

# **INFORMER: A System for Immediate and Direct Notification of Critical Data for Patient Care**

Uttam Garg<sup>1</sup>, Mukut Sharma<sup>2</sup>, Gary Gaddis<sup>3</sup>, and Vijay Kumar<sup>4</sup>

<sup>1</sup>Children's Mercy Hospital and University of Missouri, <sup>2</sup>Veterans Administration, <sup>3</sup>St. Lukes Hospital & University of Missouri, and <sup>4</sup>University of Missouri, Kansas City, MO

## Abstract

Efficient and timely delivery of healthcare requires constant improvements in the quality while keeping the cost of delivery under control. One of the important requirements for such delivery system is the timely notification of patient related data (For example notification of laboratory results on metabolites, circulating levels of certain medications, etc) to doctors, nurses, and other medical professionals for prescribing necessary action. Currently, in nearly all hospitals and laboratories, laboratory or nursing staff are responsible for manually transmitting such information. They take the information verbally or written on a piece of paper, on a pad or on some other media to the recipient in one or multiple hops. Such approach, although serves the purpose, has a number of ordinary to serious limitations such as a higher error rate, incorrect destination, security breach, etc., that could endanger patients life. For example, it is quite possible that the person responsible for notification may forget or delay, for a variety of reasons, to notify the doctor or medical staff or may miscommunicate the results; for example instead of sodium of 150, he or she may orally communicate it as 160. It is also possible that the dispatcher may deliver the information to wrong person (security breach), or take too long to deliver the information. These issues are likely to have serious consequences, in particular

for institutions that deal with human subjects such as emergency department of the hospitals where rapid notification is essential for saving lives of critically ill patients. For results communication, paging is a commonly used notification methods but it also involves human and any inadvertent delays in reporting critical data to the physician and other medical staff or to the patient can have serious consequences. We claim that automation in data notification will (a) eliminate or minimize such undesirable consequences, (b) will keep the cost down and (c) improve patient care. We are in the process of designing a pervasive system, referred here as “Informer” to automate the notification process. The system will (a) compose the information (test results, recommendations, etc.) to be dispatched in a easy to read format, (b) identify and notify the critical results to the right medical professionals, (b) maintain an active log of automation process for immediate reference, (c) guarantee accurate data delivery, (d) keep the cost down, (e) provide necessary security, (f) work equally well with wired and wireless network, and (g) offer a high scalability. It will be (a) an independent system with plug and play capability, (b) can port to any system (window, Mac, Linux, etc.), and (c) easy to configure for specific needs.

**Key Words:** Notification, Healthcare, Information, Cost, Scalability, Plug and play.