



Recording vital signs in the emergency room: Can we improve ?

Alistair Appleby*

ABSTRACT

Audit is the process of measurement of care, intervention designed to improve, and remeasurement. This paper describes the development of an audit in the Emergency department of a large urban hospital in Nepal using blood pressure and pulse recording rates as measures of care. Two periods, a year apart, were compared. We investigated the impact of several interventions including the institution of a systematic training programme for resident doctors and the appointment of a registrar in Emergency Medicine. The paper also examines whether more sensitive measures of care can be developed.

The study found an improvement in both parameters over the year studied but this did not reach statistical significance. We describe briefly how our audit could be refined and the potential for, and benefits of, audit in Nepal.

Keywords: Audit; emergency care; blood pressure; pulse.

INTRODUCTION

Audit involves a cycle of:

1. measuring, against an agreed standard, the quality of a certain aspect of care.
2. an intervention aimed at improving the care, and
3. remeasurement of the chosen aspect of care.

Hospitals need to develop audits appropriate to the context they are in. For us

this meant finding methods of evaluating the standard of care in Patan Hospital Emergency Room. Audit must concentrate on easily measurable parameters that are most influential in affecting patient care. The improvements in performance must clearly benefit the patient, and there should be a valid way of measuring the performance. The performance should be compared to a predefined "gold standard" of care. Traditionally, assessments of quality of care

* MRCGP, Primary Care Physician, Patan Hospital Emergency Department, Box 152, Kathmandu, Nepal.
E-mail: appleby@umn.mos.com.np

in Emergency departments have used methods such as patient re-examination, mailed questionnaire and telephone interviews¹ which would be difficult or expensive to apply in Nepal.

Why choose pulse and blood pressure measurements ? As early as 1861 Marey noted the association between a high pulse and the presence of hypovolaemia.² Documentation of baseline observations with which to compare further changes in the health status of the patient is critical to good management.³ It is almost universally accepted that as vital signs deviate from the normal the urgency rating for treatment increases correspondingly, and if any vital sign deviates significantly from the normal the patient's life is threatened.⁴

The failure, therefore, to take or record either pulse or blood is less than ideal care in all but the most trivial illnesses or injuries. Most standard guidelines for ER case notes contain a specific site for the recording of vitals including at least the pulse and blood pressure.⁵

A literature search including Medline and the Cochrane Database revealed no papers in the last ten years whose primary area of interest was the value of measuring pulse or blood pressure. However, locally performed research does confirm that blood pressure and pulse are strong prognostic indicators for patients presenting to the Emergency Room in a large urban hospital in Nepal.⁶ We therefore assumed that 100% recording of blood pressure and pulse for seriously ill patients is the "gold standard" of care.

Problem Statement

Patan Hospital Emergency Room sees, on average, about 70-120 patients per day, of which 7-12 are admitted. Both doctors and nurses are charged with the task of recording blood pressure, pulse and other vitals. However, at present, the doctor usually assumes the responsibility for completeness of the record. We observed that these "vital recordings" were not always measured and recorded on patients presenting with significant illnesses and injuries to the emergency room of Patan Hospital. Could this situation be improved ? Is the rate of recording of these parameters a reasonable method of evaluating the department's performance ?

Aims of the study

1. To determine the proportion of patients, ill enough to require inpatient admission, or to have died in the ER who did not have recordings of either pulse or blood pressure whilst in the ER.
2. To compare this with one year previously in order to determine if the quality of recording is improving or deteriorating. There have been several initiatives within the year separating the two study periods. The appointment of a full-time registrar in the Emergency Room and the institution of a systematic curriculum for training of residents in the ER have been two of these. Have they made any difference ?
3. To determine if the method used is a cheap and effective way of auditing care in an Emergency Department in Nepal.

METHOD

Records for patients who are seen and discharged from Patan ER are retained by the patient and therefore not accessible to a retrospective notes study. However, all patients who die in the ER, or who are admitted to the inpatient departments, are given a permanent file which is held by the hospital.

One hundred consecutive permanent file numbers were taken from the ER attendance book, starting at 1st Poush 2053, and the same for one year later starting with 1st Poush 2054. The admission dates for both years spanned about ten days before 100 files had been accrued. This therefore includes many shifts, involving many doctors and nurses and therefore represents the performance of the department as a whole, rather than of a particular doctor or nurse on duty at any one time. Exclusions were: files of children under 14 years of age and women in labour sent directly to the ward.

Blood pressure "?", "unrecordable", or "0" were counted as valid recordings. "Feeble", without a rate, was not accepted as a pulse rate recording. Recordings that had been done later while the patient was an inpatient were not accepted, the distinction usually being obvious in the notes.

The results were analysed using the EPI6 statistical software package.

RESULTS

A recording rate of 100% was considered to be the "gold standard".

The results are as shown below.

	<i>Poush '53</i>	<i>Poush '54</i>
Files sought by file number	106	102
Number with no ER record	23	19
Children and women in labour excluded	7	5
Remaining ER records	76	78
No pulse recorded	5 (6.6%)	2 (2.6%)
No BP recorded	7 (9.2%)	6 (7.7%)

A total of 208 permanent files were sought. 156 were found which had a recognisable ER record. The failures to find were largely due to the whole file being absent from the correct file location in the records department.

Pulse recordings

In Poush '53, 6.6% of the study population had no pulse recorded while in the Emergency room. This had improved to 2.6% by the following year. Statistical analysis shows the Relative Risk to be 0.39 ($0.08 < RR < 1.95$) and the Fisher exact P value 0.21.

Blood pressure recordings

A similar but less pronounced improvement was seen in the recording of blood pressure, though the difference was not so great. Relative Risk = 0.86 ($0.24 < RR < 2.24$). Fisher exact P = 0.77.

DISCUSSION

Auditing the quality of care provided is increasingly necessary, not only in order to improve patient services, but to prove the effectiveness of given interventions. In

addition, sponsors of health care increasingly make audit a necessary part of the funding of a health care provider. In Nepal attracting the financial support of both Government and outside agencies is easier if audited proof of clinical performance is available.

Overall, the figures indicate an improvement in the recording of "vitals", particularly pulse. The ability of our audit method to give a numerical value to a measure of care and the clarity of the "gold standard" give weight to its validity as an audit method. However, a more sensitive indicator of care is needed, or a larger sample of case notes, if statistical significance is to be demonstrated.

CONCLUSION

The recording of vital signs by emergency room staff is an easily quantifiable measure of the quality of patient care. Its gold standard of 100% is definite and not generally disputed. Improvements in case not retention and the development of a more sensitive index of care can provide opportunities for departments like ours to review and improve the quality of their care. We intend to build on the experiences of this study to develop improved audits for our context. We suggest that the recording of pulse and blood pressure form the basis of more complex audits in view of the high validity and ease of measurement of these parameters. In summary, it is possible to develop effective audits in the Nepalese context, even with several restrictions. The potential benefits to patients and institutions should encourage us to do this.