Update on current SAPG projects

SAPG Network event 2\textsuperscript{nd} November 2018
Jacqueline Sneddon

Scottish Antimicrobial Prescribing Group
Safeguarding antibiotics for Scotland, now and for the future
LITERATURE REVIEW

• Two international guidelines for the diagnosis and management of Candida diseases: ESCMID guideline (2012) and IDSA guideline (2016 Update)

• Empirical therapy should be considered in critically ill with risk factors and no other cause of fever.

• However, risk prediction algorithms are crude and not properly validated.

• Traditional diagnostic techniques insensitive and slow.

• Biomarker-based diagnostic tests e.g. β-D-glucan and PCR have high NPVs allowing empirical therapy to be withheld

• Antifungal prophylaxis should be limited to very specific populations of high risk patients with a high incidence of infection.
Antifungal stewardship – Critical Care

- Survey of current practice - 15 responses received from 6 health board areas
- Most units do not use prophylactic antifungals except in specific patient groups
- Fluconazole is first line in most units
- 11 teams supported development of national guidance

“I'd fully support this initiative as treatment of possible fungal infection feels like guesswork at present. Although there isn't much evidence to inform guideline contents at least uniformity in practice will allow future evidence to be gathered and keep costs down.”

Draft good practice recommendations on invasive candidaemia being finalised and will share for consultation
RISK FACTORS TO CONSIDER

- Central venous catheters and other intravascular devices
- Compromised GI tract
- Exposure to broad-spectrum antibiotic therapy
- Severe systemic illness or burns
- Patients with prolonged neutropenia or sustained immunosuppression, CS therapy

DIAGNOSIS

- Gold standard is a positive blood culture. Overall sensitivity is approximately 50%

TREATMENT

*No single trial to date has demonstrated the clear superiority of an echinocandin over fluconazole in the management of candidaemia*
Antifungal stewardship – Haemato-oncology

• Survey of current practice in using anti-fungals in haemato-oncology had poor response (7 replies across 6 board areas)

• Survey respondents had mixed views on the development of national consensus guidance but support for improved access to diagnostics and CT scanning to inform treatment decisions.

• Collating board policies to review current practice across all boards to inform good practice recommendations
Antifungal stewardship - respiratory

• Low number of patients but high antifungal burden in chronic respiratory infections
• Survey of current practice in respiratory medicine being tested and will be disseminated through MCNs and other respiratory groups later this month
• Focus on Allergic Broncho-Pulmonary Aspergillosis (ABPA) and chronic pulmonary aspergillosis (CPA)
Antifungal stewardship - diagnostics

Health Technology Assessment underway by SHTG to consider cost-effectiveness of biomarker diagnostics

Research question

Are molecular/biomarker-based diagnostic strategies (Intervention) a cost effective intervention to improve management of invasive fungal disease in haemato-oncology and critical care patients (Population) through more targeted use of antifungals (Outcome)? The intervention would be to withhold antifungal use based on the powerful negative predictive value of molecular and biomarker-based assays.

Comparator is empirical antifungal treatment based on clinical and radiological features.

- Polymerase Chain Reaction (PCR), galactomannan tests for invasive aspergillosis
- Beta-D-glucan (glucan, BDG) for invasive candidiasis

Publication of Evidence Note and Advice statement in 2019
ANY QUESTIONS?
Penicillin allergy de-labelling

- Point prevalence survey of penicillin allergy labelling
- 20 wards across 10 boards
- 1871 patients reviewed and 188 patients (10%) had a allergy documented.
- Mean age was 67 years and 64% were females.
- 48% of patients had an antibiotic prescribed during current admission.
Penicillin allergy de-labelling

Time from administration of penicillin to reaction occurring

Type of reaction to penicillin
Penicillin allergy de-labelling

- Risk based algorithm for screening patients with documented penicillin allergy being refined
- Patients with reaction > 10 years ago and those with unknown or clearly no history of allergic reaction considered for penicillin challenge
- Standard protocol for penicillin challenge
- Patient information leaflets for:
  - Before challenge test
  - After challenge – no allergy
  - After challenge – confirmed allergy
- Standard letter for communication of result to primary care
Penicillin allergy de-labelling – next steps

- Pilot in several boards to test algorithm and challenge process
- Need to consider governance requirements and patient consent
- How to manage any allergic reactions during challenge test
- Which wards? Medical admissions, downstream wards, pre-op surgical assessment
- Evaluation is critical before rolling out

How did things work for clinical teams? Were there concerns about risks? Any incidents/harm to patients?

Did communication work effectively for patients and clinical teams? Was label removed across all settings and did removal ‘stick’?

How did patients feel about having challenge test?
ANY QUESTIONS?
DAY 3 REVIEW

- HOSPITAL ANTIBIOTIC REVIEW PROGRAMME (HARP)
- *Open to suggestions on name*

- Similar approach to ScRAP programme with facilitated education delivered by AMT or others

- Will provide support for reliable review of IV antibiotics and documentation of duration for oral therapy
DAY 3 REVIEW – what will it comprise?

- Introductory resource on NES website – short videos to generate interest featuring leaders and front-line staff
- Two slide sets, each for 30 minute face-to-face learning session
  - Session 1: Making the case for change
  - Session 2: Using the quality improvement toolkit
- QI toolkit: audit tools, good practice guides, examples from practice
- Support pack for facilitators

Later may add an on-line self-directed learning resource
Session 1: Making the case for change

Learning outcomes

- Understand the global threat from antimicrobial resistance (AMR)
- Be aware of the current antibiotic use and resistance landscape in Scotland
- Understand why reducing inappropriate antibiotic use is important
- Identify the benefits for patients, staff and healthcare providers of best practice in prescribing antibiotics in the hospital setting
How does IV antibiotic review benefit patients and teams?

**Patients**
- Reduced pain and discomfort from PVC sites
- Reduced PVC site infections and SABs
- Improved mobility
- Less Volume of IV fluid administered
- Improved patient satisfaction

**Clinical Teams**
- Less time spent preparing, administering and monitoring IV antibiotic therapy
- Reduced drug and associated costs
- Less time spent inserting and caring for PVC lines
- Time released to spend with patients
How does documentation of duration for oral antibiotics benefit patients and teams?

**Patients**
- Preserving the effectiveness of Antibiotics for the Future
- Reduced risk of Clostridium difficile infection
- Less side effects from antibiotic therapy
- Less drug interactions

**Clinical Teams**
- Less time wasted confirming required durations on discharge
- Preserving the effectiveness of antibiotics for the future
- Less time spent administering unnecessary doses

**Better Outcomes**

**Greater Efficiency**
DAY 3 REVIEW – supporting QI

• Session 2 will provide practical information about improvement

  • How do I know which area to concentrate on improving?
  • Who needs to be involved for it to work?
  • What will I measure?
  • Will I need to measure every week?
  • What should I test first?
  • How will I know if a change has made an improvement?
  • What tools are there to support me and my team?
  • Where can I get support?

THIS RESOURCE WILL HELP YOU WITH ALL THESE QUESTIONS
### IV ReCeRD

**Consider and Document**  
*(recommended documentation in **BOLD**)*

<table>
<thead>
<tr>
<th>Re</th>
<th>Review</th>
<th>Management plan for patient</th>
</tr>
</thead>
</table>
| C  | Clinical | Infection Source *(include in problem list)*  
  - Physical examination  
  - Summary of Progress  
  - Improving / no change / deteriorating  
  - Other considerations:  
  - Presentation  
  - Relevant past medical history |
| O  | Obs |  
  - Observations: NEWS Score or individual markers  
    - Temperature, respiratory rate, blood pressure, heart rate, oxygen saturation  
  - Blood results  
    - e.g. white cell count, C-reactive protein (CRP), creatinine |
| R  | Results |  
  - Microbiology results  
    - Awaited/ Positive culture/ Negative results/ No samples taken  
  - Other relevant investigations  
    - Chest X-ray, Urinalysis, etc |
| D  | Document | Document antibiotic plan  
  - ✔️ Day of antibiotics recorded  
  - ✔️ Antibiotic(s) patient currently on  
    - e.g. Amoxicillin Day 2  
  - ✔️ Options for outcome of the antibiotic prescribing review:  
    - Stop antibiotics  
    - IV to oral switch and documentation of duration of oral therapy  
    - Continue current antibiotic regime, with reason documented  
    - De-escalate  
    - Escalate  
    - Refer to OPAT |
Examples of stickers used in other hospitals

**Antibiotic Review**

ALL antibiotics MUST be reviewed 24 to 72 hours after initiation.

Antibiotic(s): ___________ Indication: ___________

<table>
<thead>
<tr>
<th>Review Decision</th>
<th>Rationale if IV continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop</td>
<td>□ NBM or not absorbing</td>
</tr>
<tr>
<td>IV to Oral</td>
<td>□ No oral option available</td>
</tr>
<tr>
<td>OPAT</td>
<td>□ Patient not improving</td>
</tr>
<tr>
<td>Continue</td>
<td>□ Deep seated infection</td>
</tr>
<tr>
<td>IV Switch</td>
<td>□ On Microbiology advice</td>
</tr>
</tbody>
</table>

Stop/review date: _______

Signature: ___________ Designation: _______ Date: ___/___/

Would this approach be worth testing in your setting?

**IV to Oral antibiotics SWITCH criteria**

**REVIEW FROM DAY 2**

This patient has been on:

S: Suitable oral option is available
W: When patient has been afebrile >24hrs
I: Infectious condition is suitable for oral treatment*
T: Tolerating oral or nasogastric food or fluid
C: Clinical and laboratory trend towards improvement
H: Haematology & Oncology patients excluded

* Excludes bacterial endocarditis, CNS infections, cystic fibrosis and bone or joint infection – discuss with infectious diseases.

DOCTOR REVIEW

Antibiotics still indicated?

□ Yes

□ No

Suitable for oral switch?

□ Yes

□ No

Reason (if continuing IV):

Can IV line be removed?

□ Yes

□ No

Review date: _______

Signature: ___________

**ANTIBIOTIC REVIEW**

Day ........... of .................................. (antibiotic)

for ............................................. (indication)

Decision (with rationale)

□ Stop antibiotic .............................................

□ Switch to oral antibiotic ..................................

□ Change to a different antibiotic ........................

□ Continue ..........................................

□ Home IV antibiotic ..................................

Total intended duration (IV + oral) ..................

Signature: ___________
DAY 3 REVIEW – successful tests of change

Nurse led improvement in ID ward following education session

Oral antibiotic duration recorded on Cardex

Improvement Keepie Uppies

Nurse

FY doctor led improvement in surgical ward asking “What is the antibiotic plan?” on ward round

Clear IV Antibiotic Plan Documented
(General Surgical Ward)

Nurse led improvement in ID ward following education session
Any questions?
Paediatric stewardship

Priorities discussed and agreed

• Identification of sepsis in young children – SPSP working on this

• Prophylaxis and treatment of urinary tract infection – aiming to develop national good practice guidance to reduce unnecessary use and standardise practice. Add module to ScRAP programme to support good practice.

• National empiric hospital guidance – current policies collated for discussion

• Gentamicin and vancomycin charts – developed in GGC and being tested in other boards with view to providing national versions

• Day 3 review work – incorporation into paediatric antimicrobial stewardship
Empiric guidance developed in GGC in collaboration with renal specialists aiming to support:

- appropriate collection of urinary samples
- prescription of appropriate antimicrobials
- timely chasing of urine culture results

Implementation being audited

Aim to agree consensus across all boards

### Upper tract UTI/pyelonephritis

| Fever above 38°C and significant systemic upset or under 6 months of age | I.V. ceftriaxone +/- gentamicin
Switch to oral antibiotics when appropriate (guided by sensitivities) Total duration: 10 days.
Gentamicin may be used in combination with ceftriaxone initially in very unwell patients after checking a serum urea and creatinine. Gentamicin usage should be reviewed daily and a gentamicin monitoring form should be completed.
Penicillin allergy: use gentamicin initially and discuss with micro or ID |

| Fever above 38°C and mild systemic upset and tolerating oral antibiotics and over 6 months of age | Oral co-amoxiclav
Penicillin allergy: ciprofloxacin
Duration: 7 days |

### Cystitis

| Frequency, dysuria with no systemic upset or fever, nitrite negative | Await urine culture result |

| If nitrite positive or significant symptoms/concerns re lower UTI and no fever | Oral co-amoxiclav
Penicillin allergy: nitrofurantoin*. Duration 3 days
*Nitrofurantoin is contraindicated in patients under 3 months of age. Please contact microbiology or ID for advice for suitable alternative. |
Prophylaxis guidance developed in GGC in collaboration with renal specialists
Routine use of antibiotic prophylaxis after UTIs no longer recommended due to lack of efficacy in preventing renal damage and increasing prevalence of antibiotic resistance.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>%Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethoprim</td>
<td>28.4%</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>10.1%</td>
</tr>
<tr>
<td>Co-amoxiclav</td>
<td>27.5%</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>5.0%</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>5.0%</td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

*Resistance data from Glasgow 2018*
ANY QUESTIONS?
Acknowledgements

Thanks to all members of project steering groups which are chaired by:

• **Antifungal stewardship** – Brian Jones
• **Penicillin allergy** – Andrew Seaton
• **Day 3 review** – Stephanie Dundas
• **Paediatric stewardship** – Conor Doherty

Special thanks also to Niketa Platt and Fran Kerr for work on Day 3 review slides and improvement tests of change and to Andrea Patton for data analysis for Antifungal surveys and Penicillin allergy PPS