Antibiotic Use After Vaginal Delivery

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Faculty/Presenter Disclosure

Faculty: **Dr. Emily Bachmeier**

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<u>Potential for conflict(s) of interest</u>:

No member of the planning committee has disclosed a potential conflict of interest.

Objectives

1. Understand the indications for prescribing antibiotics after vaginal delivery

2. Appreciate the current research findings on the role of antibiotics for vaginal birth

3. Apply the evidence for best practices in the management of low risk births

Reasoning for The Current Discussion

- Observed practice variation at different training sites
- Recent publication of an article in the Lancet supporting use of antibiotics after operative vaginal delivery
- Increasing concerns for the need for antibiotic stewardship

Goals of Prescribing

- Reduce infectious complications of vaginal delivery & associated health care costs
  - i.e Endometritis, wound dehiscence, sepsis, UTI
- WHO study published in the Lancet in 2014
  - 73% of maternal deaths worldwide were related directly to an obstetrical cause, approximately 10% of those due to an infectious cause from childbirth
- WHO 2005 report
  - Globally 4.4% of births are impacted by infectious processes in labour, childbirth, and the puerperium

Mechanism of Prophylaxis

- As per SOGC:
  - Goal of prophylaxis to decrease microbial burden, not to sterilize tissues

Vaginal Deliveries & Related Procedures

- The Delivery
- Amniotomy
- Operative Vaginal Delivery *
- Manual Removal of The Placenta
- Repair of 3rd and 4th Degree Lacerations (OASIS) *
- Episiotomy
- Cervical Cerclage
- Post Partum D&C

Vaginal Delivery

- Cochrane Review 2017
  - Routine antibiotic use after uncomplicated vaginal delivery *may* reduce endometritis

Amniotomy

- Cochrane Review 2014
  - No RCT's examining the roll of prophylactic antibiotic use to reduce chorioamnionitis in ARM for induction or augmentation

Episiotomy

- WHO Recommendations 2015
  - Recommend against

- Cochrane Review 2017
  - Identified one poor quality study no clear evidence of benefit

Manual Removal Placenta

- SOGC CPG No 247 (Sept 2017) Antibiotic Prophylaxis in Obstetrical Procedures
  - Does not recommend

- Cochrane Review 2014
  - No RCT's examining, could follow WHO recommendation

- WHO
  - Could consider, based on c-section literature

Repair OASIS

- SOGC CPG No 330 (Dec 2015) Obstetrical Anal Sphincter Injuries (OASIS): Prevention, Recognition, and Repair
  - Recommends (I-A), for the use of a single dose of a second generation cephalosporin after repair of OASIS

Operative Vaginal Delivery

- SOGC CPG No 247 (Sept 2017) Antibiotic Prophylaxis in Obstetrical Procedures
  - Does not recommend
  - Similar recommendations made by ACOG and RCOG

- *NEW EVIDENCE*: The ANODE trial

ANODE Trial

- Large (3427 participants), blinded RTC from the UK
  - Participants were > 16 yo, > 36 weeks GA, had no other indications for antibiotic prophylaxis or ongoing antibiotic tx and had either a forceps or vacuum delivery

- Primary outcome: “confirmed or suspected maternal infection within 6 weeks of delivery” defined by a new prescription for either a confirmed or suspected wound infection, endometritis, UTI, or sepsis.

ANODE Trial Outcomes

	Amoxicillin and clavulanic acid (n=1715)	Placebo (n=1705)	RR*	p value
Confirmed or suspected maternal infection	180 (11%)	306 (19%)	0·58 (0·49–0·69)†	<0·0001
Missing	96	99	NA	NA
Confirmed systemic infection on culture	11 (1%)	25 (1%)	0·44 (0·22–0·89)†	0·018
Missing	1	1	NA	NA
Endometritis	15 (1%)	23 (1%)	0·65 (0·34–1·24)†	0·186
Missing	1	1	NA	NA
New prescription of antibiotics with relevant indication	180 (11%)	306 (19%)	0·58 (0·49–0·69)†	<0·0001
Missing	96	99	NA	NA
Systemic sepsis according to modified SIRS criteria for pregnancy	6 (<1%)	10 (1%)	0·59 (0·16–2·24)‡	0·307
Missing	9	16	NA	NA
Perineal wound infection				
Superficial incisional infection	75 (4%)	141 (8%)	0·53 (0·37–0·75)‡	<0·0001
Missing	3	9	NA	NA
Deep incisional infection	36 (2%)	77 (5%)	0·46 (0·28–0·77)‡	<0·0001
Missing	5	11	NA	NA
Organ or space infection	0	4 (<1%)	0	0·044
Missing	7	11	NA	NA

Data are n (%), risk ratio (RR; 95% CI), or RR (99% CI). NA=not applicable. SIRS=systemic inflammatory response syndrome. *Risk in amoxicillin and clavulanic acid group/risk in placebo group. †95% CI. ‡99% CI.

Table 2: Outcomes at 6 weeks post-delivery based on data from telephone follow-up and hospital records (intention-to-treat population)

	Amoxicillin and clavulanic acid (n=1296)	Placebo (n=1297)	Effect measure (99% CI)	p value
Perineal pain	592 (46%)	707 (55%)	0·84 (0·76 to 0·93)*	<0·0001
Missing	0	0	NA	NA
Use of pain relief for perineal pain	99 (8%)	138 (11%)	0·72 (0·52 to 0·99)*	0·0073
Missing	13	18	NA	NA
Need for additional perineal care	390 (31%)	543 (43%)	0·72 (0·63 to 0·83)*	<0·0001
Missing	42	38	NA	NA
Wound breakdown	142 (11%)	272 (21%)	0·52 (0·41 to 0·67)*	<0·0001
Missing	4	7	NA	NA
Dyspareunia†	299 (55%)	280 (54%)	1·01 (0·87 to 1·17)*	0·873
Missing	5	8	NA	NA
Breastfeeding at 6 weeks	662 (51%)	657 (51%)	1·01 (0·91 to 1·11)*	0·828
Missing	4	4	NA	NA
Perineum ever too painful or uncomfortable to feed baby	136 (11%)	198 (17%)	0·69 (0·53 to 0·90)*	<0·00025
Missing	96	98	NA	NA
Hospital bed stay to discharge	1 (1–2)	1 (1–2)	0 (0 to 0)‡	0·318
Missing	0	0	NA	NA
Any primary care or home visits in relation to perineum	361 (28%)	496 (38%)	0·73 (0·63 to 0·84)*	<0·0001
Missing	3	5	NA	NA
Any outpatient visits in relation to perineum	95 (7%)	173 (13%)	0·55 (0·40 to 0·75)*	<0·0001
Missing	5	6	NA	NA
Maternal hospital re-admission	63 (5%)	84 (7%)	0·75 (0·49 to 1·14)*	0·072
Missing	47	51	NA	NA
Maternal health-related quality of life				
EQ-5D-5L score	0·935 (0·098)	0·927 (0·111)	0·008 (–0·003 to 0·019)§	0·048
Missing	16	18	NA	NA

Data are n (%), n, median (IQR), or mean (SD). NA=not applicable. EQ-5D-5L=five-level EuroQol-5D questionnaire. *Risk ratio (risk in amoxicillin and clavulanic acid group/risk in placebo group). †Denominator is all women who have attempted intercourse since giving birth (n=544 amoxicillin and clavulanic acid group, n=514 control group). ‡Difference in medians for hospital bed stay to discharge. §Difference in means.

Table 3: Secondary outcomes at 6 weeks post-delivery based on data from questionnaire (intention-to-treat population)

Implications for Practice

- In summary:
  - Many procedures associated with vaginal birth have little to no evidence to recommend antibiotic prophylaxis

- ANODE trial shows convincing evidence for the use of a single prophylactic dose of a penicillin-like antibiotic; however, it would be interesting to see how treatment of GBS or use of a cephalosporin would impact these results.

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