HOSPITAL ANTIBIOTIC REVIEW PROGRAMME

QI APPROACH TO IMPLEMENTATION

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Scottish Antimicrobial Prescribing Group
Safeguarding antibiotics for Scotland, now and for the future
Making Change Happen

WILL TO CHANGE
CONVINCING PEOPLE THAT CHANGE IS BENEFICIAL

IDEAS TO EFFECT CHANGE
HOW TO MAKE PROCESSES AND OUTCOMES BETTER

EXECUTION OF THE IDEAS
TOOLS AND TECHNIQUES ALONG WITH THE CAPACITY AND CAPABILITY AMONGST STAFF WHO WILL PUT THE IDEAS INTO PRACTICE
HOW BIG IS THE PROBLEM OF ANTIMICROBIAL RESISTANCE?

By 2050: more people will die from resistant infection than from cancer

GLOBAL
A failure to address the problem of antibiotic resistance could result in:

10m deaths by 2050
Costing £66 trillion

Deaths attributable to antimicrobial resistance every year compared to other major causes of death:

- Tuberculosis: 60,000
- Diarrhoeal disease: 100,000 - 120,000
- Malaria: 130,000
- AMR: 709,000
- Road traffic accidents: 1,209,000
- Diabetic disease: 1,400,000
- Cancer: 8,200,000

Source: Review on Antimicrobial Resistance 2014

IF NOT TACKLED, RISING AMR COULD HAVE A DEVASTATING IMPACT

Source: Review on Antimicrobial Resistance 2014

Without effective antibiotics modern medicine will become dangerous due to the risk of infection. Setting broken bones, major surgery and chemotherapy all depend on access to antibiotics that work.

The thoughtless person playing with penicillin treatment is morally responsible for the death of the man who succumbs to infection with the penicillin-resistant organism.

AVOIDABLE HARM ASSOCIATED WITH IV ANTIBIOTIC USE

- Most PVCs placed for IV antibiotic administration
- 1 in 3 S.aureus bacteraemias (SABs) acquired in hospital are PVC-related
- 22% Mortality with Hospital acquired SAB

Reviewing PVCs and IV antibiotics can prevent the majority of SABs and reduced mortality
1. **What are we trying to accomplish?**
   A clear aim: what, how much and by when?
   e.g. 90% of patients will have an IV review and antibiotic plan documented within 72 hours of starting IV antibiotics by April 21

2. **How will we know that change is an improvement?**
   By measuring processes and outcomes

3. **What changes can we make that will result in an improvement?**
WHAT ARE WE TRYING TO ACHIEVE?

Standards on Healthcare Associated Infections and Indicators on Antibiotic Use 2019

Use of intravenous antibiotics in secondary care defined as DDD / 1000 population / day will be no higher in 2022 than it was in 2018.

NHS Lanarkshire

• 2018 quarterly average 0.8 and 2019 average was 0.87
• So a rise of almost 10%.
• 1 in 10 reduction in IV antibiotic’s
SMART AIM – RELIABLE ANTIBIOTIC REVIEW

• **90% of patients on IV antibiotics** will have written evidence of clinical review of antibiotic therapy within 72 hours and a documented antibiotic action plan:
  – IV to oral switch with correct duration of oral treatment documented
  – Continue current antibiotic regime with reason documented
  – Escalate with reason documented
  – De-escalate
  – Stop

By : (Decide with your team when you will achieve this by e.g. 90 days)

• **90% of patients prescribed oral antibiotics** will have the correct (by guidelines) duration documented on the medicine chart
WHAT IS HAPPENING NOW?

Half of IV antibiotics are given for >3 days

One third of IV antibiotics are continued without any documentation as to why

Good practice point
Review IV antibiotics daily and switch to oral, stop or de-escalate as soon as possible

Good practice point
Document a clear management plan when reviewing IV antibiotics


Ref: SAPG quality indicator report 2018
PATIENT STARTED ON IV ANTIBIOTICS

Ensure IV review documented in notes with antibiotic plan within 72 hours and then update regularly

Patient for IV to oral switch

Ensure duration for oral antibiotic recorded on the Kardex

Ensure correct duration i.e. Per local antibiotic policy (or reason documented)
Oral duration = Total duration – IV duration

Ensure antibiotic stopped when course completed
WHERE TO START

• How do I know which area to concentrate on improving?

• Who needs to be involved for it to work?

• Where can I get support?

Number of patients with IV Antibiotics prescribed for over 3 days

Number of IV antibiotics prescribed for over 3 days
SHARING DATA TO BRING ABOUT CHANGE

BUILDING WILL

OVERCOMING OBSTACLES

People don’t see the need to or aren’t motivated to change.
Make it visual.
Make it real.
Bring it down to patient level.
Give the team a vision
Its just too much
Shrink the change
Are there obstacles that can move
Provide clarity/additional support
Tools to support change

<table>
<thead>
<tr>
<th>IV ReCORD</th>
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| **Consider and Document** (recommended documentation in **BOLD**)
| **Re** Medicine | Management plan for patient |
| **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 |
Starting Oral rather than IV
Low Hanging Fruit

Antibiotics that have EXCELLENT oral bioavailability (>90%)

- Co-trimoxazole
- Levofloxacin*
- Linezolid*
- Metronidazole*

LevoFloxacino* has excellent bioavailability - is the oral route available for the patient?

N.B. Oral levofloxacin is rapidly and almost completely absorbed with peak plasma concentrations obtained within 1 - 2 h. Absolute bioavailability is 99 - 100%.

[https://www.medicines.org.uk/emc/product/11103/smpc]
What should I test first?

Once you have baseline data you are ready to start testing interventions to improve practice.

- **Start small** - anything you try will take you forward in your learning journey
- Try tests for one intervention, one ward, one patient, one antibiotic, with one prescriber or on one day/shift
- Remember what works for someone else may not work for you

Complete the full PDSA cycle so that you know the next step to take!
What are you measuring?

How will I know a change is an improvement?

**Process measures**
- Measures that we think will affect the overall outcome and are linked to the project aim:
  - e.g. Documented IV review within 72 hours

**Balancing Measures**
- Measures that check the impact on the system elsewhere. Are there any unintended consequences from our tests?
  - e.g. Did patients stop antibiotics too soon?
  - e.g. Did ward rounds last longer?

**Outcome measures**
- Outcome measures capture the high-level aim:
  - e.g. Reduction in IV and oral antibiotic use in hospitals in Scotland
Audit tools for data collection

### Outcome of review

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<tr>
<th>Week</th>
<th>Stop</th>
<th>Continue</th>
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### Oral - Duration documented

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Asking antibiotic plan on ward round:
Junior doctors tested asking for antibiotic plan on the ward round if it wasn’t mentioned directly by the consultant (and documenting in notes after ward round).

Feedback:
Team Feedback: Junior doctor fed back initial audit results (conducted as part of FY1 project) to the rest of the team. Emphasis was made that feedback had to be positive even if results were poor.

Peer to Peer Feedback: Audit results fed back to FY1s looking after patients.
Sustainability: making changes stick

- Make sure there is a system in place to ensure everyone knows how this is done
- No matter what time of day or what day of the week the new process will be applied to ALL patients every time.
- Maintaining awareness and getting others involved
- Feedback, feedback, feedback
- Antibiotic review then becomes routine practice on the ward
- Utilise HEPMA or other electronic systems for “hard wiring”

NEW SYSTEM AND NEW CULTURE
- RELIABILITY, DURABILITY, UNIFORMITY, CONSISTENCY
CHANGE IN COMPLEX SYSTEMS

Improvement is 20% Technical

Improvement is 80% Human