Survival benefit of the full selective digestive decontamination regimen
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CRD summary
The authors concluded that full selective decontamination of the digestive tract (SDD) protocol reduced mortality in critically ill patients, in particular when successful decontamination was obtained. The conclusions reflect the evidence presented and appear reliable.

Authors' objectives
To assess the effectiveness of the full protocol of selective decontamination of the digestive tract (SDD) using parenteral and enteral antimicrobials on mortality.

Searching
MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched without language limitations. Search dates varied across sources and spanned 1976 to June 2007. Search terms were reported. Reference lists of identified meta-analyses and articles, and conference abstracts and proceedings were searched.

Study selection
Randomised controlled trials (RCTs) that compared the full protocol of SDD (including parenteral and enteral antimicrobials) with no treatment or placebo were eligible for inclusion. Studies of cancer (neutropenic, stem cell and bone marrow transplant) patients and those in which both arms received SDD were excluded. The primary outcome was total intensive care unit mortality.

The included studies considered mixed medical-surgical intensive care unit (trauma, pancreatic, paediatric) patient populations. Cefotaxime was the main parenteral agent. SDD regimens evaluated included oropharyngeal and enteral antimicrobials (tobramycin, polymyxin E, amphotericin B). Outcomes considered included total mortality, infection-related mortality and early and late (>one week) mortality.

The authors stated neither how the studies were selected for the review nor how many reviewers performed the study selection.

Assessment of study quality
The quality of included studies was assessed by adequacy of randomisation, blinding, patient selection, population description, reproducibility, carriage and infection.

Quality was independently assessed in a blinded manner by two reviewers.

Data extraction
The odds ratios (ORs) and 95% confidence intervals (CIs) for the effects of SDD protocols on outcomes were extracted.

Two reviewers independently extracted data. Disagreements were resolved by consensus.

Methods of synthesis
Pooled odds ratios and 95% CIs for the effect of SDD protocol on mortality outcomes were calculated using the random-effects model. The number needed to treat (NNT) of SDD protocol was calculated. Sensitivity analysis for outcomes was performed by comparing results according to the type of randomisation, adequacy of randomisation procedure, blinding, quality and success of decontamination. Statistical heterogeneity was assessed using the Cochran Q and I^2 statistics. Publication bias was assessed using the funnel plot.
Results of the review
Twenty one RCTs (n=4,902 patients) were included in the review. Sample sizes ranged between 49 and 934 patients. Methodological quality was reported as high in 11 studies.

Full protocol was associated with significantly lower mortality (OR 0.71, 95% CI 0.61 to 0.82; NNT 18, 95% CI 17.68 to 17.22; n=4,902 patients, 21 RCTs). No evidence of publication bias was found.

Full SDD protocol was associated with a non-significant reduction in infection-related mortality (OR 0.40, 95% CI 0.10 to 1.59; n=612 patients, six RCTs) and early mortality (OR 0.64, 95% CI 0.34 to 1.19; n=1,085 patients, four RCTs).

Full SDD protocol was associated with a significant reduction in late mortality (OR 0.56, 95% CI 0.40 to 0.77; n=1,268 patients, five RCTs).

Subgroup analysis: Selective decontamination of the digestive tract (SDD) significantly reduced mortality in successfully decontaminated patients (OR 0.58, 95% CI 0.45 to 0.77; n=1,474 patients, nine RCTs).

Results of subgroup analyses of randomisation, blinding, and quality of studies revealed statistically significant reductions in mortality favouring SDD.

There was no evidence of statistical heterogeneity in any of the comparisons.

Authors' conclusions
Full SDD protocol reduced mortality in critically ill patients, in particular when successful decontamination was obtained.

CRD commentary
The review question was clearly stated. The search strategy was adequate and designed to minimise potential language and publication biases. Appropriate methods were used to minimise the risk of reviewer error and bias during data extraction and quality assessment, but it was unclear whether similar methods were used for study selection. Study quality was assessed using appropriate criteria; half of the studies were of high quality. Statistical combination of results was justified given the absence of evidence of heterogeneity. The review was generally well conducted. The conclusions reflect the results of the review and appear reliable.

Implications of the review for practice and research
The authors did not state any recommendations for practice or further research.

Funding
Not stated.

Bibliographic details

PubMedID
19327325

DOI
10.1016/j.jcrc.2008.11.005

Original Paper URL
http://www.jccjournal.org/article/S0883-9441(08)00249-9/abstract

Indexing Status
Subject indexing assigned by NLM
MeSH
Anti-Bacterial Agents /therapeutic use; Clinical Protocols; Critical Illness /mortality /therapy; Decontamination /methods; Gastrointestinal Tract /microbiology; Humans; Intensive Care Units; Randomized Controlled Trials as Topic

AccessionNumber
12009108304

Date bibliographic record published
18/11/2009

Date abstract record published
27/01/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.