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Overcoming Resistance?

The case for infection prevention and control

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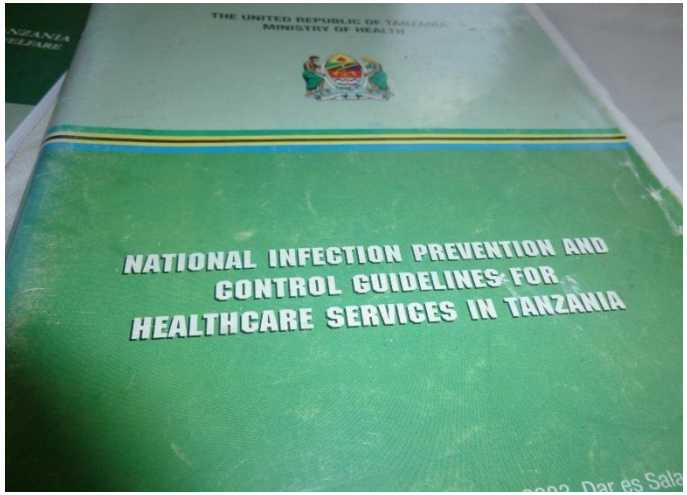
Overcoming resistance …

WHERE?

WHOM?

HOW?



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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

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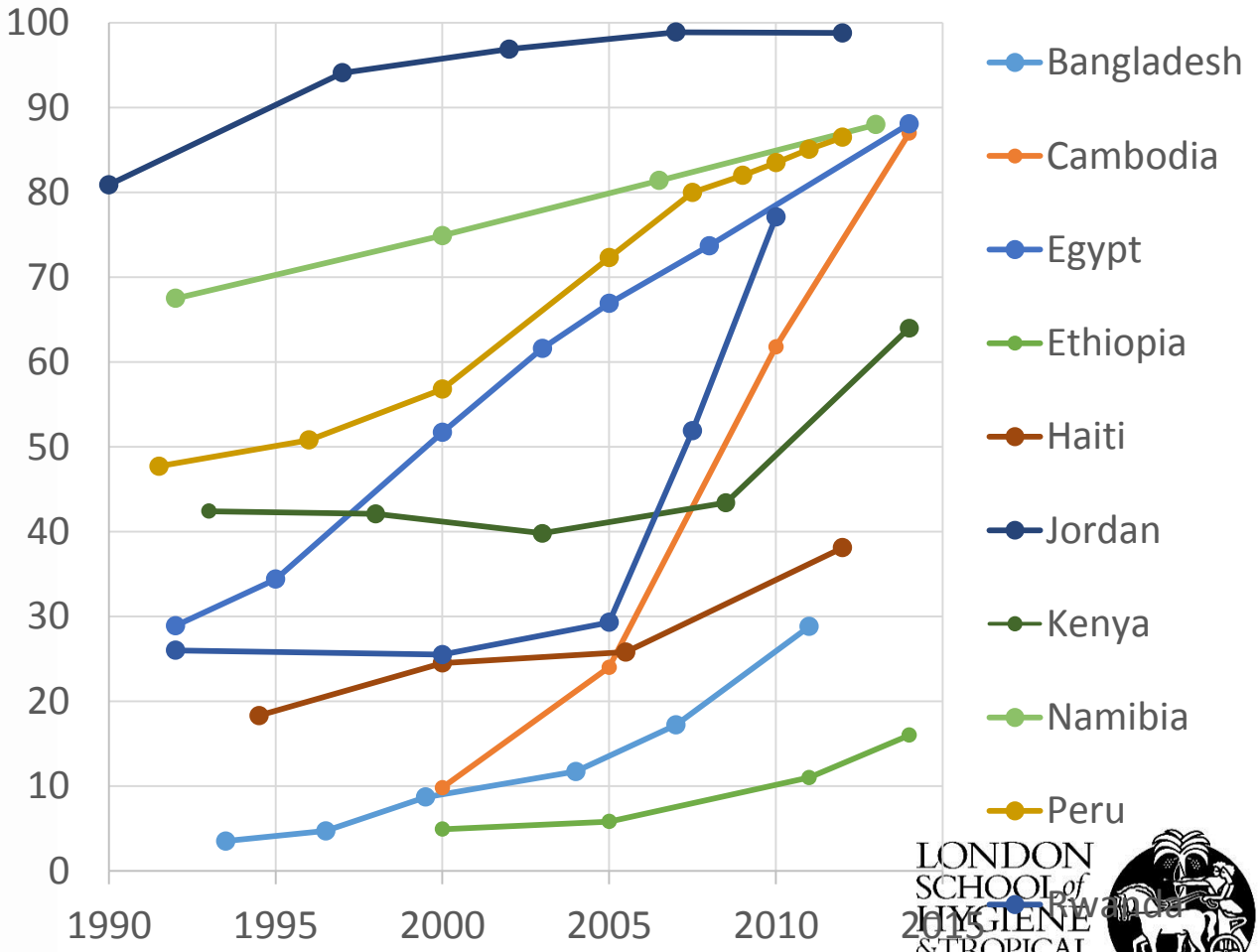
Why focusing on the maternity & neonatal wards in LMICs now?

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

(Graham et al., 2016)



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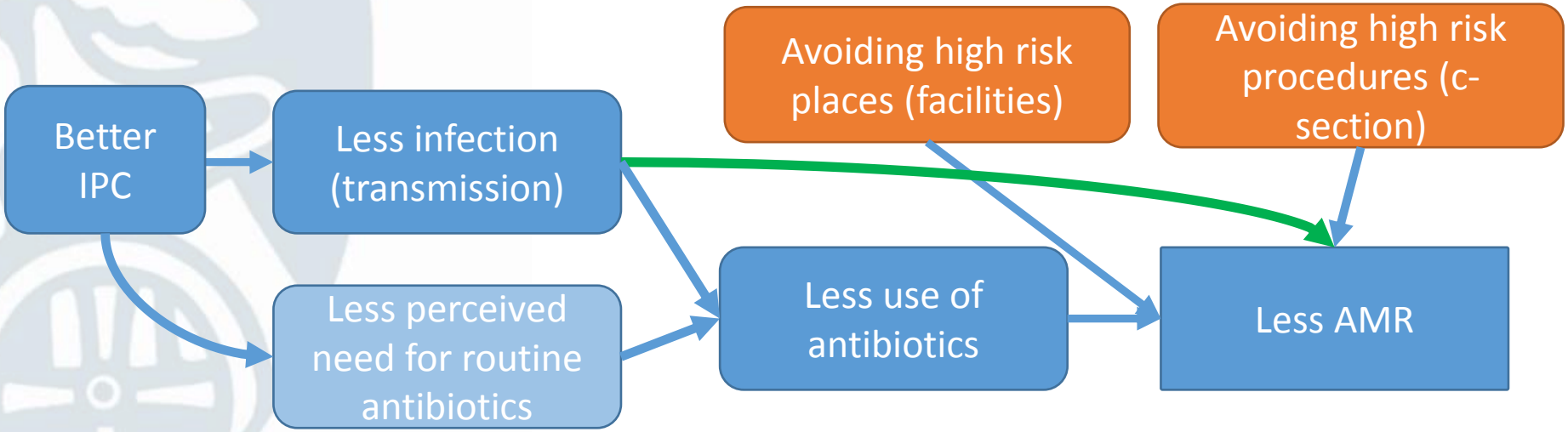
IPC → AMR

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



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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)

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The IPC umbrella

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Water

- 38% facilities in LMICs don't have a
- <30% of facilities in 4 East African c labour wards (Gon et al, 2016)
- Across 7 facilities in Zanzibar, 21% c washing had a total bacterial count

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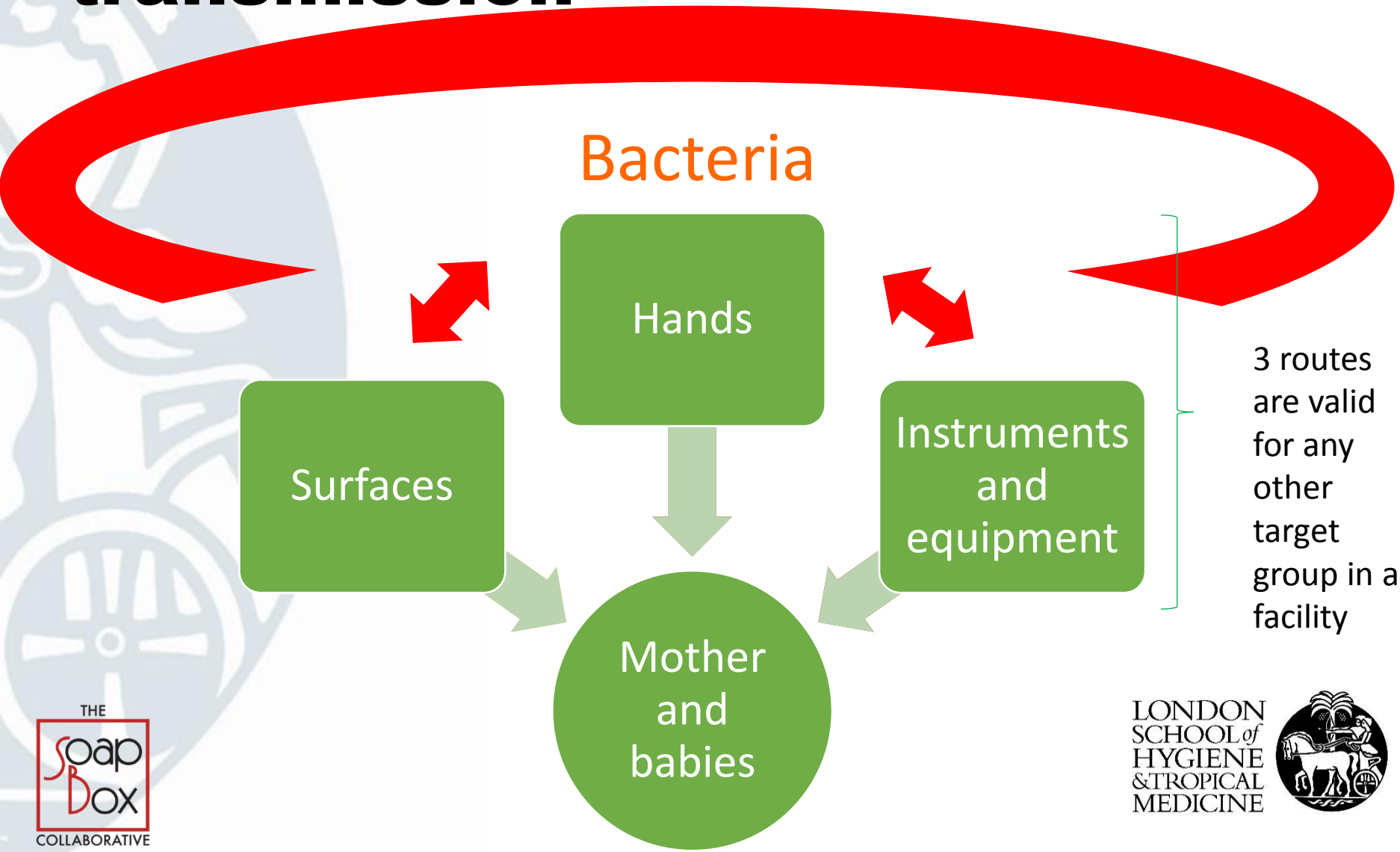
Three main routes of transmission



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

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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

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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."

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Hand hygiene

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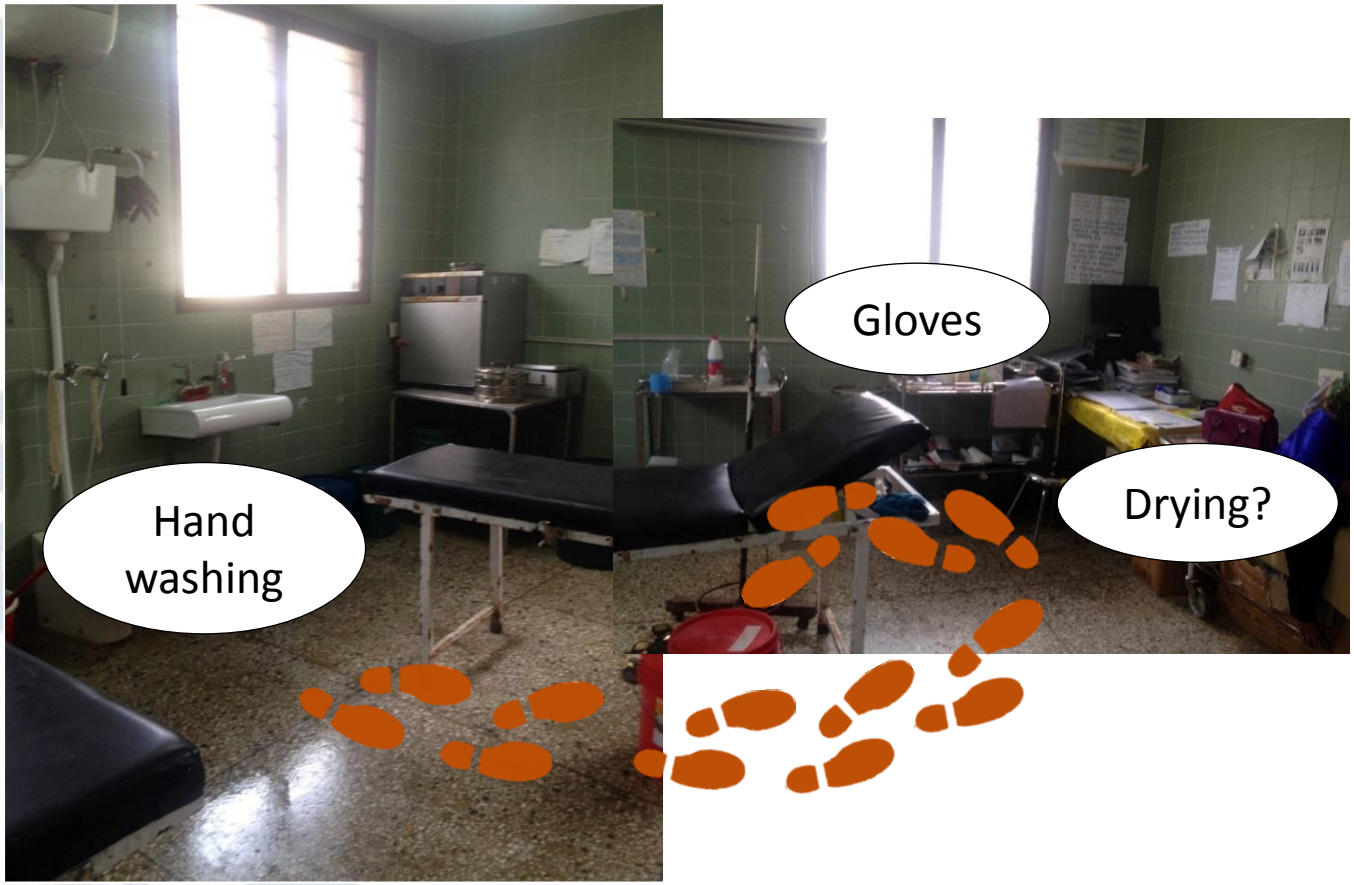
Instruments and equipment

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

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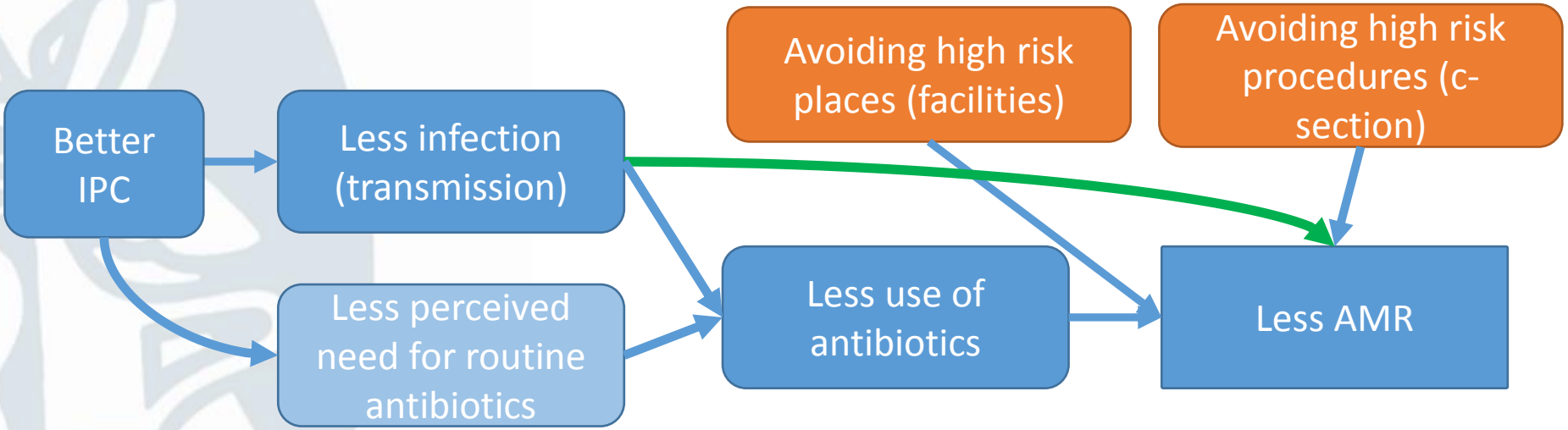
Conclusions



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Thank you!

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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)

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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

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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??

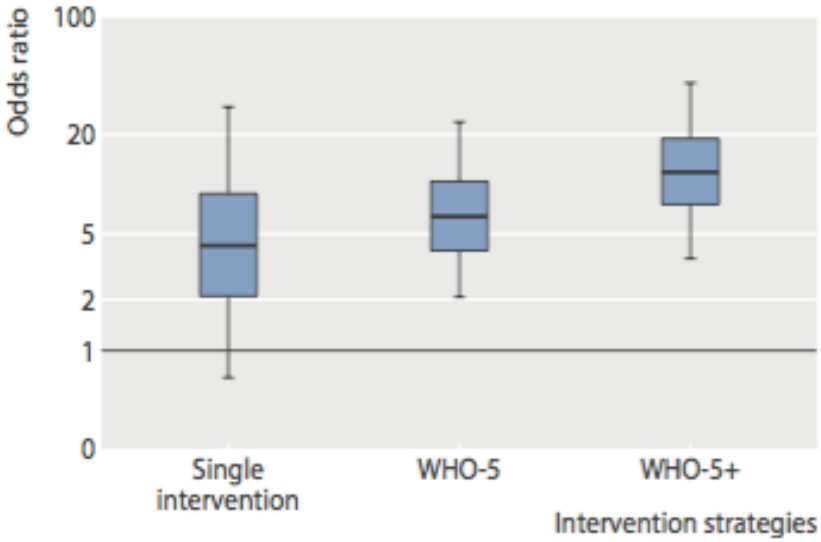

Fig 7 | Box-and-whiskers plot showing relative efficacy of different hand hygiene intervention strategies compared with standard of care estimated by network meta-analysis

Relevant to many aspects of AMR – not just IPC

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