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Cost Containment and Patient Safety

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There is an ongoing demand for quality patient care and reduction of human errors. We know it is possible to prevent errors, but how much does it cost?

Over a decade ago, the much-quoted To Err is Human report (Kohn et al. 1999) was published and we acknowledged that unsafe medical practices cost lives. Since then, a number of changes have been implemented, however, the magnitude of clinical errors in costs still continue to grow, estimated to be £6 billion in UK alone (Vincent et al. 2001). It is by all means no surprise that the National Conference of State Legislatures (USA), has prepared a document titled “State Health Care Cost Containment Ideas”, of which one full chapter focuses on medical errors and medical malpractice.

Being safer does not always mean higher costs; sometimes change of practice means lower cost without worsening patient safety. One example of this is to abolish routine chest X-ray in ICUs: There are numerous studies showing this practice is unnecessary (Hendrikse et al. 2007). Another example, when a small capital investment is needed, is the use of real-time ultrasound for central venous catheter (CVC) insertion. It is cost-effective in that it prevents complications (Shojana et al. 2001). Eventually, ultrasound guidance will probably be used in the airway management of critically ill patients as well (Sustic 2007).

In a critical analysis of patient safety practices, Leape and colleagues (2002) summarised what practices would most improve safety. According to the results, available evidence points heavily towards injuries from care, that are not caused by errors. For example, use of sterile barriers during catheter insertion, use of pressure relieving bedding materials or continuous aspiration of subglottic secretion all demonstrate strong evidence of preventing injuries from care. These technical advances, which have been shown to prevent complications, are cost-effective as well, in terms of their reduction of length of stay. Of the 73 practices listed in Leape’s analysis, only 30% (22 out of 73) were intended to prevent errors. Why is the evidence weighted towards technical advances? The answer is simply because they have been studied extensively by industry-driven funds. Error prevention is a relatively young field having only limited resources for research.

These are some examples of error prevention initiatives that are related to medical mistakes and/or medication errors:

• Ask patients to recall and restate what they have been told during informed consent

• Localise specific surgical procedures to high-volume centres

• Initiate changes in ICU structure – i.e. more active management by intensivists

• Evaluate/initiate changes in nursing staff levels

• Improve information transfer between inpatient and outpatient pharmacy

• Use computer monitoring for potential adverse drug events

• Employ specialised teams for inter-hospital transport

• Follow protocols for high risk drugs (e.g. nomo grams for heparin)

• Utilise clinical pharmacist consultation services

Some of the untoward inpatient events could be prevented as well, for example, in the case of inpatient falls, or early recognition of

cardiopulmonary arrest on ward using bed alarms. In a recent study, Marchetti and colleagues modelled the cost-effectiveness of an early-alert surveillance system for these two conditions and they found it to be efficacious with a daily economic benefit of 14.6 US$ per patient assuming a 40% reduction in the fall rate and a 25% reduction in the cardiopulmonary arrest rate (Marchetti et al. 2007).

Have we done everything possible to curb errors in the past decade? Certainly not, as it was clearly shown in the SEE Study, where the total prevalence of unintended events was 38.8 per 100 patient days (Valentin et al. 2006). The majority of unintended events were medication prescription and administration errors. However, these could be prevented by computer-based prescription systems, which may not be as expensive as they appear. In a study from Boston in the US (Teich et al. 2000), a time series analysis was performed at an urban academic centre, in which all adult inpatient orders were entered through a computerized system. Although it cost around 700 000 US$ per year to implement and maintain such a computer system, the use of dose selection menus and guidelines resulted in a decrease in drug doses by 11% and consequent cost savings. Reduction in recommended frequency of ondansetron administration itself generated 250 000 US$ savings in the first year.

What is the way forward? In the US, the state of Nevada passed legislation in 2003 requiring that all hospitals report "sentinel events" to an institutional safety officer within 24 hours of an occurrence. There are other key areas for improvement, both in regards to internal and external education and training, as well as manual development and maintenance of medical equipment. However, these activities require extra staff to be employed. How much does it cost? A very recent study from Japan quoted 1 full-time equivalent (FTE) for 250 beds (Hayashida et al. 2007) and this is in accordance with earlier studies. As the cost of one FTE nursing staff is between 35 000 and 50 000 euros per year in Europe; this can be seen as a good investment in improving patient safety.

Mortality of anaesthesia has declined ten-fold in the last decade as a result of a concerted effort to improve patient safety. If careful guidelines for prevention and reporting of errors are followed, the hope is that intensive care will follow this pattern in the coming decade.

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