**BACKGROUND**

When acute bed occupancy reaches critically high levels that interfere with the admission process escalation responses are often initiated. These include measures such as expediting elements of care to increase discharges.

It is common for occupancy levels to fall off after peaks, and this is likely to be interpreted as evidence of the effectiveness of escalation practices.

However, the degree to which current escalation practices and their components are effective is not certain, particularly when they are applied at short notice as is often the case.

**METHODS**

We built a simulation of bed occupancy using real local data.

In order to isolate the natural background pattern we removed seasonality and the effect of transients such as epidemics.

We used historical data to model the distribution of acute medical admissions per day and the distribution of length of stay for individual patients.

These were ordered randomly: i.e. for a simulated day, the take size was randomly selected from historical data and then the individual patients admitted that day were designated a length of stay randomly selected from historical data.

We ran the model for a 3 year period. Seasonal and weekends effects were not included in the model in order to reveal the background pattern of occupancy variation.

In this simulation no interventions were made when occupancy peaked.

**Results**

There is a natural tendency for episodes of high occupancy to be followed by a fall in patient numbers and spontaneous resolution.

This is accompanied by high numbers of short stay patients accumulating at times of peak occupancy.

This phenomenon could make it appear that ineffectual escalation practices have been successful, and reinforce wasteful behaviours.

Elements of escalation packages need to be researched locally to determine if they are actually effective in increasing discharges.