Bedside electronic capture — can it influence length of stay?

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To the Editor: As the originators of the hospital-wide patient surveillance concept,[1] we are convinced that bedside electronic capture of clinical observations using handheld computers, coupled with automated clinical alerts, can improve the reliability of the processes involved in the recognition and response to patient deterioration. However, we do not believe that, in the study described by Jones and colleagues,[2] the reduction in the study's primary outcome (length of stay [LOS]) of 2.8 days could simply follow the introduction of the Patientrack system.

The baseline and alerting periods of Jones and colleagues' research did not study comparable patient groups. The median ages were different and, in the alerting phase, there were more patients aged over 90 years (more likely to die, and die earlier in their stay) and fewer observations per admission. The latter might be because the patients were less sick, but notably, the authors provide no data showing the distribution of Early Warning Score (EWS) values in each period. Better planning may have eliminated, to a large extent, the potential for confounding of the results by seasonal differences. Patients admitted during winter are usually sicker, older and have a longer LOS. However, choosing a 47-day baseline period starting mid November meant that the hospital stays of some patients will, inevitably, have intersected with the Christmas and New Year periods, when patient discharge is notoriously slow because of a paucity of hospital staff and supporting community services.

Changes in LOS of the extent described by Jones et al are most likely multifactorial in origin, and due predominantly to process and resource changes. Their article fails to describe the following data for each period: the number of medical assessment unit (MAU) and medical ward beds; the number, grade and location of responding medical staff; and the discharge processes. However, in freely available material, there is strong evidence of organisational, process and staffing changes at their hospital, which Jones et al fail to mention, and which are likely to account for any observed LOS reduction.[3-5] Between 2007 and 2008, portering services were increased to respond to high patient activity in the MAU; additional consultant acute physicians and critical care physicians were recruited; and intensive care bed availability was increased.[3] Importantly, a major alteration to patient flow occurred between the two phases of the study.[4] Specifically, every morning from mid April 2008 onwards, "one patient would move from the MAU to each of seven medical wards", with similar transfers of patients from these wards to the hospital's discharge lounge to await transportation home. It is reported that performance improved immediately, with the "key to success being the freeing up of beds on the MAU".[4] In addition, significant numbers of patients within medicine and surgery were deemed to be medically fit for discharge, but waiting for "continuing care assessment, adaptations to their homes or complex care packages".[4] Additional capacity was provided at another site, improving "flow through the acute medical beds and enabling timely discharge of these patients to a more appropriate environment".[4] Day cases, as a proportion of hospital total inpatient activity, also increased between 2007–08 (28.8%) and 2008–09 (37.8%).[5]

Important detail is missing from the article's methods and results.[2] Outcomes are provided for only 684/705 patients in the baseline phase and 725/776 patients in the alerting phases. Why were all outcomes not available? To calculate true LOS of each of the groups, all participants must necessarily have been discharged. Were the LOS data "trimmed" and to what extent? Did the calculated LOS include non-survivors?

According to other presentations by Jones's group, 116 patients in the baseline phase triggered an alert.[6,7] Therefore, the non-triggering patients ($n = 589$, using a baseline of 705 patients) contribute the greatest proportion of LOS values. Any reduction in overall LOS in the alerting phase is most likely to come from improvements in the management of this massively larger group, making it unlikely that it was due to improved senior medical attendance to triggering patients. Readers would have a better understanding of whether, and for which patients, the Patientrack system had an impact, if the authors could provide the number and LOS for patients groups where EWS was (a) < 3; (b) 3–5 and (c) > 5.

There were apparently 566/7820 (7.24%) triggering alerts in the baseline, but the clinical response could not be determined due to poor documentation in the notes. The authors have demonstrated that more alerts had documented clinical attendance in the alerting compared with baseline phases, but it seems impossible to determine whether the improvement is in the attendance or merely its documentation, hence negating the article's major conclusion — that Patientrack improved clinical attendance.

The authors report different information about the same study elsewhere[6-8] — these disparities require explanation. In a poster presented in 2009,[8] the baseline phase lasted from mid November 2007 to mid February 2008, and the alerting phase from mid May 2008 to mid September 2008, as opposed to only 47 and 38 days, respectively.[2] Were the authors selective in the data they presented in the article? What were the LOS, mortality and ICU data for the longer periods? Also, they have reported elsewhere 747 patients in the baseline phase,[6,7] as opposed to 705.[2] Why do these differences exist?

Finally, the research described by Jones et al[2] is a collaboration between the Central Manchester University Hospitals NHS Foundation Trust (CMFT) and an Australian company, Patientrack.[9] The NHS Innovations Unit covering CMFT, TrusTECH, states that it has facilitated a legal agreement between CMFT and Patientrack that provides CMFT with "a royalty on all future UK sales subject to a successful development and evaluation trial"[10] and ensures "that the Trust is financially rewarded, if the system is commercially successful".[9] Clearly, the CMFT stands to gain financially from a successful trial of the Patientrack system. Published documents would seem to indicate that Dr Eddleston is fully aware of this relationship and the consequent financial benefits to CMFT of a positive trial.[9] Neither she, nor Jones, Mullaly or Ingleby — all of whom are employed by CMFT — have declared a competing interest.

Competing interests

VitalPAC, a clinical software system that enables nurses and doctors to record vital signs and other data at the bedside, analyse it instantly, and summon help when needed, is a collaborative development of The Learning Clinic (TLC) and Portsmouth Hospitals NHS Trust (PHT). PHT has a royalty agreement with TLC to pay for the use of PHT intellectual property within the VitalPAC product. Gary Smith was an employee of PHT until 31 March 2011. The wives of Gary Smith and David Prytherch are shareholders in TLC. Paul Schmidt is a director of a UK-registered company that holds a minority shareholding in TLC. Gary Smith, David Prytherch and Paul Schmidt are unpaid research advisors to TLC. Gary Smith and David Prytherch have received reimbursement of travel expenses from TLC for attending symposia in the UK. Gary Smith has acted as an expert witness on the subject of "early recognition and treatment of patients" for UK and international organisations.

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