Is resistance important to me?
Practical ways forward

Caroline Mawer
ANTIBIOTIC ACTION

"Antibiotic resistance - one of the three greatest threats to human health."

World Health Organisation, 2009

"A poor antibiotic era means, in effect, an end to modern medicine as we know it. Things as common as strep throat or a child’s scratched knee could once again kill."

-Dr. Margaret Chan, Director General of the World Health Organization
Keynote Address, Conference On Combating Antimicrobial Resistance,
Copenhagen, Denmark (March 14, 2012)
Evidence
Antibiotic Use and Resistance are linked

High use = High Resistance

Correlation between penicillin use and prevalence of penicillin resistant S. pneumoniae

UK PRESCRIBING
Local Data
Abx by STAR PU Qtr4 2010-Qtr3 2011

[Graph showing prescribing data for practices across quarters from Qtr4 2010 to Qtr3 2011. Each vertical bar represents a practice, with the height indicating the number of prescriptions for 'Abx' by STAR PU. A red arrow points to a specific practice identified as 'Your Practice'.]
Annual Fluctuations in Drug Resistance Are Linked to Seasonal Antibiotic Use

1 month lag between use and resistance

Evidence

Your prescribing influences resistance

Effect of antibiotic prescribing on resistance

A meta analysis of English Primary Care

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio for resistant organism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Antibiotic &lt;2m</td>
</tr>
<tr>
<td>UTI 5 studies: n = 14,348</td>
<td>2.5</td>
</tr>
<tr>
<td>RTI 7 studies: n = 2,605</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Longer duration and multiple courses associated with greater resistance

UK PRESCRIBING
What is happening to GP prescribing?

Trends in prescribing of antibacterial items (excluding penicillins) in English General Practices

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Items per 1000 Patients</th>
<th>Changes since 2007/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>100</td>
<td>Macrolides +3%</td>
</tr>
<tr>
<td>1999-00</td>
<td>90</td>
<td>Tetracyclines +23%</td>
</tr>
<tr>
<td>2000-01</td>
<td>80</td>
<td>Sulphonamides &amp; Trimethoprim +23%</td>
</tr>
<tr>
<td>2001-02</td>
<td>70</td>
<td>Co-Amoxiclav +1%</td>
</tr>
<tr>
<td>2002-03</td>
<td>60</td>
<td>Nitrofurantoin +178%</td>
</tr>
<tr>
<td>2003-04</td>
<td>50</td>
<td>Cephalosporins +128%</td>
</tr>
<tr>
<td>2004-05</td>
<td>40</td>
<td>Quinolones -3%</td>
</tr>
<tr>
<td>2005-06</td>
<td>30</td>
<td>Metronidazole &amp; Tinidazole</td>
</tr>
</tbody>
</table>
Use proper dosage

• 37yr old breastfeeding woman
• R breast outer zone mastitis
• Rx 250mg fluclox qds

30 hrs later, I saw her
• Both breasts hyper-infected
• Pulse 151, T 38.9

ED Consultant “Women die of breast abscesses”
Cough/Chesty Cough

- When young children catch a cold they often develop a ‘noisy chest’ or a ‘chesty cough’. This can be worrying for parents who believe that a chesty cough is a sign of a ‘chest infection’.

- Young children often get noisy chests. This is because they have smaller airways and thinner rib cages than adults.

- A child with a true chest infection will generally be more ‘unwell’. See page 7 for signs of a more serious problem.

How long will it last?
This chart shows you how long cough often lasts in children. The faces represent ten children who have seen their GP with a cough. Green faces are those who have recovered at each time period.

What can I do about it?
Coughing helps the body fight against infection and can take a while to go. Cough syrups probably do not help. See page 6 for other things that may help.

Do antibiotics help?
Most people who take antibiotics do not get better any faster than people who do not take them. Looking at adults and children with bronchitis (chesty cough), on average, people taking antibiotics will have a cough for only half a day less than those who don’t.
Earache

- There is normally no need to treat ear infections with antibiotics. Pain control with Paracetamol and / or Ibuprofen is all that is normally needed.
- If your child is having hearing problems, or the ear is draining, they should see a GP.

How long will it last?
This chart shows you how long earache often lasts in children. The faces represent ten children who have seen their GP with earache. Green faces are those who have recovered at each time period.

Do antibiotics help?
After one week, more than three-quarters of children will be better whether they take antibiotics or not. Most (14 out of 15) children who take antibiotics get better just as quickly as if they had not taken them. Children under the age of two with ear infections in both ears, and those with an ear infection that is draining, are more likely to benefit from antibiotics than other children and should be seen by a doctor or nurse.
The following are signs of possible serious illness:

- **Your child is drowsy or irritable.** (Although children with a temperature are often more sleepy, irritable and lacking interest than usual, they usually improve after treatment with paracetamol and / or ibuprofen. If they do not improve, or if they are very drowsy indeed, they should see a doctor urgently).

- **Your child has problems breathing** - including rapid breathing and being short of breath or 'working hard' to breathe. (It sometimes looks as though the tissues between the ribs and below the ribs get sucked in each time they breathe). Any child who has a lot of difficulty breathing needs to see a doctor urgently.

- **Cold or discoloured hands or feet** with a warm body

- **Severe arm and/or leg pains** (for no obvious reason)

- **Unusual skin colour** (pale, blue or dusky around lips)

- **High temperature** (40 C or higher) (not necessarily a sign of serious infection, but if the temperature does not come down with treatment or your child has other features on this list then you should seek help).

- **An infant who is not feeding** or any child that is showing signs of **dehydration**

**Symptoms related to meningitis:**

- Unusually severe headache
- A stiff neck (difficulty putting chin to chest)
- Dislike of bright lights
- A rash that does not fade with pressure (see page 8)

**Other symptoms that should be assessed by a GP:**

- A cough lasting more than 3 weeks (or sooner if becoming breathless more easily or there is a family history of asthma)
Antibiotic prescribing is related to consultation rates

- Consultation rate for RTI varies: 125–1100 per 1000 patients
- Antibiotics prescribed in 45% to 98% of patients with RTI
- Consultation rates related to prescribing
- Practices who reduced prescribing experienced a reduced consultation rate

Thus patients can be retrained not to expect antibiotics

TARGET Antibiotics toolkit

This Toolkit has been developed by the RCGP, PHE and The Antimicrobial Stewardship in Primary Care (TAS) collaboration with professional societies including GPs, pharmacists, microbiologists, clinicians, guidance developers and other stakeholders.
Antibiotic information leaflet

Patient’s name

No antibiotic prescription given

Antibiotic prescription given today but it should only be collected after ___ days if needed from: surgery reception GP pharmacy

Why did you not get antibiotics today?

- Colds and most coughs, sinusitis, otitis media (earache) and sore throats often get better without antibiotics.
- The table below shows how long these illnesses normally last, what you can do to ease your symptoms and when you should go back to your GP or contact NHS 111 (England), NHS Direct (Wales) or NHS 24 (Scotland).

<table>
<thead>
<tr>
<th>Please tick</th>
<th>Illness</th>
<th>Lasts on average</th>
<th>What you can do to ease the symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ear infection</td>
<td>4 days</td>
<td>• Have plenty of rest. • Drink enough fluids to avoid feeling thirsty.</td>
</tr>
<tr>
<td></td>
<td>Sore throat</td>
<td>1 week</td>
<td>• Ask your local pharmacist to recommend medicines to bring down your temperature or control pain.</td>
</tr>
<tr>
<td></td>
<td>Common cold</td>
<td>1 ½ weeks</td>
<td>• Other things you can do suggested by GP or nurse.</td>
</tr>
<tr>
<td></td>
<td>Sinusitis</td>
<td>2 ½ weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cough or bronchitis</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other infection</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

When should you (or your child) go back to your GP practice or contact NHS 111, NHS Direct Wales? (Listed in order of urgency, with the most urgent symptoms first)

1. If you develop a severe headache and are sick.
2. If your skin is very cold or has a strange colour, or you develop an unusual rash.
3. If you feel confused or have slurred speech or are very drowsy.
4. If you have difficulty breathing. Signs that suggest breathing problems can include:
   - Breathing quickly
   - Turning blue around the lips and the skin below the mouth
   - Skin between or above the ribs feeling sucked or pulled in with every breath.
5. If you develop chest pain.
6. If you have difficulty swallowing or are drooling.
7. If you cough up blood.
8. If hearing problems develop or if there is fluid coming out of your ears (any earache in children).
9. If you are feeling a lot worse or are not improving by the time given in the ‘lasts on average’ column.
10. Other

Why you should only take antibiotics when they are needed

- Bacteria can adapt and find ways to survive the effects of an antibiotic. They become ‘antibiotic resistant’ so that the antibiotic no longer works.
- The more we use antibiotics, the greater the chance that bacteria will become resistant to them so that they no longer work. If we all try to reduce their usage, antibiotics will be more likely to work when we really need them.
- Antibiotic-resistant bacteria don’t just infect you, they can spread to other people in close contact with you.
- Some antibiotics can cause allergic reactions such as rashes, being sick if you also drink alcohol and reactions to sunlight – as well as other symptoms.
Centor criteria to aid diagnosis of Group A beta-haemolytic streptococcus

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Centor criteria to aid diagnosis of Group A beta-haemolytic streptococcus (GABHS) as a cause of presentation with a sore throat:

- tonsillar exudate
- tender anterior cervical lymph nodes
- absence of cough
- history of fever

- presence of three or four of these clinical signs suggests that the chance of the patient having GABHS is between 40% and 60%, so the patient may benefit from antibiotic treatment
- absence of three or four of the signs suggests that there is an 80% chance that the patient doesn't have the infection, and antibiotics are unlikely to be necessary
- in patients with tonsillitis who are unwell, and have three out of four of these criteria, the risk of quinsy is 1:60 compared with 1:400 in those who are not unwell
- centor criteria is not ideal, and will lead to some patients with bacterial pharyngitis not being treated and result in unnecessary antibiotic treatment for others

Reference:

# Self Assessment Checklist

**What would be good practice now**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your practice use antibiotic guidance provided nationally or locally by the microbiologist or commissioners for treatment of common infections?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your practice use delayed prescribing on a regular basis for uncomplicated respiratory tract infections?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the latest antibiotic guidance made available to all temporary prescribers working in your surgery?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you undertaken a practice wide antibiotic audit in the last two years?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do your clinicians record clinical indication for antibiotic prescribed in patient notes using read codes?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**What most practices should aim to do soon**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a GP within your practice who takes a lead for antibiotic stewardship in the practice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you analyse and discuss antibiotic prescribing at your surgery in comparison to local targets at least once a year?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you keep a written record and surgery action plan resulting from antibiotic audits?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**What all antibiotic aware practices should be doing**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your practice use patient focused strategies to highlight the importance of responsible antibiotic use? For example patient information, leaflets and posters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do your clinicians use patient information leaflets within your consultations?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there a standard approach to antibiotic prescribing to avoid patients re-consulting with other clinicians within the practice, to obtain the antibiotic they expect?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you or anyone in your practice undertaken any antibiotic related prescribing clinical courses, for example MARTI and MUTs on the RCGP website?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[www.rcgp.org.uk/TARGETantibiotics](http://www.rcgp.org.uk/TARGETantibiotics)
TARGET: Training Resources

Managing Acute Respiratory Tract Infections

Managing Urinary Tract Infections

Stemming the Tide of Antimicrobial Resistance

www.rcgp.org.uk/TARGETantibiotics
Questions for discussion

• Delayed prescribing?
• Paed doses paper?
• Who knows duration of RTIs?
• Lancet amoxicillin paper?
Some references

• http://www.rcgp.org.uk/targetantibiotics/
• Delayed antibiotic prescribing for RTI .. BMJ 2014; 348:g1606
• Oral penicillin prescribing for children in the UK. BrJGP 2014; 64:182-3
• Prognosis of RTIs in primary care BMJ 2013; 347: f7185
• Amoxicillin for acute LRTI in primary care .. high risk groups. Lancet 2013; 13/2: 123-9