NURSING WORKFORCE:

• Largest professional workforce within Healthcare

• Regular clinical review and engagement with patients

• Consistent role at point of care for patients and families

• Primary role to administer medications safely and effectively

• NMC duty of care to ensure no harm & patients receive the correct medicine
Table 1. Overlap of nursing activities with function attribution in current antimicrobial stewardship models

<table>
<thead>
<tr>
<th>Patient admission</th>
<th>Nursing</th>
<th>Microbiology</th>
<th>Case Management</th>
<th>Pharmacy</th>
<th>Infectious Diseases</th>
<th>Infection Control</th>
<th>Inpatient Physician</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triage and appropriate isolation</td>
<td>●</td>
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<td>●</td>
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</tr>
<tr>
<td>Accurate allergy history</td>
<td>●</td>
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<tr>
<td>Early and appropriate cultures</td>
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<tr>
<td>Timely antibiotic initiation</td>
<td>●</td>
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<td>●</td>
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</tr>
<tr>
<td>Medication reconciliation</td>
<td>●</td>
<td>●</td>
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<td>●</td>
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<td>●</td>
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</tr>
<tr>
<td>Daily (24 h) clinical progress monitoring</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Progress monitor and report</td>
<td>●</td>
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<td>●</td>
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<td>●</td>
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<tr>
<td>Preliminary micro results and antibiotic adjustment</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Antibiotic dosing and de-escalation</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Patient safety and quality monitoring</td>
<td>●</td>
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<tr>
<td>Adverse events</td>
<td>●</td>
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<tr>
<td>Change in patient condition</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Final culture report and antibiotic adjustment</td>
<td>●</td>
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<tr>
<td>Antibiotic resistance identification</td>
<td>●</td>
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</tr>
<tr>
<td>Clinical progress/patient education/discharge</td>
<td>●</td>
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<td>●</td>
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</tr>
<tr>
<td>IV to PO antibiotic, outpatient antibiotic therapy</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td>Patient education</td>
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<td>●</td>
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<td>●</td>
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<td>●</td>
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<tr>
<td>Length of stay</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Outpatient management, long term care, readmission</td>
<td>●</td>
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<td>●</td>
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</tr>
</tbody>
</table>

WHERE CAN NURSES/MIDWIVES CONTRIBUTE TO AMS?
NO EXTRA WORK INVOLVED!
**NURSING/MIDWIFERY INFLUENCE IN ANTIMICROBIAL STEWARDSHIP**

<table>
<thead>
<tr>
<th>Medicines Management</th>
<th>Nursing Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribing in line with recommended guidelines – non medical prescribers</td>
<td>Adherence to infection prevention and control standards both national and local</td>
</tr>
<tr>
<td>Monitor duration of therapy</td>
<td>Provision of essential nursing care including nutrition, hydration and prevention of pressure ulcers</td>
</tr>
<tr>
<td>Promote appropriate route of administration</td>
<td>Appropriate sampling</td>
</tr>
<tr>
<td>Timing of antimicrobial administration</td>
<td>Review microbiology results</td>
</tr>
<tr>
<td>Participation in therapeutic drug monitoring</td>
<td>Nursing assessment</td>
</tr>
<tr>
<td>Check allergy status</td>
<td>Health Promotion</td>
</tr>
<tr>
<td>Contribute to preparing patient for Out-patient parenteral antimicrobial therapy (OPAT)</td>
<td>Discharge Planning</td>
</tr>
</tbody>
</table>

Patient education, awareness and involvement in antibiotic use

Redefining the Antibiotic Stewardship Team:
Recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the Role of Registered Nurses in Hospital Antibiotic Stewardship Practices

Effective Date: 2017
CURRENT NURSING AMS INVOLVEMENT IN UK

- National audit & feedback
- Penicillin allergy review
- Education & awareness – pre & post registration
- Bacteraemia review – SABs & Gram -ve
- Antimicrobial stewardship rounds
- Bone & joint infection rounds
- International AMS collaboration
- Health & Social Care Integration
- R&D
- Policy & strategic direction
UK PERSPECTIVE – WHAT’S TO COME
ANTIMICROBIAL STEWARDSHIP IN NURSING CLINICAL PRACTICE
Aims

Increase nursing knowledge
Reduce number of inappropriate urine samples sent to the lab

Measurables

Pre-test/post-test questionnaire
Number of urine samples sent to lab
<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-test result</th>
<th>Post-test result</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know what antimicrobial stewardship means</td>
<td>50% Agree 36% Disagree 14% Unsure</td>
<td>96% Agree 4% Disagree</td>
<td>0.019</td>
</tr>
<tr>
<td>I have sufficient knowledge of antibiotics to ask the prescriber questions about antimicrobial prescriptions</td>
<td>68% Agree 23% Disagree 9% Unsure</td>
<td>92% Agree 8% Unsure</td>
<td>0.01</td>
</tr>
<tr>
<td>I know what is meant by empiric antibiotic therapy</td>
<td>23% Agree 54% Disagree 23% Unsure</td>
<td>76% Agree 4% Disagree 20% Unsure</td>
<td>0.00003</td>
</tr>
<tr>
<td>Urinalysis is a reliable tool in the diagnosis of UTI in older adults and catheterised patients</td>
<td>27% Agree 64% Disagree 9% Unsure</td>
<td>92% Disagree 4% Agree 4% Unsure</td>
<td>0.019</td>
</tr>
<tr>
<td>Antibiotic resistance only affects the person who has received the antibiotics</td>
<td>45% Agree 18% Disagree 41% Unsure</td>
<td>20% Agree 76% Disagree 4% Unsure</td>
<td>0.029</td>
</tr>
<tr>
<td>I know which antibiotics are classed as high risk in terms of promoting resistance or C.difficile infection</td>
<td>73% Agree 23% Disagree 4% Unsure</td>
<td>92% Agree 8% Unsure</td>
<td>0.013</td>
</tr>
</tbody>
</table>
Knowledge does not always result in behaviour change
## IMPACT ON PRACTICE

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the session on antimicrobial stewardship been beneficial for your nursing practice?</td>
<td>100% Yes</td>
</tr>
<tr>
<td>Since attending the educational session on antimicrobial stewardship, I now feel more confident in my role in the management of infections.</td>
<td>95.24% Yes, 4.76% No change</td>
</tr>
</tbody>
</table>

Can you provide an example of where you have used the areas of nursing influence or principles of antimicrobial stewardship in clinical practice?

**Qualitative themes**

- End date antibiotic prescriptions
- Urinalysis no longer used as diagnostic tool for UTI
- Questioning inappropriate sample requests
- Review lab results for sensitivities
URINE SAMPLES

Statistically significant reduction in urine samples sent to the labs from mean 20.9 to 14.9 samples per 1000 OBD (p=0.009)

- 29% overall reduction
- Marginal cost saving
- Prevention of antimicrobial prescriptions
UNDERGRADUATE NURSING EDUCATION

Education introduced to undergraduate nursing programme 2014
First School of Nursing to include AMS
AMS education delivered in 3rd yr
Blended teaching methods
Incorporates all principles of AMS, microbiology and areas of nursing influence in AMS
EVALUATION OF UNDERGRADUATE NURSING EDUCATION

Evaluation carried out 2016
Quantitative & qualitative evaluation questionnaire
10 questions and 3 statements
All 13 questions had optional free text
Survey completed by 167 students
15% of students aware of AMS pre-lecture rising to 79% post-lecture

“I have more insight into the principles of AMS & the link between this & IPC”

“Students are not in a position to challenge a prescriber”

“Nurses & students spend most time with patients & are key factor in patient education”
APPLICATION TO CLINICAL PRACTICE

92% believed that nurses have an important role to play in AMS
71% could identify where they could contribute to antimicrobial & infection management
38% felt their practice had changed

“Assess length of antibiotic prescriptions”
“Promote IPC with colleagues”
“Share information with other colleagues to optimize patient outcomes”
RELEVANCE TO PRE-REGISTRATION PROGRAMME

84% felt that AMS relevant to undergraduate nursing education
73% felt more confident in asking about antimicrobial prescriptions

“AMS contemporary healthcare issue where we have clear roles and responsibilities”

“I feel more confident in asking about antibiotic prescriptions”

“AMS should be introduced in 1st year and we should have more of this in our training”
HOPES FOR THE FUTURE - SYNERGY....

Pharmacy Influence
- Comprehensive pharmacy assessment
- Awareness of drug-drug, drug-patient interactions, pharmacokinetic/dynamic relationships, co-morbidities
- Provision of essential pharmacy care e.g. med reconciliation, medication chart review, estimated discharge data

Collaborative AMS Responsibilities
- Establish allergy status
- Prescribing within antimicrobial guidelines as agreed by the ASP
- Document indication, dose & duration
- Timely initiation/ Administration of therapy
- Monitor therapy duration
- Promote appropriate route of administration
- Monitor therapeutic drug levels
- Actively assess patients to see if IVOS/ OPAT possible
- Adhere to optimal IPC practice
- Review drug susceptibility
- Educate and involve patients and citizens
- Advocate for AMS programmes & interventions
- Promote integration with related programmes (sepsis, hand hygiene, water & sanitation, IPC)

Medical Influence
- Comprehensive medical assessment
- Establish diagnosis, source of infection & necessary source control
- Select appropriate investigations in line with presenting complaint

Nursing Influence
- Comprehensive nursing assessment
- Provision of essential nursing care e.g. nutrition, fluids, pressure area
- Advocate role and influence of nurses in interventions to reduce AMR (e.g. IVOS/OPAT/ TDM/ sampling/ review antibiotic duration)
