



Correspondence

Changing the System – Major Trauma Patients and Their Outcomes in the NHS (England) 2008–17

The study by Moran and colleagues which evaluates the effect of the establishment of Major Trauma Centres (MTC) and of ambulances taking patients to them rather than the nearest emergency department (ED) has attracted significant publicity [1]. There is a general trend towards configuration of services to specialist centres for specified conditions. This can have a negative effect of making services less accessible when the specialist service is remote from the patient's location; this is well documented for cancer treatment [2,3]. It is therefore very important that the methodology of studies that evaluate the consequences of reconfiguration is robust.

Interrupted time series analyses such as this study are usually considered very robust “natural experiments” second only to randomised clinical trials for assessing interventions. The headline conclusion in the trauma analysis is that there was “a significant 19% (95% CI 3%–36%) increase in the odds of survival for trauma victims who reach the hospital alive ($p = 0.012$).” This is derived from change in excess survival rate either side of the 2012 date of centralisation of major trauma services as assessed by the regression slope of this survival measure against time. My concern in this is the validity of the regression curve prior to the intervention.

Fig. 3 shows a steady secular trend for improvement in survival over the period of analysis but the odds of survival are calculated with reference to the first year, 2008–9. This is an outlier from the general trend. The point is that the trend for all hospitals does not appear to change around the 2012 date for the service change. Similarly, in the hospitals with “consistent submission” of data analysis in Fig. 2, 2008–9 is better than the following years with the exception of 2010–11. The interrupted time series shown in Figs. 4 and 5 show that the slope before the intervention point is very strongly influenced by data from 2008 to 9; if this had not been a very good year for uncentralised major trauma patients' outcome the slope would not have been negative.

TARN data collection procedures were clearly developing in the early years of the process. The authors draw attention to the under-

reporting of older patients before the networks were established and the increase in numbers of those over 64 increased more rapidly than would be expected from the “ageing babyboomer” demographic trend. How certain are the authors of the completeness of data collection in this first year? Deaths occurring after the patient left the receiving institution might be particularly vulnerable to underreporting and this would have a major bearing on the analysis.

My favoured methodology would be to compare two groups of major trauma patients in the interrupted time series analysis; those where the incident leading to injury took place in the natural catchment area of the host ED of the MTC so the ambulance destination did not change in 2012 (about a third of cases from the evidence in the paper) and those incidents in places where the ambulance now takes patients with injury severity score of 9 or greater to a different hospital from the venue for those with lesser injuries. The former group should only show the general secular trend, the latter group the effect of centralisation.

For severe trauma, a clinical condition where the decision on the venue for hospital care is made by ambulance staff rather than the patient, the issue of distance affecting access to treatment is unlikely to be as significant as it is for less acute conditions. This does not detract from the need for an analysis of the effect of reconfiguration to be as robust as possible.

References

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