A Novel Approach to Implementation of the Hospital Antibiotic Review Programme

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Background

• Antimicrobial stewardship programmes are widespread and increase knowledge of prescribing principles
  • Online/Learnpro
  • Lectures/tutorials

• This knowledge does not always translate into practice
How can we improve prescribing behaviour?
Why Simulation?

- Simulation is ubiquitous in modern medical education
- Benefits are well documented across literature
- Allows participants freedom to make mistakes
- Increased fidelity -> increased immersion -> increased impact on behaviour
Aims

• Design an immersive, high-fidelity simulation specifically teaching good antimicrobial stewardship principles
• Focused on HARP
Course Structure

- Pre-Brief: ~10 minutes
- Scenario: ~30-45 minutes
- Debrief: ~25 minutes
Pre-Brief

• Informs the participant of how the session will run
• Informs them of the ILO’s
• Aims to get them in the right mind-set for the scenario
  • Orientation (3-bedded infectious disease ward, morning ward round)
• Helps promote psychological safety
  • Always senior on-call for advice
  • Participant able to take a time out
  • Should be a little stressful, but not too much
<table>
<thead>
<tr>
<th>Technical</th>
<th>Non-technical</th>
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<tbody>
<tr>
<td>• Appreciate the importance of antimicrobial stewardship</td>
<td>• Understand the importance of structured ward rounds and how to carry one out</td>
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<tr>
<td>• Understand and apply simple principles of antimicrobial prescribing:</td>
<td>• Appreciate the importance of clinical reasoning and the effective use of resources to aid decision-making</td>
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<tr>
<td>o Use of culture results to narrow antibiotic spectrum</td>
<td>• Appreciate the importance of documentation</td>
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<tr>
<td>o Use of local empirical antibiotic guidelines and IVOST resources</td>
<td>• Understand how to communicate with colleagues to ensure patient care is effectively managed</td>
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<td>o Documenting antibiotic course duration</td>
<td>• Understand how to communicate with colleagues to ensure patient care is effectively managed</td>
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<td>o Awareness of WHO AWaRe Classification of antimicrobials</td>
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<td>• Be aware of common antibiotics with high oral bioavailability e.g. metronidazole, levofloxacin</td>
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<td>• Understand the management of S.A.B</td>
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<tr>
<td>• Be aware of cation interactions and how to minimise them</td>
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<td>• Understand when an infection should be discussed with microbiology/infectious disease teams</td>
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<td>• Understand the role of OPAT and when referrals are appropriate</td>
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Scenario

• 3 patient ID ward
• Each patient specifically designed to elicit certain ILO’s
  • Each has a script
  • Moulage to simulate disease process
  • Realistic and complete paperwork
• Nursing stooge for guidance if necessary
• All guidelines were present in the room, and via the laptop
<table>
<thead>
<tr>
<th>Simulated Patient Name</th>
<th>History</th>
<th>Learning Objectives</th>
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</table>
| Sarah Phillips (25)    | Pyelonephritis S. Aureus Bacteraemia | Recognise treatment failure in the context of infection  
Understand the role of OPAT  
Understand when an infection should be discussed with microbiology/ID |
| Michael Gallacher (79) | Community acquired Pneumonia – On IV Levofloxacin | Be aware of common antibiotics with high oral bioavailability  
Be aware of cation interactions and how to minimise them  
Use of local empirical antibiotic guidelines and IVOST resources  
Documenting antibiotic course duration |
| Sue Brown (54)         | Worsening Cellulitis                    | Use of cultures to guide treatment in resistant organisms  
Treatment of S.A.B and MRSA  
Understand the role and benefits of OPAT  
Appreciate the importance of IVOST |
Debrief

• ~25 minutes
• 1 – 1
  • Experienced faculty
• Debriefing tool provided with guidance for facilitators
Pilot Study

• 7 preparation for practice students at UHM
• Pre-course and post-course questionnaire

Quality of programme assessed using Kirkpatrick’s evaluation model:
Results – Reaction (1)

I have enjoyed the antimicrobial ward round simulation

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Simulation is an effective tool for learning about antimicrobial stewardship

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Simulation is an effective tool for learning about structured ward rounds

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

I would recommend the antimicrobial ward round simulation to colleagues and peers

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree
Results – Learning (2)

- I am confident when selecting and prescribing antimicrobials
- I am comfortable using culture results to guide decision making
- I am comfortable knowing where to find guidance regarding antimicrobial usage
- I am familiar with the concept of oral bioavailability
- I am familiar with the concept of Cation interactions

Bar charts showing the distribution of responses for each statement, comparing pre-course and post-course attitudes.
Results – Behaviour? (3)

My knowledge of oral bioavailability influences my decisions when prescribing antimicrobials

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

My knowledge of cation interactions influences my antimicrobial prescribing

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

I am comfortable recognising when IVOST is appropriate

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Post Course vs. Pre Course
Conclusions

• High-Fidelity Simulation is both effective and valid for teaching antimicrobial stewardship

• Further work is need to assess if HFS can generate more behavioural prescribing change vs traditional teaching
Issues

• Simulation is **very** expensive compared to traditional teaching methods
• Faculty intensive
• Faculty need to be experienced debriefers, but also understand the principles they are trying to teach
• Time allowed for simulation
Future Work

• Provide the programme for FY1s in NHS Lanarkshire

• Run larger project in February 2022
  • HEPMA to compare prescribing behaviour before and after
  • Pre-, post and 3 month MCQ
Acknowledgements

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• Catie Paton