Pneumonia and lower respiratory tract infections

The 56-year-old man walked down the corridor from the waiting room holding onto the wall – Ménières? Labyrinthitis? I wondered.

“Oh doctor, I feel awful…”

“He’s all muddled too” chipped in his wife.

He was indeed a bit confused, hypotensive, tachycardic, feverish and clearly unwell, although examination was otherwise unremarkable. I wasn’t quite sure what was going on – encephalitis? septicaemia? Whatever the underlying cause, he was going to hospital! That bit I was sure about! I described his symptoms (he didn’t really have any, except feeling awful) and signs to the medical registrar at the hospital “Oh, I bet he has got *Strep. pneumonia*” she said. She was right! That was exactly what was on the discharge summary. I was impressed!

However, most of our patients don’t present like this – so how should we manage pneumonia and lower respiratory tract infections?

At the end of 2014, NICE produced guidance on pneumonia (NICE 2014, CG191). I will focus on the aspects relating to community-acquired pneumonia. The guidance does NOT cover children, or those with bronchiectasis. Nor does it discuss whether or not a CXR should be considered in those diagnosed with pneumonia and managed in primary care (an interesting omission I feel!).

**Pneumonia statistics**
- 0.5–1% of adults get pneumonia each year.
- Mortality in those admitted with pneumonia is 5–14%. More than half of all these deaths are in those over 84y.

**What is pneumonia?**

This may sound like a daft question, but it is important! Pneumonia is one of a number of conditions that may cause a lower respiratory tract infection. Other conditions that may cause a lower respiratory tract infection include acute bronchitis and exacerbations of COPD. NICE want us to distinguish pneumonia from non-pneumonia lower respiratory tract infections.

NICE defines a lower respiratory tract infection as: an acute illness usually with cough as the main symptoms and at least one other lower respiratory tract symptom (fever, sputum production, breathlessness, wheeze, chest discomfort/pain) AND no alternative diagnosis (sinusitis, asthma).

NICE defines community acquired pneumonia as: clinical features of a lower respiratory tract infection with features that suggest this is pneumonia (for example, focal chest signs, more severe illness).

The British Thoracic Society definition of pneumonia is (and I find this more helpful!):

Cough and at least one other lower respiratory tract symptom

AND

New focal chest signs on examination

AND

EITHER sweating, fevers, shivers, aches and pains OR fever >38°C

AND

No other explanation for symptoms.

**NICE on pneumonia: the key messages**

- When seeing someone with a lower respiratory tract infection, decide whether it is pneumonia or a non-pneumonia lower respiratory tract infection.
- Once a clinical diagnosis of pneumonia is made, use your clinical judgement in conjunction with the CRB65 score to assess risk of death, and thus guide management.
- CRP testing is NOT indicated if a clinical diagnosis of pneumonia has been made, but point of care CRP tests may be useful in those with a non-pneumonia lower respiratory tract infection, if it is unclear whether to give antibiotics.
- Antibiotics: 1st line for those being managed at home with pneumonia: amoxicillin. If allergic to penicillin use a macrolide (e.g. erythromycin) or tetracycline. Do not use the fluoroquinolones (such as ciprofloxacin).
- Only use 2 antibiotics together in more severe illness (i.e. in hospital, not primary care).
Clinical picture of a lower respiratory tract infection

Clinical diagnosis of community-acquired pneumonia
- Cough and ≥1 lower respiratory tract symptoms (sputum production, breathlessness, wheeze, chest pain)
- AND new focal chest signs on examination
- AND EITHER sweating, fever, shivers,aches and pains OR fever >38°C
- AND no other explanation for symptoms.

Use clinical judgement with CRB65 to assess mortality risk and guide management.

Score 1 for each of CRB65 criteria:
- Confusion: Abbreviated mental test score of ≤8/10, or new disorientation in person/place/time
- Respiratory rate: RR ≥30/minute
- BP: SBP ≤90 or DBP ≤60
- 65: ≥65 years of age

Low severity (approximates to CRB65 score of 0)
- Most can be managed AT HOME

Moderate and high severity (approximates to CRB score of ≥1)
- Consider ADMISSION TO HOSPITAL (especially if CRB65 ≥2 or more)

For those admitted:
- Investigations
  - CXR
  - Blood cultures
  - Sputum cultures
- Consider pneumococcal and legionella urinary antigen tests

Antibiotics
- Consider 7–10d course.
- Dual antibiotic therapy (amoxicillin and a macrolide) may be considered. In those with more severe illness co-amoxiclav, or a cephalosporin may be used.
- Steroids
- Do not use steroids unless they have another condition such as asthma/COPD.

Information for patients about recovery phase

Obviously, recovery depends on the severity of the illness, age and co-morbidity, but NICE say the following is what most people can expect in terms of recovery:

After 1 week: fever should have resolved
After 4 weeks: chest pain and sputum production should have substantially reduced
After 6 weeks: cough and breathlessness should have substantially reduced
After 3 months: most symptoms should have resolved but fatigue may be present
After 6 months: most people will feel back to normal.
**CRB65 score**

The CRB score is a tool designed to predict mortality. Scores also correlate roughly with severity and whether patients should be admitted. In hospitals they use the CURB65 score – the U is for urea.

<table>
<thead>
<tr>
<th>Score</th>
<th>Management</th>
<th>Mortality risk (chance of death in next 30d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Home based care for most</td>
<td>Low risk (mortality &lt;1%)</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Consider hospital assessment (especially if 2)</td>
<td>Intermediate risk (mortality risk 1–10%)</td>
</tr>
<tr>
<td>3 or 4</td>
<td>Consider hospital assessment</td>
<td>High risk (mortality risk &gt;10%)</td>
</tr>
</tbody>
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NICE reviewed all the scoring tools available, before opting for the CRB65 test, partly based on the evidence available but also the simplicity of this test. Interestingly, the evidence for the CRB65 test is fairly limited in a primary care setting!

**CRB65 in non-pneumonia lower respiratory tract infections**

Why not use CRB65 in non-pneumonia lower respiratory tract infections? NICE found insufficient evidence in those without pneumonia. However, the GP Update team don’t see any harm in using it – it will give you some indication of severity and is a good way of documenting key facts that may be useful for another doctor seeing them later in the illness to decide if they are better or worse.

**CRP tests in pneumonia**

Point of care CRP testing is used only when there is uncertainty about whether to use antibiotics in those with non-pneumonia lower respiratory tract infections. However, once a diagnosis of pneumonia has been made, NICE recommend all are offered antibiotics, so there is no place for point of care CRP tests.

**Costs of point of care CRP tests?**

NICE estimated that the test costs around £13.50/patient.

**What about the procalcitonin test?**

There were no direct trials comparing the procalcitonin test with CRP testing. However, on the data that were available NICE thought that, overall, point of care CRP was a better test (more effective and cheaper).

**Would an X-ray guide antibiotic use?**

No, there is no evidence to suggest that we should use chest X-rays to guide antibiotic use.
Pneumonia

- When seeing someone with a lower respiratory tract infection, ask yourself: is this pneumonia or non-pneumonia? The BTS definition of pneumonia is probably the most helpful in separating the two.
- If this is pneumonia, calculate the CRB65 score and interpret findings in the light of your clinical judgement, and manage accordingly.
- If this is a non-pneumonia lower respiratory tract infection, use your clinical judgement to decide if antibiotics are indicated. If uncertain whether to give antibiotics, use a point of care CRP test (>100mg/L: offer antibiotics, 20–100mg/L: offer delayed script).
- Do not use point of care CRP tests in pneumonia (they should all be offered antibiotics).
- CRB65 scores don’t have evidence for use in non-pneumonia lower respiratory tract infections (lack of evidence) but we see no harm in using it as a way of prompting you to consider and document vital signs.

Do you make a distinction in your clinical practice between pneumonia and other lower respiratory tract infections? Or do you, like many of us, code everyone as having a chest infection and recognise that some are sicker and some less sick and give antibiotics accordingly?
Do you use CRB65?
Do you have access to point of care CRP tests?

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We make every effort to ensure the information in these pages is accurate and correct at the date of publication, but it is of necessity of a brief and general nature, and this should not replace your own good clinical judgement, or be regarded as a substitute for taking professional advice in appropriate circumstances. In particular check drug doses, side effects and interactions with the British National Formulary. Save insofar as any such liability cannot be excluded at law, we do not accept any liability for loss of any type caused by reliance on the information in these pages.

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