The role of full capacity protocols on mitigating overcrowding in EDs

CRD summary
This review concluded that full capacity protocols could be a promising approach for reducing overcrowding in emergency departments, but that the evidence to support their implementation was weak. The reliability of this conclusion is uncertain because the results of some included studies (of system-wide interventions) were not reported although they were used to inform the conclusion.

Authors' objectives
To assess the effectiveness of full capacity protocols in mitigating emergency department overcrowding. This review was an update of a previous review (see other publications of related interest).

Searching
Seven databases including MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from October 2004 to May 2009 without restriction by language or publication status. The search strategy was reported. Two clinical trials registries and Google Scholar were also searched. Abstracts of five emergency medicine conferences were also searched and authors of identified studies and experts were contacted. References of identified studies were checked. Search results were merged with those of the previous review (1966 to December 2005).

Study selection
Eligible studies assessed the impact of a full capacity protocol on overcrowding in emergency departments serving adults or mixed populations of adults and children. Studies could assess a full capacity protocol as a single intervention or as part of a system-wide intervention. Randomised controlled trials (RCTs), controlled clinical trials (CCTs), cohort studies, interrupted time-series, case-control studies and before-after design studies were eligible. Outcomes assessed were: emergency department length of stay; hospital length of stay; the number of waiting room patients (emergency department access block); and the number of boarded patients held in the emergency department (hospital access block).

The one study of a full capacity protocol as a single intervention was conducted in Canada and involved a series of two hour targets for assessment, admission and transfer to in-patient care and a protocol for using in-patient space when over-capacity was reached. Four studies in which full capacity protocols were a component of a system-wider intervention were also identified.

Two reviewers independently assessed the studies for inclusion; disagreements were resolved through consensus.

Assessment of study quality
Study quality was independently assessed by two reviewers using a tool developed by the Effective Public Health Practice Project. This assessed the criteria of selection bias, study design, confounders, blinding, data collection methods and withdrawals and drop-outs. Each criterion was rated as strong, moderate or weak. Discrepancies between the reviewers were resolved through consensus. An overall assessment was calculated based on the number of strong and weak ratings.

Data extraction
Data on outcomes were extracted to allow comparisons between length of wait or number of patients waiting with or without a full capacity protocol. Authors were contacted for clarification and/or additional data.

Data were independently extracted by two reviewers using a standardised form; discrepancies were resolved through consensus.

Methods of synthesis
A narrative synthesis was presented due to the small number of included studies.
Results of the review
One before-after design study (rated as methodologically weak) assessed a full capacity protocol as a single intervention. Over a six month period 61,329 patients were involved. Four studies assessed system-wide interventions with a full capacity protocol as a component, but results of these studies were not included in the review.

The single included study for which results were reported found that after the full capacity protocol was implemented there was a five hour decrease in the mean length of stay in the emergency department (p<0.001). Reductions were found for all types of admitted patients (medical (nine hour reduction), surgical (1.6 hour reduction) and mental health (9.2 hour reduction). Hospital length of stay was also reduced for all categories of patient (p<0.001 in all cases). The number of patients waiting for assessment in the emergency room fell by 28% and the number waiting for admission to hospital by 37% (p<0.001 in both cases).

Authors' conclusions
Although full capacity protocols could be a promising approach for overcrowded emergency departments, the evidence to support their implementation was weak.

CRD commentary
The review question was clear and was supported by transparent inclusion criteria. The search was extensive and included attempts to identify unpublished studies and those in other languages. This reduced the chances of omitting relevant studies or introducing bias. The authors used methods designed to reduce reviewer error and bias at all stages of the review process.

The quality assessment used appropriate criteria, but the reporting of only a summary score or judgement may be uninformative. The synthesis was limited by the fact that only a single study was included. It was unclear why the results of studies which met inclusion criteria were not reported. The authors were correct in stating that the effects of the intervention would be confounded in these studies, but it would have made more sense to present the results or to exclude these studies altogether. The use of these studies to inform the conclusion means that the reliability of the conclusion is potentially reduced as some of the evidence base is only partially reported.

Implications of the review for practice and research
Practice: The authors stated that the field would benefit from a concerted effort by administrators and health service researchers to collaborate in the improvement of the evaluation of full capacity protocol interventions and to promote full outcome reporting and wider dissemination of research into overcrowding in emergency departments.

Research: The authors stated that there was a need for improved outcome reporting and high quality research methods in research on full capacity protocols for emergency department overcrowding.

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