Overcoming Resistance?
The case for infection prevention and control

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Overcoming resistance ...

WHERE?

WHOM?

HOW?
The burden of Health Care Associated Infections (HCAIs) and antimicrobial resistance (AMR)

Overall

• HCAIs affect 15.5% of hospital patients in LMICs (Allegranzi et al 2011) vs. 5.7% (4.5-7.4%) of patients in European hospitals (ECDC 2013)
• High MRSA in *Staph aureus* isolates (>40%) in both LMICs and European hospitals

Newborns

• HCAIs among newborns born in hospitals are 3-20 times higher in LMICs, compared to HICs (Zaidi et al. 2005)
• MRSA in 56% of isolates in studies from Asia; across LMICs, high resistance to cefotaxime (Zaidi et al. 2005)

Mothers

• No estimates of healthcare associated puerperal infection
• 1 referral hospital in Uganda: 80% of the isolates in puerperal infection cases were multidrug-resistant and cefepime non-susceptible
Why focusing on the maternity & neonatal wards in LMICs now?

- ↑ facility deliveries,
- ↑ c-sections
- ↑ age/obesity/NCDs and ongoing HIV – infection risk

(Graham et al., 2016)
**IPC → AMR**

- Existing core component of any healthcare system
- The link between IPC and AMR

- Better IPC
- Less infection (transmission)
- Less perceived need for routine antibiotics
- Less use of antibiotics
- Avoiding high risk places (facilities)
- Avoiding high risk procedures (c-section)
- Less AMR
The case for Infection Prevention and Control (IPC) & HCAIs and AMR

• Improving IPC can reduce HCAIs (WHO 2016)
  • Reduced catheter/central line-associated bloodstream infection
  • Reduced ventilator-associated pneumonia

• and can reduce AMR
  • Increased hand-hygiene compliance can reduce MRSA (Luangasanatip et al 2015)
The IPC umbrella
Water

- 38% facilities in LMICs don’t have access to improved water (WHO 2015)
- <30% of facilities in 4 East African countries had improved water in their labour wards (Gon et al, 2016)
- Across 7 facilities in Zanzibar, 21% of water sources routinely used for hand washing had a total bacterial count (Gon et al, 2017)
Three main routes of transmission

- Mother and babies
- Surfaces
- Hands
- Instruments and equipment

Bacteria

3 routes are valid for any other target group in a facility
Surfaces

- 7 maternities in Gujarat - 56/183 (31%) surface swabs tested positive for potential pathogens
  - 59% showed antibiotic resistance
  - Swabs from beds (including delivery beds) commonly grew *staph aureus*
  - No clear relationship with visual cleanliness
- 3/7 maternities in Zanzibar grew *staph aureus* from bed swabs
Surface cleanliness: The cleaners!

- Cleaners/Orderlies
  - No training – translates into poor storage of cleaning equipment and poor cleaning practices
  - Shortage of staff
  - Multiple responsibilities

“Other tasks that I do apart from cleaning are delivering women, dressing wounds, giving injections, caring for the newborn, and distributing food. We just work from experience without any training.”
Hand hygiene
In Zanzibar

- 13% of vaginal wiping happened with unclean material (e.g. kanga brought from home) based on 244 observations
- Across 37 maternity units, 30% of facilities reported having no cord clamps
Why IPC is difficult in a maternity ward?
- Mother and baby
- 24/7
- A stochastic event
- Mix of complicated/uncomplicated
- Surgery/wounds/body fluids

Similar to an emergency department, different wards will have different requirements.
Conclusions

Better IPC → Less infection (transmission) → Less perceived need for routine antibiotics → Less use of antibiotics → Avoiding high risk places (facilities) → Avoiding high risk procedures (c-section) → Less AMR
Thank you!
Overcoming resistance - IPC core components (2016) for acute settings

1. IPC programmes
2. IPC guidelines
3. IPC education and training
4. Surveillance
5. Multimodal strategies
6. Monitoring/audit of IPC practices and feedback
7. Workload, staffing and, bed occupancy (acute health care facility only)
Overcoming resistance

• Key Stakeholder Involvement – multi-professional
  • MoH
  • International and Local NGOs – WaterAid, Horizons Trust
  • Local research institutions
  • Partnerships with technical experts – NHS Grampian; plumbers/engineers

• Actionable Information; multi-disciplinary
  • Visual
  • Microbiology
  • Observational quantitative

• Quality Improvement activities
Changing behaviour

• Challenging – we are all resistant!
• Multiple disciplines
  • Health psychology, sociology, evolutionary anthropology
  • Different theories, models, methodologies
  • Not always complimentary
• Multiple determinants
  • Better to address more
  • But which ones are most important??

Relevant to many aspects of AMR – not just IPC