CRITICAL RESULT REPORTING – COMPLETING THE FULL CIRCLE

Mohammad Yusuf

Manager IT, Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan

ABSTRACT

Numerous advantages result from integration of systems for healthcare diagnostic services. One important feature is the communication of critical results from specific diagnostic services to targeted end users and groups. This enables timely communication of critical information as it becomes available and plays an important role in improving patient care. This article defines the overall framework to achieve that objective.

Introduction

Diagnostic services have a significant impact on patient care within a healthcare environment. The effectiveness of these services can be perceived in many ways. One important parameter is the identification and comm-unication of critical findings to the respective persons/ groups so that appropriate and urgent action may be taken in time. This article outlines the overall framework (Fig.1) and the basic steps in the process and explores the integration that must exist between various systems to accomplish this important feature.
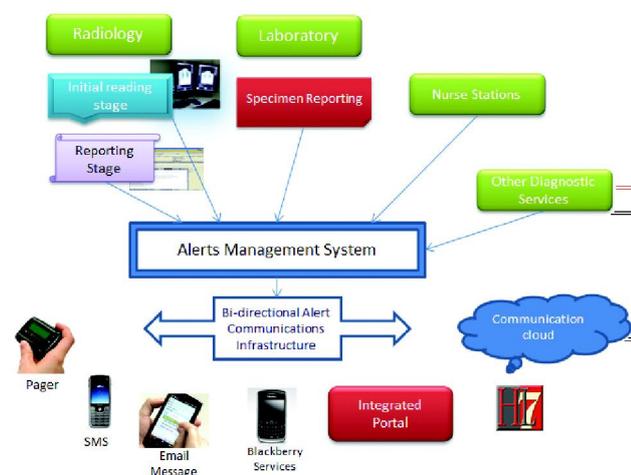

Figure 1: An overall framework for managing and communicating the critical results

Correspondence : Mr. Muhammad Yusuf
Manager IT, Department of Radiology,
Aga Khan Uni versity Hospital,
Stadium Road, P.O. Box 3500, Karachi 74800
Pakistan. Tel. No: 34930051 - Ext. 2020
E-mail: mohammad.yusuf@aku.edu

Communicating the results involve various steps as well as services in the complete workflow. The system must ensure reliability of the communication framework so that the critical patient care information is not missed out and reaches the physician in time. An optimal, efficient system must be automated and fully integrated at various levels starting from the result acquisition up until the reception of these results by the right person/groups. The basic steps involved might be the generation of the diagnostic results, either automatically or manually and managing them within the primary source system, management of these critical alerts at the central Hospital Information System (HIS), routing the communication to the appropriate delivery source(s), communicating the alerts and finally acknowledging back to the source about the delivery of the message.

Generation of Critical Results and Alerts

Various diagnostic departments may be the source for alerts related to patient care. The Laboratory might identify and generate results manually or automatically. Radiology systems might log critical findings at various stages of acquisition and reporting, Cardiopulmonary services might similarly manage alerts within the domain of the systems. Effort is needed to streamline the critical result categorization and logging based on

a common standard for the organization. The formalized standard must address the various levels of criticality which must be homogeneous across the enterprise. The simplest arrangement must be to have three states signifying Normal, Abnormal or Critical conditions. The standard must further define how a critical condition is spelled so that the automatic systems can recognize the conditions without ambiguity. The standard has to define the interface that will exist between the various services and some central system to handle these conditions.

Management of Critical Results

Once the standard is defined for logging critical results within the scope of each of the systems, it is essential to formalize a common, central service that can act as an interface between the individual systems acting as alert sources and the communications system that will help in communicating the results to various devices. This central system must have a standardized interface to all the individual departmental systems to ensure uniformity in interfacing as well as in managing the upgrades and modifications. It must be closely tied to the HIS to ensure access to consistent, centralized information about the sub-systems, users, comm-unication information, locations, etc. This will ensure that information is updated, consistent, non-redundant and centrally accessible for processing.

The central system must be able to recognize the various services and their alert mechanisms, implement necessary security and access permissions, determine the user or system details where the alerts are to be communicated, specifies the communication services like paging systems, emails, SMS, portals, etc. All this information must be maintained centrally within HIS.

The central system can acquire the alerts via two different methods. It can poll the individual services for new alerts and acquire them for further processing. It can also act as a central hub where individual services can push the alert messages directly to the central service without waiting to be polled. Both these approaches have their merits and demerits and must be evaluated based on the optimal use each approach can impart.

Communicating the Alerts

The final part of the setup is where the communication of alerts is actually performed. The Alert has so far been generated at the local service level, and then picked up by the central system to provide the necessary information for communication targets, services and HIS related information and then forwarded to the communications module for sending out to the necessary targets. These might be specific users, a group of users as well as any central portals or common system interfaces available to a wide community of users.

The communicating system can have generic interfaces with various communication technologies and can handle each based on its availability in the organization and its usage. Paging systems are the most common and the system can route the alerts to specific pagers. These normally do not have facilities to acknowledge back the receipt of any alerts. Similar case is with SMS with an additional point of delay (Telco provider). Most users now have telephones with email capabilities and these can be employed with acknowledgements for delivery.

User portals are very useful in consolidating and displaying alerts and critical results. A common, standardized user portal normally is used for communicating results from various services on to a common interface with a single signon based access. Different results from various services based on patient identification are available for viewing. Physicians may have customizable areas for displaying information based on their preferences. Including the Alert display and consolidation facilities on such portals can be very useful in such a setup. The alerts can be managed to be displayed based on specific location, specific services or based on any other criteria. Location based grouping of alerts may be for patients in critical areas like ICU, CCU etc. Service specific alerts may be managed for areas like laboratory, Radiology etc. where the alerts generated by these can be grouped and displayed in the portal. Alerts can be grouped for patients under the primary care of individual physicians, etc. Essentially, the portal may provide customized solutions based on the end user requirements.

Process Management

It is essential to have interfaces for managing and obtaining the status of alerts within the system and to ensure that the communication services are available and online. The system must track the resources, keep track of each individual alert as it is managed by the system, log all transactions for audit, be able to trace an alert from the source to destination and can maintain an overall health status of the system.

Critical result communication and management is an essential functionality in an effective patient care setup and is very closely tied to the EHR initiatives. Considering its integration and imbedding it in the workflows as well as provisioning it early within the system design will eventually pay off for organizations embarking on a centralized, integrated patient care system.