Electronic Interfaces: Friend or Foe?

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Traditionally, laboratory test requests in hospitals were ordered on multi-part forms, that required patient demographic information, clinical findings and reason for request to be handwritten. It was not unusual for transcription and transposition errors to be detected. Examples such as mis-spelled names, incorrect dates of birth, surname and address mis-matches were common. It was also the case that very frequently information was missing and / or request forms were incomplete. Such errors and omissions frequently led to time delays, and, as well as increasing risks to patient care, staff resources were consumed with investigating problematic requests for tests.

Electronic interfaces between hospital and laboratory information systems facilitate real time ordering of services and obviate the need for the traditional multi-part form filling order requests (Østbye et al., 1997). Most importantly they also promise that demographic errors are eliminated and up-to-date clinical information is available. It is logical to expect that patient clinical outcomes and safety are enhanced, and that major cost efficiencies will also result. Indeed there is potential for Clinical Decision Support Systems (CDSS) to be incorporated into the Computerised Physician Order Entry (CPOE) system which adds further clinical and economic value to the services.

However, it is a growing concern that implementation of these interfaces has revealed unintended consequences that compromise patient safety, and add significant cost to service provision (Bobb et al., 2007). It is now recognised that following implementation, typically, the demand on services often rises significantly, without apparent clinical justification. It is reported that there are frequent failures in the follow-up on non-urgent clinically significant test results on ambulatory patients, and there is growing evidence of the negative impacts for patients when important results are not actioned (Dalal et al., 2015; Callen et al., 2011). Among the unintended consequences documented post-implementation of CPOE interfaces are workflow changes, changes in communication patterns and practices, over dependence on technology and new kinds of errors introduced (Georgiou et al., 2007b; Campbell et al., 2006). Many of the newly introduced errors reported result from interface design problems, such as dense pick lists that cause juxtaposition problems. Some studies report that errors, adverse drug events, and even mortality increased after CPOE implementation (Eslami et al., 2008).

Advances in functionality of clinical information systems and decision support tools provide a convincing case for the exploration of technical solutions that would reduce clinical concerns that important test results may go unnoticed, and put patient lives at risk. Addressing the problem of ordering large volumes of redundant tests can also be expected to reduce current costs significantly. More research is needed to determine
the risks and benefits of CPOE implementation, and the impact on patient outcomes (Georgiou et al., 2007a).

References


