TARGET

Keep Antibiotics Working

Common infections in extraordinary times

Decision points for remote management

General Practice and Out of Hours

Dr Tessa Lewis

Aims

- Identify key decision points for remote management of common infections (ENT, COVID-19, cough, urinary infection, insect bites)
- Identify people most likely to benefit from antibiotics
- Recognise risk and cognitive bias (’something bad happening’)
- Back-up prescribing – Practicalities

Question 1

Estimate the rate of *E.coli* **blood stream** infections, which are resistant to co-amoxiclav

a) 0-10%
b) 11-20%
c) 21-30%
d) 31-40%
e) Over 40%

Q1: Answer & Rationale

Estimate the rate of *E.coli* **blood stream** infections, which are resistant to co-amoxiclav

a) 0-10%

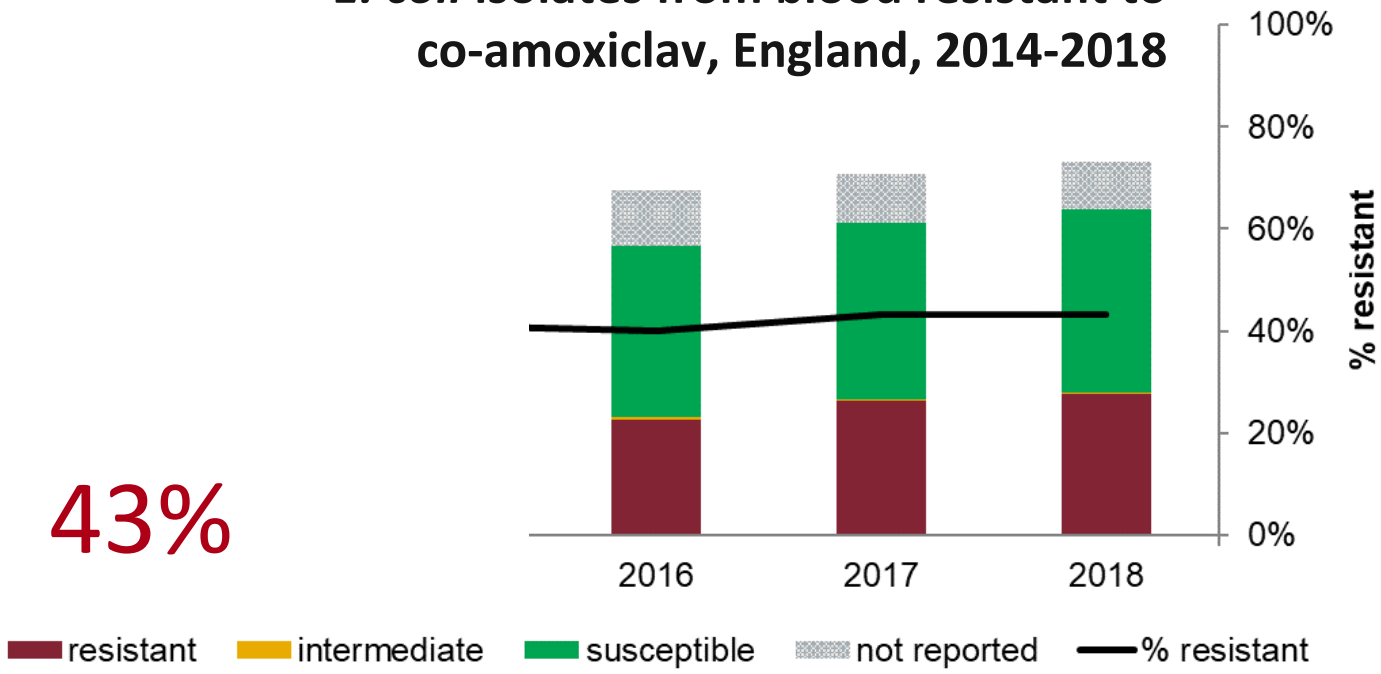
b) 11-20%

c) 21-30%

d) 31-40%

e) Over 40% 43%

E. coli isolates from blood resistant to co-amoxiclav, England, 2014-2018



Public Health England (PHE). (2018). *Antimicrobial resistance quarterly surveillance: March 2018.*

Why do we prescribe antibiotics?

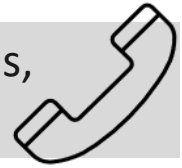
- Relief of symptoms
- Worry about complications/more serious illness
- Patient pressure

The Patient Perspective 2017 n=249

Why they visited GP with RTI (not cold/runny nose)

- **Advice:** self care & relief of symptoms, 25- 35%
- **Worry**: more serious illness
- Expecting antibiotics 38%
- **Cause & duration**

ASK EARLY Patient's concerns, purpose of call



McNulty et al. (2019). *Public understanding and use of antibiotics in England: findings from a household survey in 2017.* doi:10.1136/bmjopen-2019-030845

Challenges in Practice: AMS vs Sepsis

Spectrum of illness & risk

LOW RISK

- Young adult
- Fit and well
- Symptoms - recent mild
- Signs - none

HIGH RISK

- Age extremes
- Comorbidities
- Polypharmacy
- Recent admission
- Recurrent illness
- Social circumstances
- Condition-specific considerations

Challenges in Practice: AMS vs Sepsis

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- Recurrent illness
- Social circumstances
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SIGNS **Home readings**

✓ Temp, pulse, BP, blood glucose, PFR

Oximetry: Caution – don't use smart-phone apps

Tips for telephone consultations

Begin the conversation

- Establish who you are talking to and purpose of call
- Establish if COVID-19 is suspected

Check

- Symptoms
- Existing conditions
- Medication
- Home readings
- Symptoms of deterioration

Telephone appropriate?

- Diagnosis is clear
- Duration of illness short
- No red flags

Safety netting

Specific advice

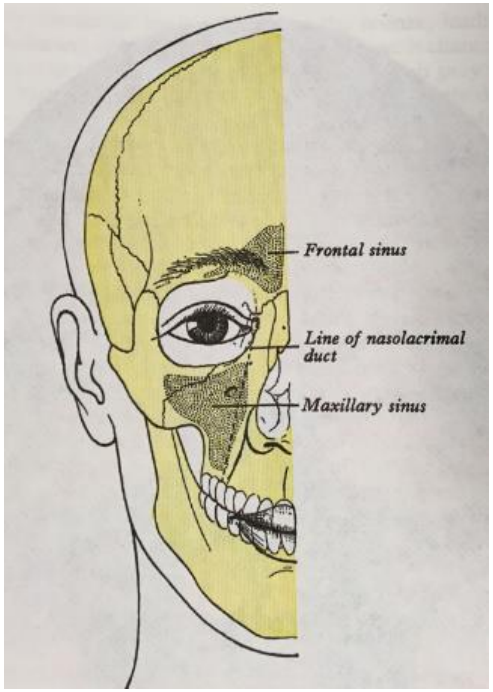
- Persisting or worsening symptoms e.g. SoB
- Stay at home advice
- Where to seek help

Remote	May be appropriate where the patient's clinical or treatment request is straightforward [GMC]
Face to face	**Diagnostic uncertainty** about **cause** or **severity** Several remote assessments for same problem *** Shared decision**

Stockley S and Neighbour R (RCGP). (2020). *Top 10 tips for COVID-19 telephone consultations.*
Hazell T et al. (RCGP). (2020). *Coronavirus - Top 10 tips on what to do in primary care*
Greenhalgh T, *et al*. BMJ 2020; 368 :m1182

Sinusitis
Question 2

Sinusitis is a common diagnosis accounting for approx. 8% antibiotic prescriptions



What percentage of acute sinusitis infections are viral?

a)30%
b)50%
c)70%
d)over 90%?

Smieszek, T., et al. (2018). DOI: 10.1093/jac/dkx500
https://www.nice.org.uk/guidance/ng79

Remote Assessment Sinusitis

- Is it really sinusitis?
- Other causes for facial pain symptoms

* Common cold
- Allergic rhinitis
- Nasal foreign body
- Dental pain
- Sinonasal tumour
- Migraine
- Giant cell arteritis
- Temporomandibular joint dysfunction
- Neuropathic or atypical facial pain.

Sinusitis (Acute)

NICE Guidance 79

If not systemically unwell or higher risk of complications:

Symptoms for 10 days or less?

Yes

Do not offer an antibiotic

Over 90% will be viral

Coronavirus (COVID-19) General Practice & Out of Hours

Sinusitis- Acute

NICE Guidance 79

Symptoms for 10 days or less?

Yes

Do not offer an antibiotic

Over 90% will be viral

Symptoms with no more improvement for more than 10 days

Yes

- Consider no antibiotic or back-up prescription, depending on likelihood of bacterial cause
- Consider prescribing a high-dose nasal corticosteroid for 14 days for adult and children aged 12+ (off label use)

mometasone 200 mcg bd
fluticasone 110 mcgs bd

Bacterial cause may be more likely if several of the following are present:

- Symptoms for more than 10 days
- **Discoloured or purulent nasal discharge**
- **Severe localised unilateral pain** (particularly pain over teeth and jaw)
- **Fever**
- Marked deterioration after **an initial milder phase**

Question 3

Acute Sinusitis:
What is the recommended first choice antibiotic?
(Select one)

a) Amoxicillin
b) Co-amoxiclav
c) Phenoxymethylpenicillin
d) Doxycycline

Sinusitis (Acute) Antibiotic Choice

Antibiotics for adults aged 18 years and over

Antibiotic[1]	Dosage and course length for adults
First choice	
Phenoxymethylpenicillin	500 mg four times a day for 5 days
First choice if systemically very unwe illness or condition, or at high risk of	
Co-amoxiclav	500/125
Alternative first choices for penicillin	
Doxycycline	200 mg o days (5-d
Clarithromycin	500 mg t
Erythromycin (in pregnancy)	250 mg t 1000 mg

Evidence

Antibiotic vs. placebo

- NNT: 7-21 days depending on the outcomes
- Little effect on illness duration

Harms: NNH

All adverse effects: 8-11

Diarrhoea: 18

Symptoms last 2-3 weeks

Severe complications 1:32 000 (otherwise healthy adults)

Cognitive Bias & Assessing Risks

Availability bias

Stories from the media or friends easily come to mind

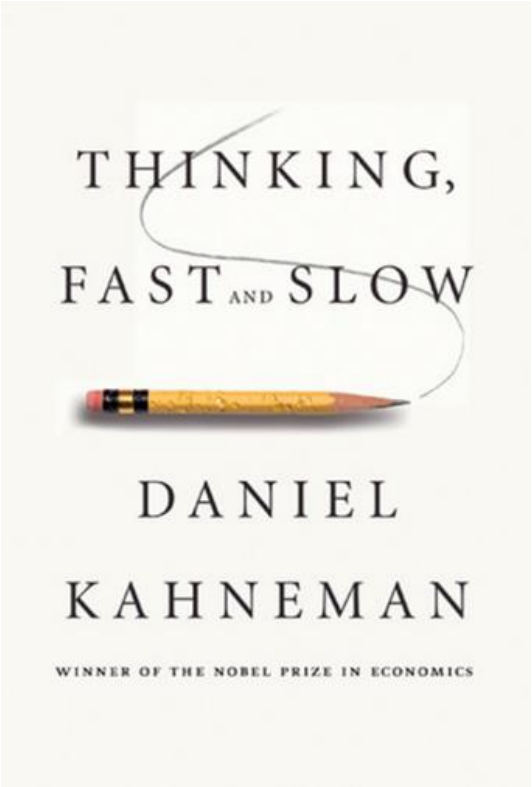
Probability neglect

The amount of concern is not adequately sensitive to the probability of harm.

Hindsight bias

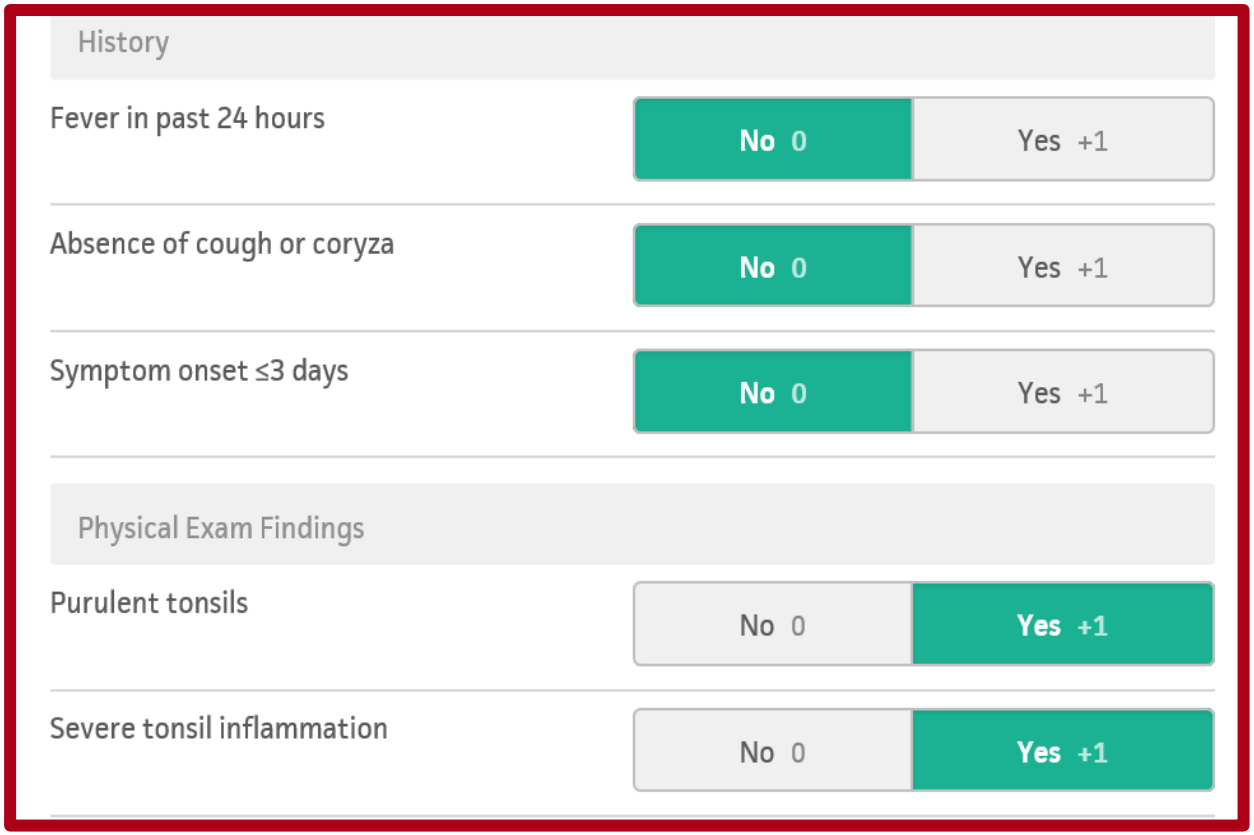
Hindsight is great!

(It can be very difficult to reset the scenario once the outcome is known)



Sore Throat

- Use a score e.g. FeverPAIN or Centor
- Only examine oropharynx of children if essential [RCPCH] *Use PPE



Sore throat may be a symptom of COVID-19 . Ask about high temperature, a new continuous cough, a loss of, or change to, sense of smell or taste

Sore Throat
Remote Assessment

FeverPAIN remote assessment

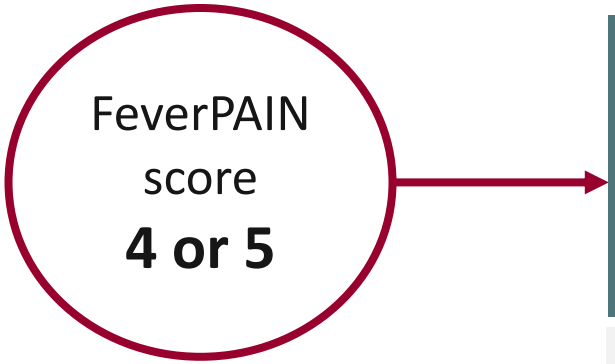
- ✓Consider using parental description (do not actively encourage parental examination)
- ✓If tonsil appearance unknown, consider starting with a feverPAIN score of 2

Remember

- ✓Most people feel better after 1 week, with or without antibiotics
- ✓Withholding antibiotics is unlikely to lead to complications

Sore Throat

NICE guidance can then be followed



Consider an immediate antibiotic or a back-up antibiotic prescription

Recommended duration of treatment?

5 days of phenoxymethylpenicillin may be enough for symptomatic cure;
10-day course may increase the chance of microbiological cure e.g. in recurrent tonsillitis

https://www.nice.org.uk/guidance/ng84/resources/visual-summary-pdf-4723226606

Otitis Media in Children
Remote Assessment Decision Points

- **R**ecurrent episodes?
- **2 Age** under 2 years?
- **D**ischarge perforation or otitis externa?
- **2 ears- bilateral** *(may be difficult to identify remotely in a toddler)*

R2-D2

STAR Severity systemic upset, vomiting

WARS Pain despite adequate analgesia- dose based on weight

Otitis Media in Children

- **Severity** systemic upset, vomiting
- Pain despite **adequate analgesia-** dose based on weight

NICE Guidance 91

Groups who may be more likely to benefit from antibiotics

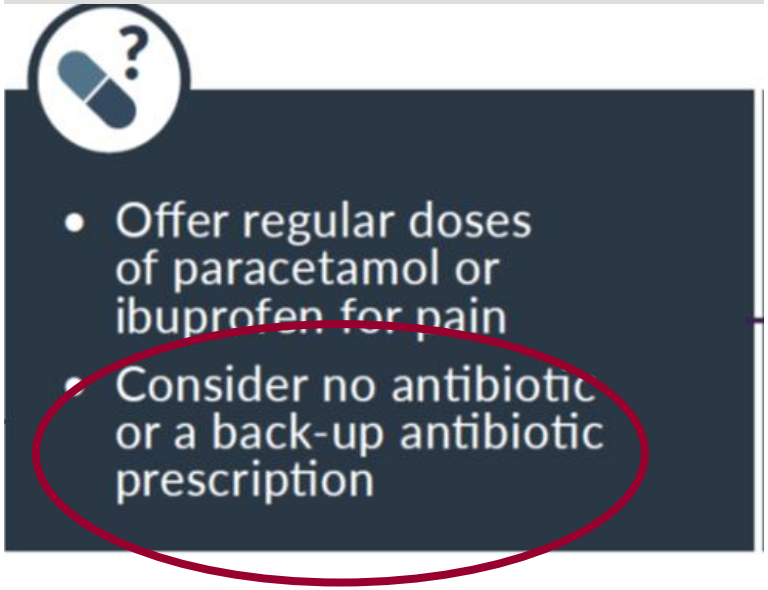
- Children and young people with acute otitis media and **otorrhea**
- Children under **2 years** with acute otitis media in **both ears**

Offer an immediate antibiotic

- systemically very unwell,
- symptoms & signs of more serious illness
- high risk of complications.

Otitis Media in Children

Age over 2, no otorrhoea



Evidence on antibiotics

- Antibiotics make little difference to:
  - The number of children whose symptoms improve
  - The number of children with recurrent infections, short-term hearing loss or perforated ear drum
- Complications such as mastoiditis are rare with or without antibiotics

COVID-19: Assessing Breathlessness & Severity by Phone or Video

A good history is important (evidence-cov.id/assess-dyspnoea)

1. Ask the patient to **describe their breathing in their own words,** and assess the ease and comfort of their speech. Ask open ended questions and listen to whether the patient can complete their sentences:

How is your breathing today?

2. Align with the NHS 111 symptom checker, which asks three questions (developed through user testing but not formally evaluated):

Are you so breathless that you are unable to speak more than a few words?
Are you **breathing harder or faster** than usual when doing nothing at all?
Are you so ill that you've **stopped doing** all of your usual daily activities?

3. Focus on change.
A clear story of deterioration is more important than whether the patient currently feels short of breath.

Is your breathing faster, slower, or the same as normal?

What could you do yesterday that you can't do today?
What makes you breathless now that didn't make you breathless yesterday?

4. Interpret the breathlessness in the context of the wider history and physical signs. For example, a new, audible wheeze and a verbal report of blueness of the lips in a breathless patient are concerning.

Caution COVID-19 results

Greenhalgh T, et al.
BMJ 2020; 368 :m1182

Assessing Severity

[NICE NG165] *Usual physical examination will be limited during COVID-19.Suspect community-acquired pneumonia of any cause (adult) if:*

- *temperature above 38°C*
- *respiratory rate above 20 breaths per minute*
- *heart rate above 100 beats per minute*
- *new confusion.*

The *Oxford COVID-19 evidence service team* advised:

- **Auscultation** reserve for those where it is crucial to decision making.
- **Roth score** to assess breathlessness over the phone, **does not provide an accurate assessment of hypoxia**

Cough & Pneumonia During COVID-19 Severity Scores & Red Flags

- **Roth score** [CEBM]

- **CRB65** [NICE NG165]

Confusion, RR over 30, BP, age over 65

- not validated in people with COVID-19.
- Requires BP -may be difficult/undesirable during pandemic
- risks cross-contamination

Red flags [NICE NG165]

- Severe shortness of breath at rest or difficulty breathing
- Coughing up blood
- Blue lips or face
- Feeling cold and clammy with pale or mottled skin
- Collapse or fainting (syncope)
- New confusion
- Becoming difficult to rouse
- Little or no urine output.

What is the role of antibiotics in early & mild COVID-19 disease?

Do not offer an antibiotic for treatment or prevention of pneumonia if:

- COVID-19 is likely to be the cause and
- symptoms are mild.

Inappropriate antibiotic use may reduce availability if used indiscriminately, and broad-spectrum antibiotics in particular may lead to Clostridioides difficile infection and antimicrobial resistance. [NICE NG165]

A review of studies published on **hospitalized COVID-19 patients** identified that while 72% (1450/2010) of patients received antibiotics, only 8% (62/806) demonstrated superimposed bacterial or fungal co-infections.[4] [WHO]

Cough & Pneumonia

Viral or Bacterial Pneumonia?

COVID-19 viral pneumonia may be more likely if

- History of typical COVID-19 symptoms for about a week
- Severe muscle pain (myalgia)
- Breathless but no pleuritic pain
- Exposure to known or suspected COVID-19 (household/workplace)

Bacterial cause of pneumonia

[primary community acquired] **may be more likely** if:

- Becomes **rapidly unwell** after only a few days of symptoms
- Does not have a history of typical COVID-19 symptoms
- **Pleuritic pain**
- Has **purulent sputum**

Question 4
Cough

If prescribing antibiotics for people

with acute cough or pneumonia,

what is the recommended antibiotic course length?

Treatment of Suspected Pneumonia in the Community

Offer an oral antibiotic if:

- **Likely cause is bacterial or**
- **Unclear whether the cause is bacterial or viral and symptoms are more concerning** or
- they are at **high risk of complications**

E.g. older or frail,
pre-existing comorbidity
such as immunosuppression
or significant heart or lung disease
(e.g. bronchiectasis or COPD),
history of severe illness following
previous lung infection.

Suspected pneumonia (adults)

First-choice antibiotic during the COVID-19

doxycycline 200 mg on the first day, then 100 mg once a day for **5 days** in total (not in pregnancy)

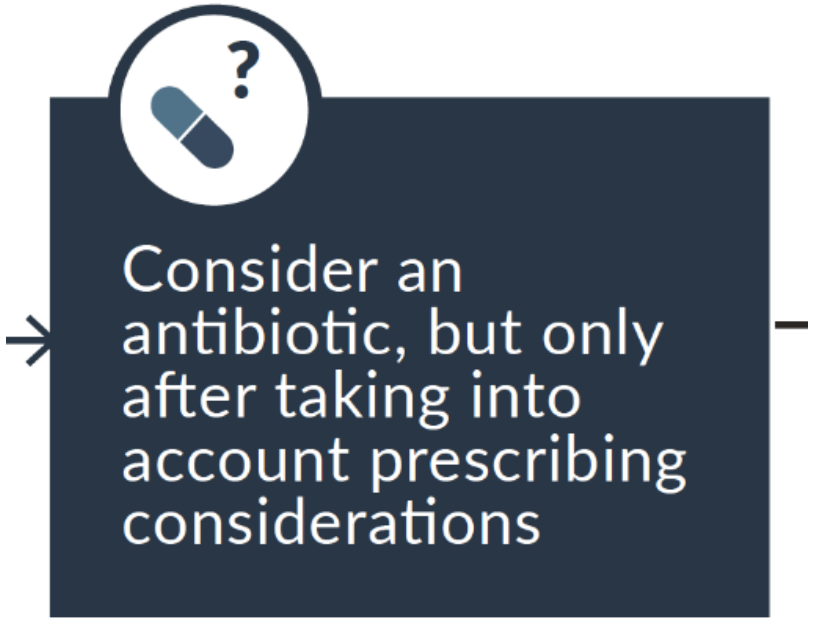
- alternative: amoxicillin 500 mg 3 times a day for 5 days.

Do not routinely use dual antibiotics.

COPD Guidance Prior to COVID-19

Chronic Obstructive Pulmonary Disease

(Acute exacerbation): antimicrobial prescribing



Background

- A range of factors (including viral infections and smoking) can trigger an exacerbation
- Many exacerbations (including some severe exacerbations) are not caused by bacterial infections so will not respond to antibiotics

In community (classified as mild- moderate exacerbation): **NNT 14**

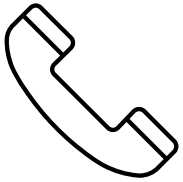
Up to 1 month after treatment starting, for failure to resolve or improve

 Vollenweider et al. 2012

COPD

COVID-19 RAPID Guideline

Rescue packs if symptoms of COVID-19?



Tell patients **not to start** a short course of oral corticosteroids and/or antibiotics for symptoms of COVID-19, for example fever, dry cough or myalgia

How does COVID-19 alter your advice to people with COPD who are smoking?

Strongly encourage patients with COPD who are still smoking to stop, to reduce the risk of poor outcomes from COVID-19 and their risk of acute exacerbations.

Back-Up Antibiotic Prescribing

De la Poza- URTI Including Sinusitis

As effective as an immediate antibiotic prescription

No significant differences in adverse events compared with an immediate antibiotic prescription

Significantly lower rates of antibiotic collection:

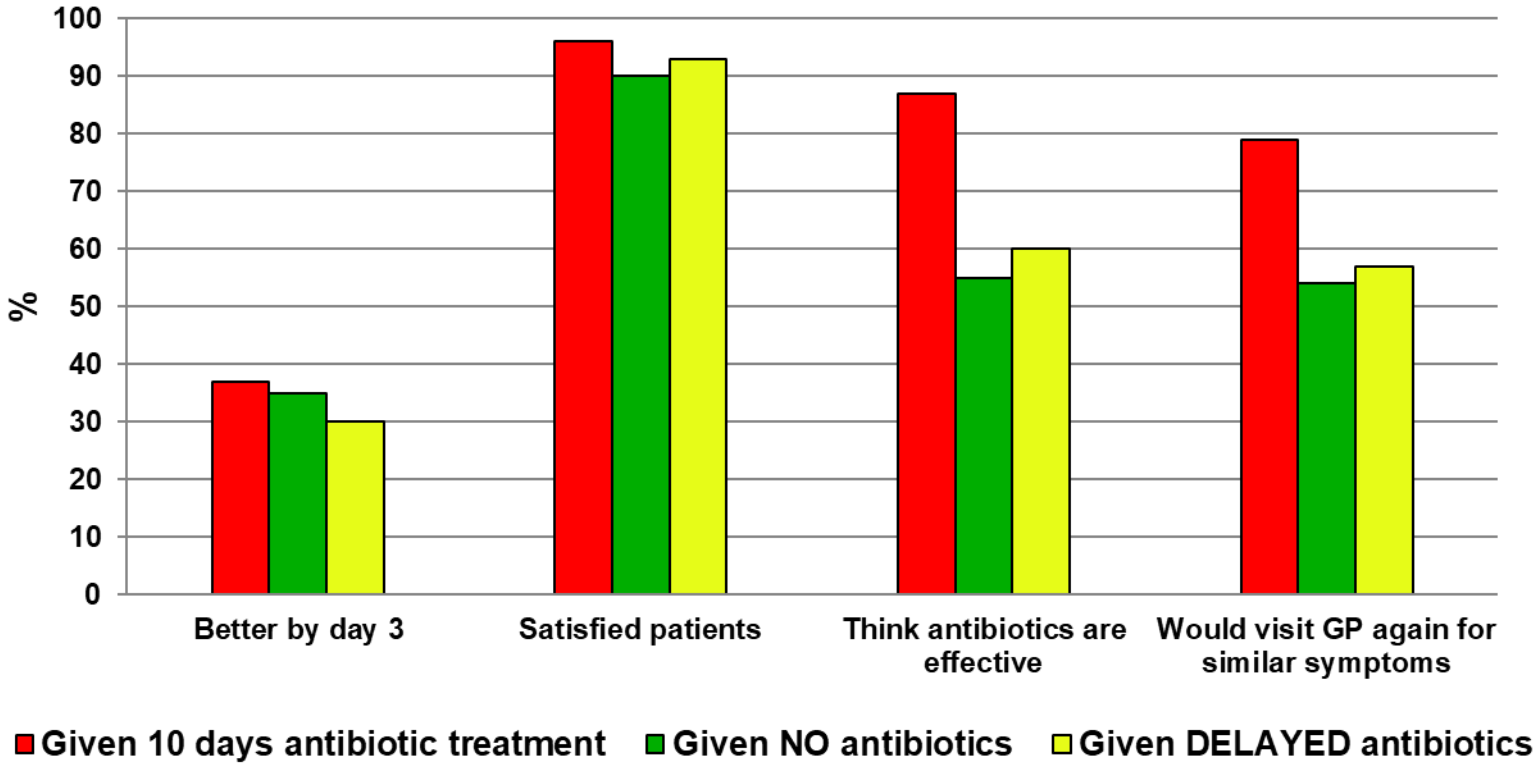
- delayed collection prescription group (26%)
- patient-led back-up prescription group (35%)
- immediate prescription group (89%)

How do you manage back-up prescribing locally?

What is the evidence for the back-up / delayed prescribing?

Clinical Scenario
Acute Sore Throat

English RCT comparing three treatment strategies for sore throat (n=582)



Little, Williamson, Warner et al. BMJ . (1997) 314:722 - 727

Back-up prescribing

How To Do It

It's easy, but needs to be done properly

(and will then reduce antibiotic use)

Remember the 6 R's

1. **R**eassurance
2. **R**easons not to use antibiotics *(side effects/allergy/AMR)*
3. **R**elief: support Paracetamol *(v limited use of NSAIDS)*
4. **R**ealistic natural history *[OM 8d; sore throat 7-8d; acute sinusitis 2-3wk), Cough 3 wks.]*
5. **R**einforce key message: *only use if getting worse or not even **starting** to settle in the expected average time*
6. **R**escue (*safety netting)*

UTI- Remote Assessment Decision Points

Is it really a UTI?

Exclude urethral and vaginal causes of urinary symptoms

- **Vaginal discharge?** (80% do not have UTI)
- Consider post-menopausal atrophy & STI [PHE]

Ask about severity Pyelonephritis? Sepsis?

What type of UTI? Catheter, recurrent, lower, pyelonephritis? Structural or functional abnormality which increase the risk of a more serious outcome or treatment failure?

Does patient have any of 3 key diagnostic signs/symptoms?[14B+]

- ☐ **dysuria** (burning pain when passing urine)[5A+,6A+,14B+,15B+,16B+]
- ☐ **new** nocturia (passing urine more often than usual at night)[5A+,14B+]
- ☐ **urine** cloudy to the naked eye[14B+]

2 or 3 symptoms	1 symptom	no

UTI unlikely if
no urgency, frequency, visible haematuria, suprapubic tenderness

2 out of 3 = likely UTI

UTI (Lower)
Duration of Treatment

3 days: Simple cystitis in women only
(non-pregnant)

7+ **days:**

- **Pyelonephritis (e.g. fever)**
- **Pregnancy**
- **Complicated UTI**
- **Men**

Complicated includes:

- Structural/functional abnormality
- Underlying disease, which increases risk of more serious outcomes/ treatment failure

**See pyelonephritis guideline*

National Institute for Health and Care Excellence (NICE). (2018). *Urinary tract infection (lower): antimicrobial prescribing [NG109].* www.nice.org.uk/guidance/ng109/

Question 5

Which of the following would **NOT** be suitable to treat pyelonephritis?

(Select all that apply)

a) Trimethoprim (known sensitivity)
b) Cefalexin
c) Nitrofurantoin
d) Fosfomycin
e) Pivmecillinam

Question 5
Answer & Rationale

Which of the following would **NOT** be suitable to treat pyelonephritis?

(Select all that apply)

a) Trimethoprim (known sensitivity)
b) Cefalexin
c) Nitrofurantoin
d) Fosfomycin
e) Pivmecillinam

Antibiotics that don't achieve adequate levels in renal tissue e.g. nitrofurantoin, fosfomycin & pivmecillinam, are to be avoided [NG111].

Catheter UTI

87 yr.-old man, cognitive impairment, long-term indwelling catheter. Antibiotic request, more confused, urine dip +ve “off the scale”.

What do you want to ask?

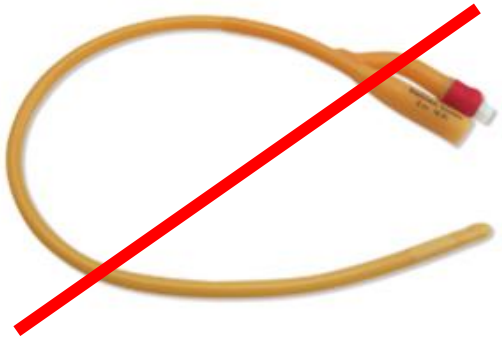
- Fever?
- Pelvic discomfort, flank pain?
- Confusion: Duration & details, other causes?

PINCH ME

Why dipped?

UTI in Adults

Healthcare professionals do not use dipstick testing to diagnose UTIs in adults with urinary catheters [QS90].



The patient's clinical need for catheterisation should be reviewed regularly and the urinary catheter removed as soon as possible [CG139].

NICE. (2015). *UTI in adults [QS90].*

NICE. (2012). *Healthcare-associated infections: prevention and control in primary and community care [CG139].*

PINCH ME

Check for other causes of delirium if relevant

P: Pain

I: other Infection

N: poor Nutrition

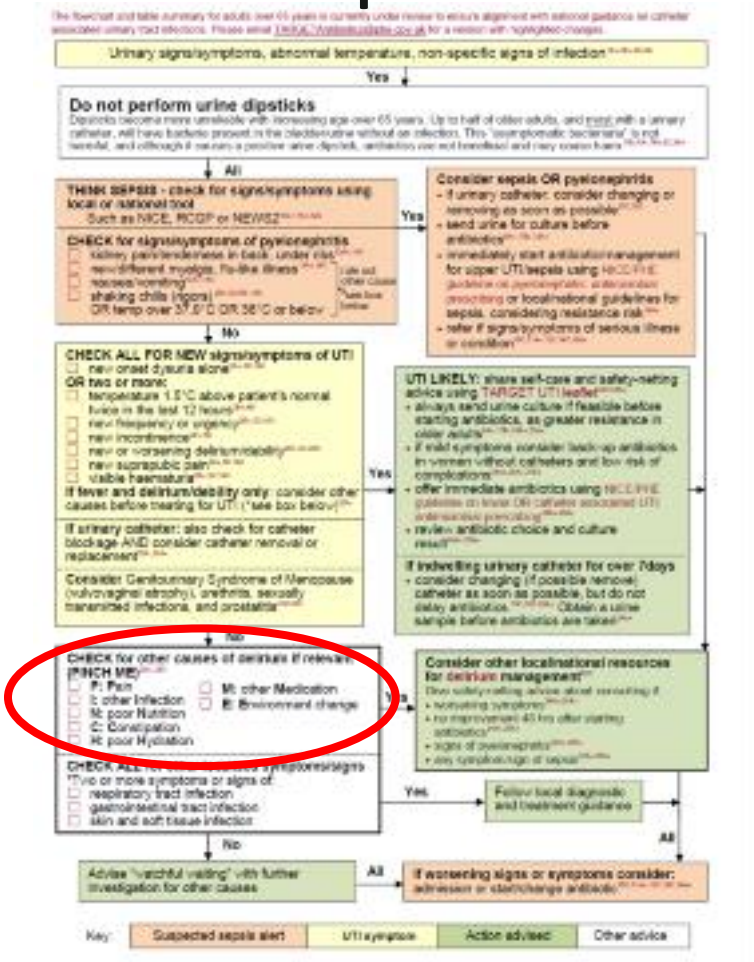
C: Constipation

H: poor Hydration

M: other Medication

E: Environment change

Flowchart for adults over 65 with suspected UTI



Public Health England (PHE). (2019). *Flowchart for adults over 65 years with suspected UTI. www.rcgp.org.uk/TARGET-QRT*

Insect Bites
Remote Assessment

NICE Guidance 182

Be aware that:

- A rapid onset skin reaction is likely to be inflammatory or allergic reaction rather than an infection
- Most insect bites or stings will not need an antibiotic

Advice

Advise people that:

- A community pharmacist can advise about self care treatments
- Skin redness and itching are common and may last for up to 10 days
- It is unlikely that the skin will become infected
- Avoiding scratching may reduce inflammation and the risk of infection
- They should seek medical help if symptoms worsen rapidly or significantly at any time, or they become systemically unwell

Summary
Common Infections Remote Assessment

- ✓**Remote?** Medico-legally demonstrate satisfactory assessment & decision- making. **If you aren't sure, it would be better to see the patient face to face**
- ✓Identify **persisting or deteriorating** symptoms & recurrent patient/NHS contacts
- ✓Remember **spectrum of risk & beware cognitive biases**
- ✓Antibiotics make little difference to clinical outcome in most cases of sinusitis, OM & sore throat
- ✓**Course length:** Acute sinusitis, cough, COPD, pneumonia (5d)
- ✓**Consider back-up** prescribing (6 R's)
- ✓**Encourage self-care** options & NHS website
- ✓**Document safety netting** advice [MPS]

Thank you

If you have any queries, please contact TARGETAntibiotics@phe.gov.uk

Acknowledgements

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