TITLE: Cefazolin for Preoperative Prophylaxis in Overweight Adults Having Any Type of Surgery: Clinical Effectiveness and Guidelines

DATE: 03 July 2013

RESEARCH QUESTIONS

1. What is the clinical evidence surrounding the effectiveness of using 2 g of cefazolin as preoperative prophylaxis in adult patients weighing ≥ 70 kg having any type of surgery?

2. What are the guidelines surrounding the use of 2 g of cefazolin as preoperative prophylaxis in adult patients weighing ≥ 70 kg having any type of surgery?

KEY MESSAGE

Three non-randomized studies and one evidence-based guideline were identified regarding the use cefazolin 2 g for preoperative prophylaxis in adult patients weighing ≥ 70 kg.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 6), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2008 and June 10, 2013. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

Three non-randomized studies (NRS) and one evidence-based guideline were identified regarding the use cefazolin 2 g for preoperative prophylaxis in adult patients weighing ≥ 70 kg. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One NRS\(^1\) examined the effect of 2 g of cefazolin for morbidly obese (body mass index [BMI] 40 to 50 kg/m\(^2\)) and 3 g of cefazolin for super-morbidly obese (BMI >50 kg/m\(^2\)) patients undergoing general surgery. Mean concentrations of cefazolin were similar in all patients 30 minutes after administration. The authors concluded that a single 2 g dose of cefazolin may provide sufficient protection for all patients undergoing surgery lasting less than five hours, regardless of BMI.

In a second NRS\(^3\), morbidly obese patients (BMI 38 to 79 kg/m\(^2\)) received 2 g of cefazolin at anesthesia induction. Based on blood samples taken four hours after cefazolin dosing, the authors determined that higher cefazolin clearance was more closely correlated to younger age than to higher weight.

In a third NRS\(^2\) women were classified as lean (BMI <30 kg/m\(^2\)), obese (BMI 30 kg/m\(^2\) to 39.9 kg/m\(^2\)), or morbidly obese (BMI ≥40 kg/m\(^2\)) and were administered 2 g of cefazolin before undergoing cesarean section. Cefazolin concentration in collected adipose tissue was inversely proportional to BMI. All patient samples contained therapeutic levels of cefazolin for gram positive cocci but, in many obese and morbidly obese patients, a therapeutic level for gram negative rods was not reached. The authors suggested current dosing may not be adequate for some patients.

In the identified guideline\(^4\), the recommended prophylactic dose of cefazolin for patients undergoing cardiac surgery is 2 g for any patient who weighs more than 60 kg.

The included studies did not include post-operative infection rates as an outcome.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies


Guidelines and Recommendations

   See: Guidelines for Appropriate Dosing of Prophylactic Antibiotics, #1

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APPENDIX – FURTHER INFORMATION:

Non-randomized Studies

Administration not related to surgery


Children


Guidance Documents

7. AL-Jelaify M. Adult dosing recommendations in obesity weight-based antimicrobials [Internet]. Riyadh (Saudi Arabia): Collage of Medicine & King Khalid University Hospital; 2013 [cited 2013 July 2]. Available from: bialweightdosing.pdf


9. Guidelines for prophylactic antibiotics in adult patients to reduce surgical site infection [Internet]. San Francisco (CA): School of Pharmacy, Department of Clinical Pharmacy, University of California; 2011 [cited 2013 July 2]. Available from: http://clinicalpharmacy.ucsf.edu/idmp/ucsf_specific/periop_ppx.htm


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