS) are being deployed to provide timely alerts to participating providers when their patients are being admitted, discharged or transferred (ADT) from participating hospitals. Hospitals and health information exchanges (HIE) are implementing ENS in an effort to reduce costly hospital readmissions and to improve the overall quality of patient care through improved care coordination. Similarly, accountable care organizations (ACO) and health systems are also utilizing private information exchange networks to deploy ENS in pursuit of the same benefits.

Today, there are numerous ENS actively facilitating care coordination across the country. For those participating providers and hospitals, coordination has been significantly improved and hospital readmissions have been reduced. Furthermore, patients and clinicians report improved patient care and care coordination, and report higher levels of patient satisfaction. Despite these pockets of success, the application and implementation of ENS varies widely across the country. Some of the variability stems from the challenges that are inherent to the design of the ENS. These challenges require careful consideration in order to fully realize ENS benefits. Some of these challenges include:

DOI: 10.4018/JCIT.2016010102

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1. Minimizing the time required to deliver notifications to participating providers
2. Optimizing the patient matching algorithms to ensure accurate patient identification
3. Utilizing the right delivery methodology to trigger timely response from providers
4. Balancing the cost - benefit inequity that drives non-ideal system designs
5. Ensuring all patient populations are included and can benefit from the ENS service

## **ORGANIZATION BACKGROUND**

Reducing unnecessary healthcare utilization and the resulting costs remain a top national priority. CMS studies indicate that the national healthcare expenditure will exceed 2.5 trillion dollars by 2023, representing 19.3% of GDP, up from 17.2 percent in 2012 (CMS, 2013). Since the passage of the Affordable Care Act in 2010, cost containment efforts emphasize improving the coordination of care with the specific goal of reducing hospital readmission rates and improving the overall quality across the continuum of care. Consequently, hospitals and physicians are challenged with keeping patients from being readmitted or face significant financial penalties (Rau, 2014).

Today's fragmented healthcare delivery system produces numerous challenges that obstruct the pursuit of delivering high quality, cost-effective healthcare (Shortell, Gillies, Anderson, Erickson, & Mitchen, 1996). Today it is possible for patients to be treated by different care providers within the same geographic region and for these providers to be completely unaware of the care provided outside of their practice. This regrettable lack of coordination is not limited to smaller facilities such as private practices and small clinics. Care coordination between hospitals and between hospitals and private practices is also lacking. For example, it is not uncommon for primary care providers to be unaware of a patient's hospitalization until the patient reports the event afterwards (Arora, et al., 2010). This report may take place in a week, months or years after discharge. One study revealed that one-third of primary care providers never learn about their patient's hospitalization (Kazzaz, 2014).

The 30 days immediately following discharge is a critical time for the patient. If the necessary follow-up is not provided to ensure compliance to the treatment plan, recovering patients can become susceptible to complications and illness, resulting in worse health outcomes and costly hospital readmissions (Kirsch, Kothari, Ausloos, Gundrum, & Kallies, 2015). A recent study showed that when patients are not seen by their primary care providers within 30 days after discharge, they have a ten-fold increased risk of readmission (Moran, Davis, Moran, Newman, & Mauldin, 2012). Additionally, timely notification of emergency room visits can allow primary care providers to share valuable information with the hospital while the patient is still in the ER (Bae, et al., 2012). This timely sharing of information could assist with the hospital's evaluation and treatment of the patient, thereby improving the patient's prognosis and potentially avoiding complications that lead to readmissions (Hernandez, et al., 2010).

Another domain that can be improved by ENS is patient satisfaction. The dimensions of quality from a patient satisfaction perspective can be defined by effective communication, care coordination and transition (Noest, Ludt, & Klingenberg, 2014). Since those specific dimensions are facilitated by ENS, it is anticipated that ENS will increase patient satisfaction by enabling real and perceived improvements in communication and patient care coordination.

## **SETTING THE STAGE**

Improving care coordination and reducing hospital readmission rates is challenging. Fortunately, there are a number of event notification systems actively in use today that are producing measurable benefits. For example, the Delaware Health Information network "DHIN" deployed its event notification system in 2013 and currently has participation from all hospitals in Delaware. Delaware was the first state to establish and operate a state-wide health information exchange (Dullabh, Hovey, & Ubri, 2013).

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