Letter to the editor

Measuring respiratory rate

Sir

I read with interest the letter about respiratory rate from Clancy & Williams in *Archives of Emergency Medicine* 8(3). I have been using the Simonsen system for measuring respiratory rate (RR) for the past 18 months, and have found the measurement of RR by using changes in transthoracic impedance between two ECG leads much simpler and more reliable than alternative systems (such as end-tidal CO₂ measurement or direct pressure measurement from nasal cannulae). It is generally agreed that standard nursing observations are unreliable! I have collected data which show a good straight line correlation between RR from transthoracic impedance monitoring and careful manual counting over 60 s. A simple filter in the circuit means that artifacts from patient talking or movement are not counted.

I have found reliable measurement of RR particularly helpful in some medical patients, particularly children under 5 and adults over 75. Tachypnoea may be the only indicator of significant respiratory pathology. The RR may become raised 24–48 h before other clinical or radiographic signs are elicitable. My own series of 29 patients passing through the resuscitation room (Fig. 1) shows a marked

Fig. 1. Diagram showing difference in machine-recorded RR between patients without respiratory pathology and those with respiratory disease. $n = 29$, ■ mean and range of breaths min⁻¹.

difference in machine-recorded RR between patients without respiratory pathology (chest pain and no heart failure) and those with respiratory disease. The usefulness of reliable RR measurement is well illustrated by an afebrile elderly patient with a minor head injury whose chest examination was normal, whose RR was 28 and who had early radiographic signs of bronchopneumonia on a CxR ordered to investigate the tachypnoea.

I would repeat Clancy & Williams plea for purchasing monitoring equipment which provides RR measurement through standard ECG leads (e.g. Sirecust 720, Simonsen plc). Unexplained raised RR, like unexplained pyrexia, should alert A&E staff to unsuspected pathology.

D. HABORNE
Accident and Emergency Department
Basingstoke Hospital
Basingstoke
Hampshire

REFERENCES

- Gravelyn T. & Weg J. (1980) Respiratory rate as an indicator of acute respiratory dysfunction. *Journal of the American Medical Association* **244**, 1123–1125.
- McFadden J., Price R., Eastwood H. & Briggs R. (1982) Raised respiratory rate in elderly patients: a valuable physical sign. *British Medical Journal* **284**, 626–627.