



DRUG USE EVALUATION: ANTIBIOTIC PROPHYLAXIS IN C-SECTION AT THE MATER HOSPITAL

Authors:

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Introduction

- Antibiotic prophylaxis is useful in reducing incidences of surgical (operation) site infection.
- The use of antibiotic prophylaxis is however characterized by inappropriate practices such as use of broad-spectrum antibiotics; administering at wrong time; and continuing for too long
- Use of single dose has been found to be as effective as multiple doses and also cost effective to patients [1].
- The recommended duration of prescribed antibiotics prophylaxis for c-section has reduced from ≥ 5 days to 3 days then to 24 hrs and finally to a single dose [2] .
- DUE serves as a structured criteria based method of identifying, monitoring and correcting challenges encountered in practice

[1] Hopkins L, Smaill F. Antibiotic prophylaxis regimens and drugs for cesarean section. Cochrane Database of Systematic Reviews 1999, Issue 2

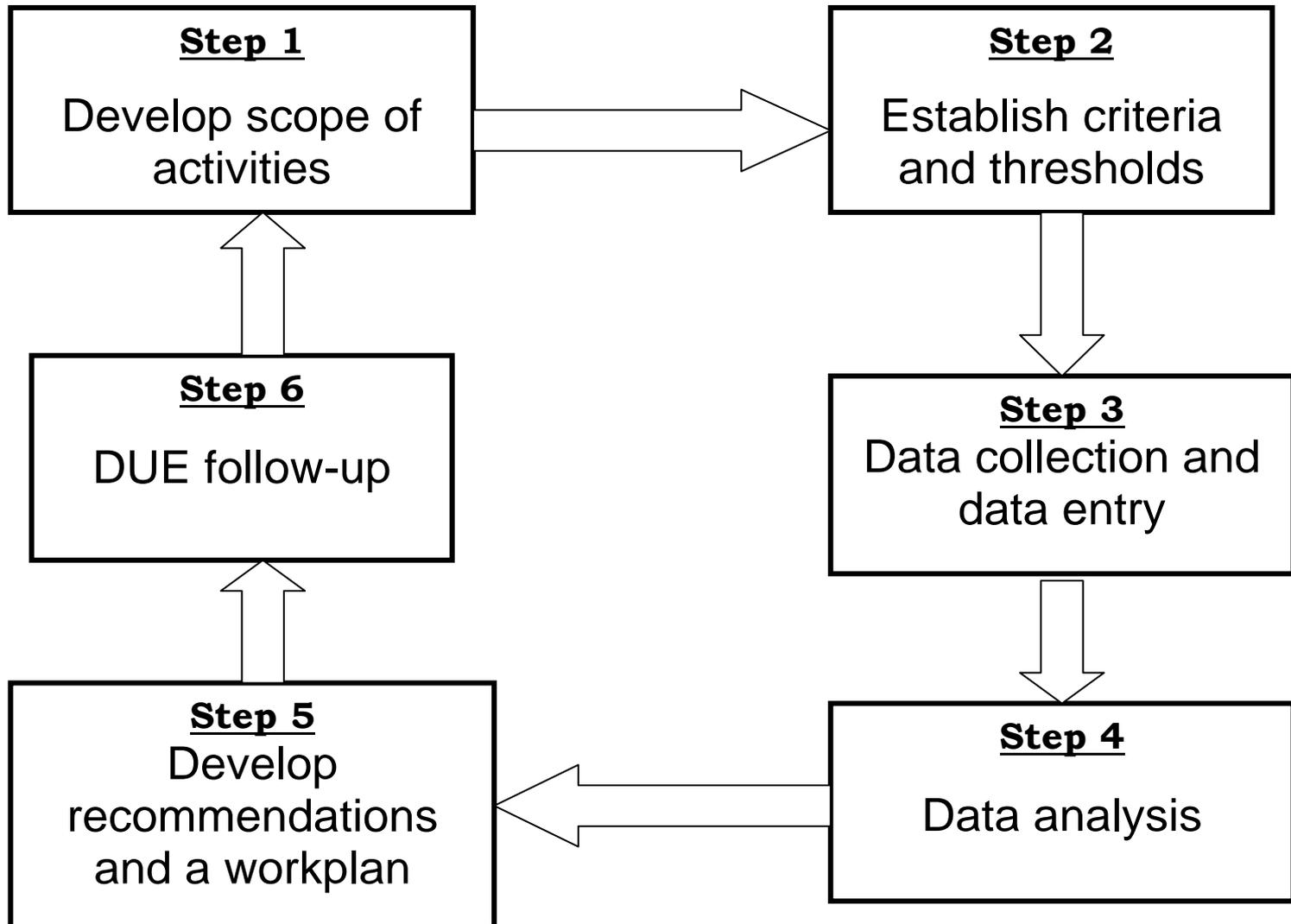
[2] Liabsuetrakul T, Lumgiganon P and Chongsuvivatwong V, 'Prophylactic Antibiotic Prescription for Cesarean Section', International Journal for Quality in Health Care 2002: Vol.14(6) pp. 503-508

Objective of DUE

- The objective of the DUE was to establish appropriate antibiotic prophylaxis for caesarean sections at The Mater Hospital between January 2006 and June 2006.
- The Mater Hospital Pharmacy and Therapeutic Committee (MHPTC) in conjunction with division of Obstetrics and Gynaecology undertook the baseline retrospective DUE*

* Boruett was trained on DUEs in the Regional DTC-TOT course organized by the Ministry of Health/ Uganda, Makerere University/Uganda and RPM Plus/MSH in collaboration with WHO & INRUD in Uganda (2004)

Stepwise Approach to DUE:



Methods

- The criteria for the DUE were developed prior to commencing, using a literature review and discussions with Ob/Gyn consultants, registrars, pharmacists, and hospital anaesthetists.
- Comparison was also made with practices at a private hospital in Nairobi.
- The Mater Hospital P&T Committee endorsed the criteria.
- A retrospective review of 110 medical records of C-sections done between January and June 2006
- Medical, Theatre and Nursing records, Treatment sheets were reviewed to identify antibiotic prescribed for each c-section delivery
- Prescribing trends were compared with the set criteria
- Antibiotic choice, dose, duration, timing of first dose formed the basis of comparison

DUE Criteria for Antibiotic Use in C-sections

INDICATOR	DESCRIPTION
Antimicrobial Agent of Choice	<ul style="list-style-type: none">○Co- Amoxiclav 1.2g or Cefuroxime 1.5 g.○Clindamycin 600 mg for patient allergic to b-lactams○Plus Metronidazole for contaminated surgery
Dose	<ul style="list-style-type: none">○Co- Amoxiclav 1.2 g or Cefuroxime 1.5 g.○Clindamycin 600 mg iv○Metronidazole 500 mg iv stat.
Timing	Immediately after cord-clamping.
Duration	<ul style="list-style-type: none">○Co- Amoxiclav 1.2 g up to 3 doses.○Cefuroxime 1.5 g STAT.
Need for Repeat doses	For procedures lasting longer than 4 hours

A compliance threshold of 90% was set

Overall Results :-

Indicator	Meets criteria	Results
Antimicrobial choice	Antimicrobial agent is as per criteria.	97%
Dose Prescribed	Dose as per criteria.	86.8 %
Duration	Duration as per criteria.	5%
Overall Adherence	Complied with all above criteria	5%

Observations:

- Adherence to defined antibiotic dose (86.8%) and duration of antibiotic prophylaxis (5%) was below the 90% threshold.
- Use of antibiotics for 2-7 days was the main reason for failure to meet defined criteria

Cost Implications of Overuse of Antibiotics

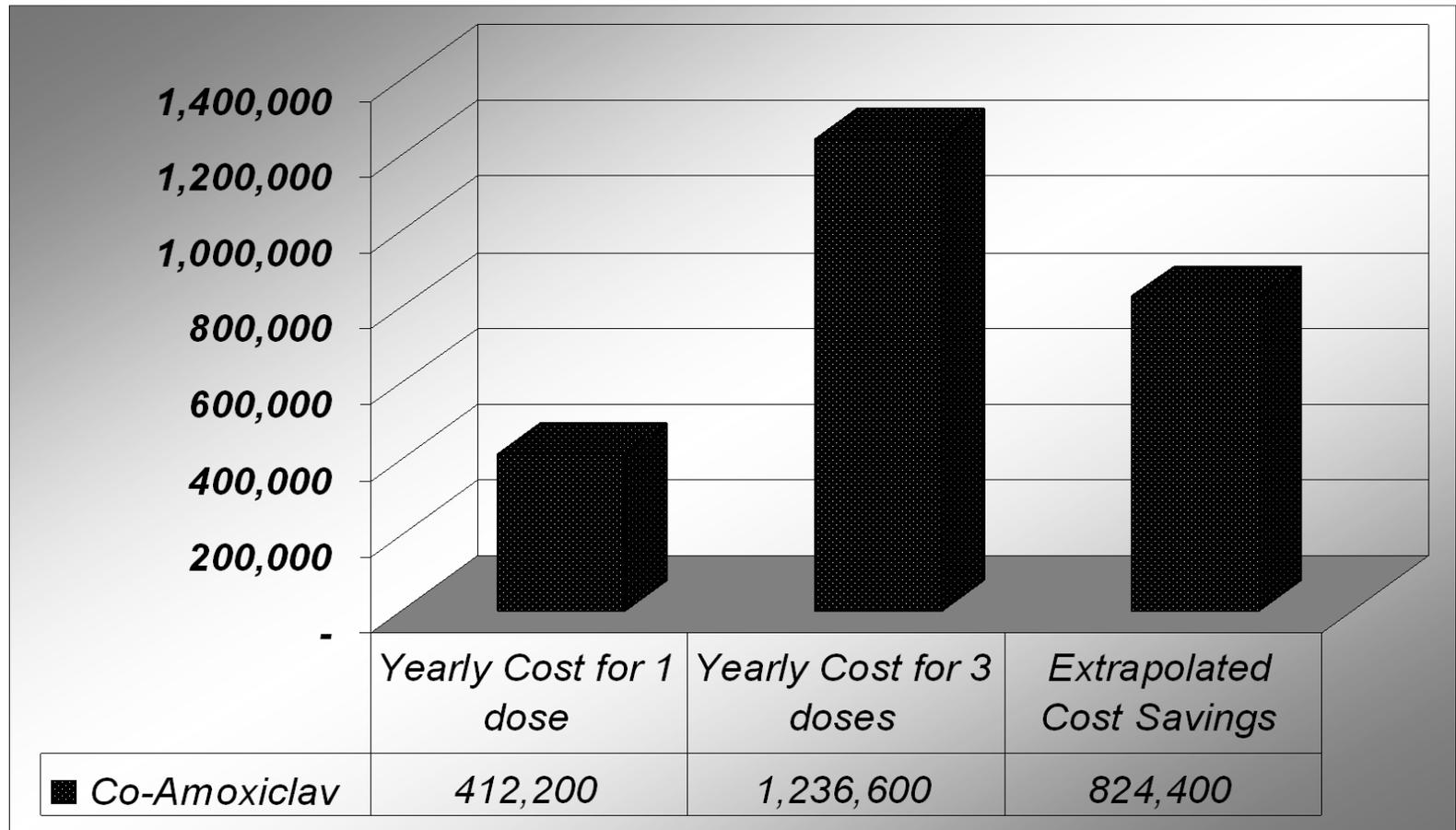


Illustration using Co-amoxiclav Inj. 1.2g -Extrapolated to 600 C-Sections Annually

Summary of Cost Implications* of Antibiotic Overuse

Component	Co-Amoxiclav	Cefuroxime
Yearly Cost for 1 dose	412,200	358,200.00
Yearly Cost for 3 doses	1,236,600	-
Extrapolated Cost Savings per year for using a single dose	824,400	878,400.00
Yearly Cost for additional oral antibiotic [10 doses]	619,273	954,436.36
Average cost saving per patient on eliminating oral antibiotics	1,310	2,019.00
Estimated cost saving per year on eliminating use of oral antibiotics	786,855	
Estimated Cost Savings per year for using a single dose of Cefuroxime Inj	1,665,255	

*Note: Costs extrapolated to 600 C-sections annually



Strategies to Improve Antibiotic Use

- Managerial Strategies
 - Drug Use Evaluation
 - Guideline on Antibiotic Prophylaxis in C-section.
 - Clinical pharmacy programs.
 - Use of automatic stop orders
- Educational Strategies
 - Face-to-face communication
 - Education outreach
 - Group sessions
 - Influencing Opinion leaders
 - Printed Educational Materials

Summary

- Administration of single dose is relatively rare at the Hospital
- Use of 3 doses, instead of a single dose of Co-amoxiclav carries huge cost implications as illustrated above.
- To increase the quality of antimicrobial prophylaxis in Caesarean section surgery, efforts should be put into developing guidelines acceptable to all disciplines.
- Other consequences of overuse of antibiotics include:
 - Increase in antibiotic resistance and adverse drug reactions
 - Increase in costs of healthcare including costs of drugs, pharmacy time, nursing care and time, and cost of consumables e.g. syringes, needles
- DUE will be an ongoing program at Mater Hospital

DUE Performance Matrix

Activity	Timeline										
	Jun to Nov 06	D-06	J-07	F-07	M-07	A-07	M-07	J-07	J-07	A-07	S-07
Managerial Strategies											
Activity 1: Drug use Evaluation											
a) Baseline evaluation	█										
b) Follow-up after intervention (Quarterly)						█	█				█
Activity 2: Development of Guideline											
a) Drafting of guideline		█									
b) Circulation of draft to stakeholders		█									
c) Approval by MHPTC , Medical advisory Committee and Hospital administration			█								
d) Official launch of guideline :				█							
e) Implementation of Guideline			█	█	█	█	█	█	█	█	█
Activity 3: Clinical Pharmacy Program											
Two pharmacists to take part in ward rounds at maternity ward				█	█	█	█	█	█	█	█
Educational Strategies											
Activity 4: Educational activities											
a) One to one detailing by pharmacists					█		█		█		
b) Group training session: CME, Clinical meeting					█ CME			█ CME			█ CME
c) Newsletter article on antibiotic prophylaxis		█						█			
d) Bulletin featuring protocol on antibiotic prophylaxis in c-section					█						