



# Lower Respiratory Tract Infections

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# NICE Guidelines on Respiratory Tract Infections

# Why?



- RTIs are common
- Complications of RTIs are less common
- We prescribe more antibiotics
- Resistance rates strongly relate to antibiotic use in primary care
- There is a lack of evidence in this area
- “Safety net” approach

# The Numbers



- URTI occurs at a rate of 2-5/adult/year
- £96.5 million spent on non-prescription liquid cough medicines (UK, 2001)
- Costs the UK economy £979 million / year
- £875 million loss of productivity
- £104 million costs to healthcare and for non-prescription medications

# PCT Savings

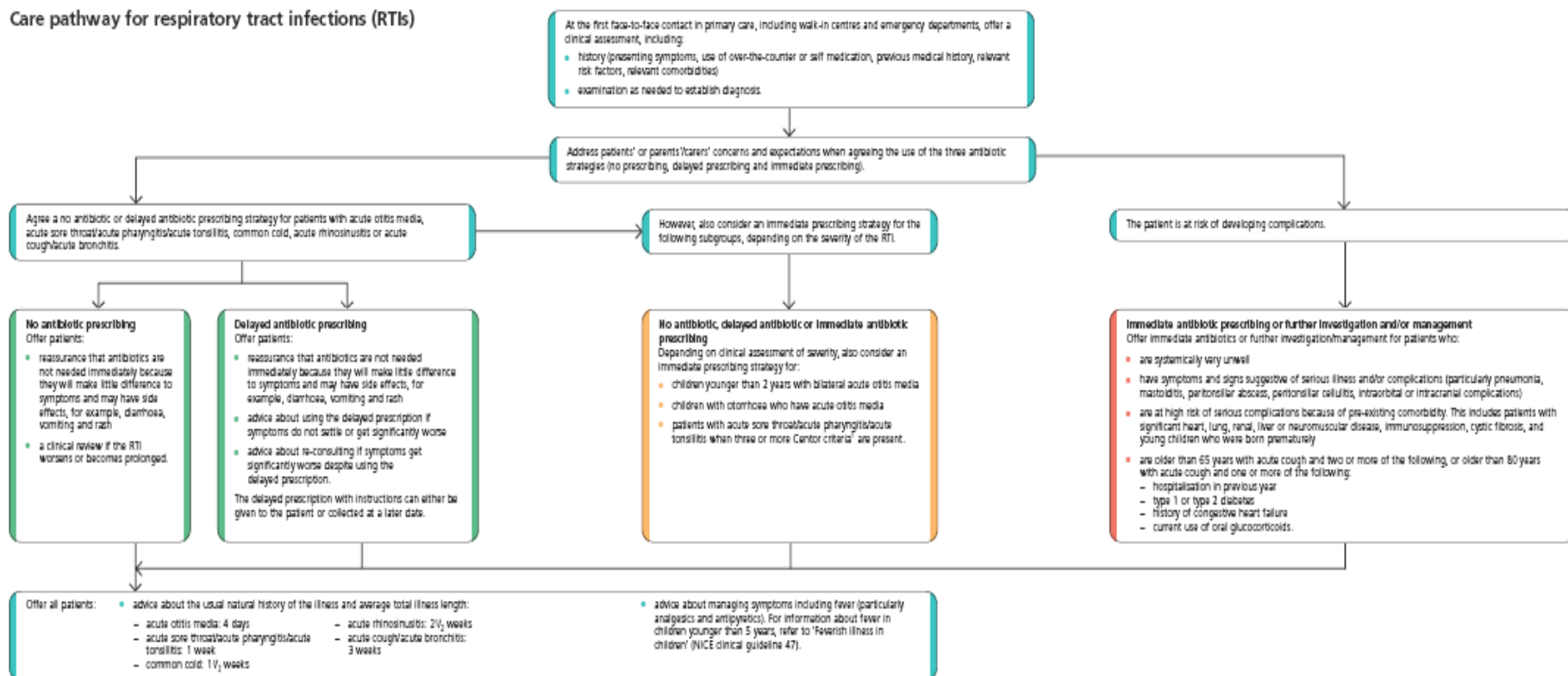


- Antibiotics - £59 000<sup>1</sup>
- Cost and volume savings
- Cost per item/per dose to that of best quartile of PCTs
- Volume – reduce number of weighted items per patient to median of all PCTs

1. Primary Care Prescribing: a bulletin for Primary Care Trusts. The Audit Commission 2003.



## Care pathway for respiratory tract infections (RTIs)



<sup>1</sup> Centor criteria are: presence of tonsillar exudate, tender anterior cervical lymphadenopathy or lymphadenitis, history of fever and an absence of cough.



Clinical Assessment

Address concerns and expectations of patient/parent/carer when agreeing to one of three antibiotic prescribing strategies

acute otitis media/acute sore throat/acute pharyngitis/acute tonsillitis/acute rhinosinusitis/common cold/acute bronchitis/acute cough

Consider  
immediate prescription

Risk of complications

Immediate antibiotics

No prescription

Delayed prescription

Children < 2y bilateral AOM  
Children otorrhoea + AOM  
Acute sore throat/pharyngitis/tonsillitis if 3+ Centor criteria

Offer all patients: advice about symptom management and usual natural history of illness and total illness length

Centor criteria: tonsillar exudate, tender anterior cervical LN or lymphadenitis, history of fever and absence of cough

# What is a Clinical Assessment?



- History
  - Presenting symptoms
  - Used of OTC medications
  - Past Medical History
  - Risk Factors
  - Comorbidities
- Examination “if indicated”

# Treatment Options



- No treatment
- Delayed treatment
  - Either now with instructions or to pick up later
  - Start if symptoms do not settle/get worse
  - Advice to re-consult if despite treatment things get worse
- Immediate treatment

# Which adults get an immediate prescription?



- Clinically unwell
- Comorbidities
- Signs/symptoms of serious complications
- >65 with acute cough and 2+ of the following or >80 with acute cough and 1+ of the following:
  - Hospitalisation in previous year
  - Diabetes mellitus
  - History of CCF
  - Currently taking oral glucocorticoids

# Natural History



Acute otitis media	4 days
Acute sore throat	1 week
Common cold	1 ½ weeks
Acute rhinosinusitis	2 ½ weeks
Acute cough/bronchitis	3 weeks

# Evidence



- Dowell J, et al. (2001) A randomised controlled trial of delayed antibiotic prescribing as a strategy for managing uncomplicated respiratory tract infection in primary care<sup>1</sup>. Assess delayed antibiotic prescribing as a strategy for acute cough
- Open RCT; 191 adults; 22 Scottish GP practices
- By GP's usual practice would have received antibiotics
- Randomised to immediate or delayed (1 wk) antibiotics
- Outcomes: symptom duration, prescription uptake, patient satisfaction, patient enablement, subsequent consultation rates

# Evidence



- Results:
- 78% patients returned the questionnaires
- 43/95 in delayed arm collected prescription
- More dissatisfaction with treatment in delayed arm
- Those who received antibiotics more likely to consult in future
- However study was underpowered

# Patient Expectations



- Qualitative analysis of consultations for acute cough
- 8 German GPs, 42 patients over 2 weeks
- Rate of prescriptions 24%
- Lots of implicit requests for antibiotics but no explicit requests
- Lack of patient-centred consultation style

# Patient Expectations



- Questionnaire Study, Australia
- 22 GPs, 336 of their patients
- Patients expecting a prescription for a new illness almost 3 x more likely to get one
  - OR 2.9 95% CI 1.3-6.3
- Doctors expecting patients to expect a prescription were 10 x more likely to get one
  - OR 10.2 95% CI 5.3-19.6

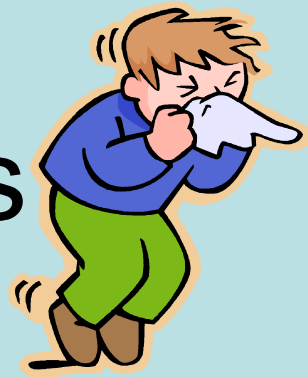
# Evidence



- Single blinded RCT (UK)
- Acute bronchitis in adults
- 212 patients given delayed prescription
- 106 also had information sheet
  
- Patient information leaflets help reduce antibiotic usage<sup>1</sup>

1. Macfarlane J, Holmes W, Gard P et al. (2002) Reducing antibiotic use for acute bronchitis in primary care: blinded, randomised controlled trial of patient information leaflet. *BMJ* 324: 91-4.

# Preventing Complications



- General Practice Research Database  
3.36 million episodes of RTI; July 1991-  
June 2001; 162 practices<sup>1</sup>
  - Sore throat: NNT to prevent quinsy
    - 4300 ( $p=0.021$ )
  - Otitis media: NNT to prevent mastoiditis
    - 4064 ( $p=0.008$ )
  - Chest infection: NNT to prevent pneumonia
    - 39 for those  $\geq 65$  years of age ( $p<0.001$ )
    - 119 in 16-64 year olds ( $p<0.001$ )

1. Petersen I, Johnson AM, Duckworth G et al. (2007) Protective effect of antibiotics against serious complications of common respiratory tract infections: retrospective cohort study with the UK General Practice Research Database. *BMJ* 335: 982.

# Evidence



- Utrecht GP research network
- LRTI; aged  $\geq 65$  yrs; 1997-2003<sup>1</sup>
- 3166 episodes in 1693 patients
- LRTI *included* pneumonia, acute bronchitis
- *Excluded* immunosuppressed, recent antibiotics or recent hospitalisation
- End point: hospitalisation or death in 30 days

1. Bont J, Hak E, Hoes AW, Schipper M, Schellevis FG, Verheij TJM A prediction rule for elderly primary-care patients with lower respiratory tract infections Eur Respir J 2007; 29: 969-975.

# Predictive characteristics



- Exacerbation COPD 2
- Pneumonia 4
- Age  $\geq 80$  2
- CCF 1
- Diabetes 2
- Oral glucocorticoids 3
- In hospital in past yr 1x 2
- $\geq 2x$  3
- Abx in previous month 2

# Hospitalisation/Death



- Derivation cohort:
  - Low risk  $\leq 2$  3.2%
  - Medium risk 3-6 9.9%
  - High risk  $\geq 7$  mortality 30.9%
- Validation cohort
  - Low risk  $\leq 2$  mortality 5.3%
  - Medium risk 3-6 mortality 14.5%
  - High risk  $\geq 7$  mortality 22%

# Cochrane Review 2007<sup>1</sup>



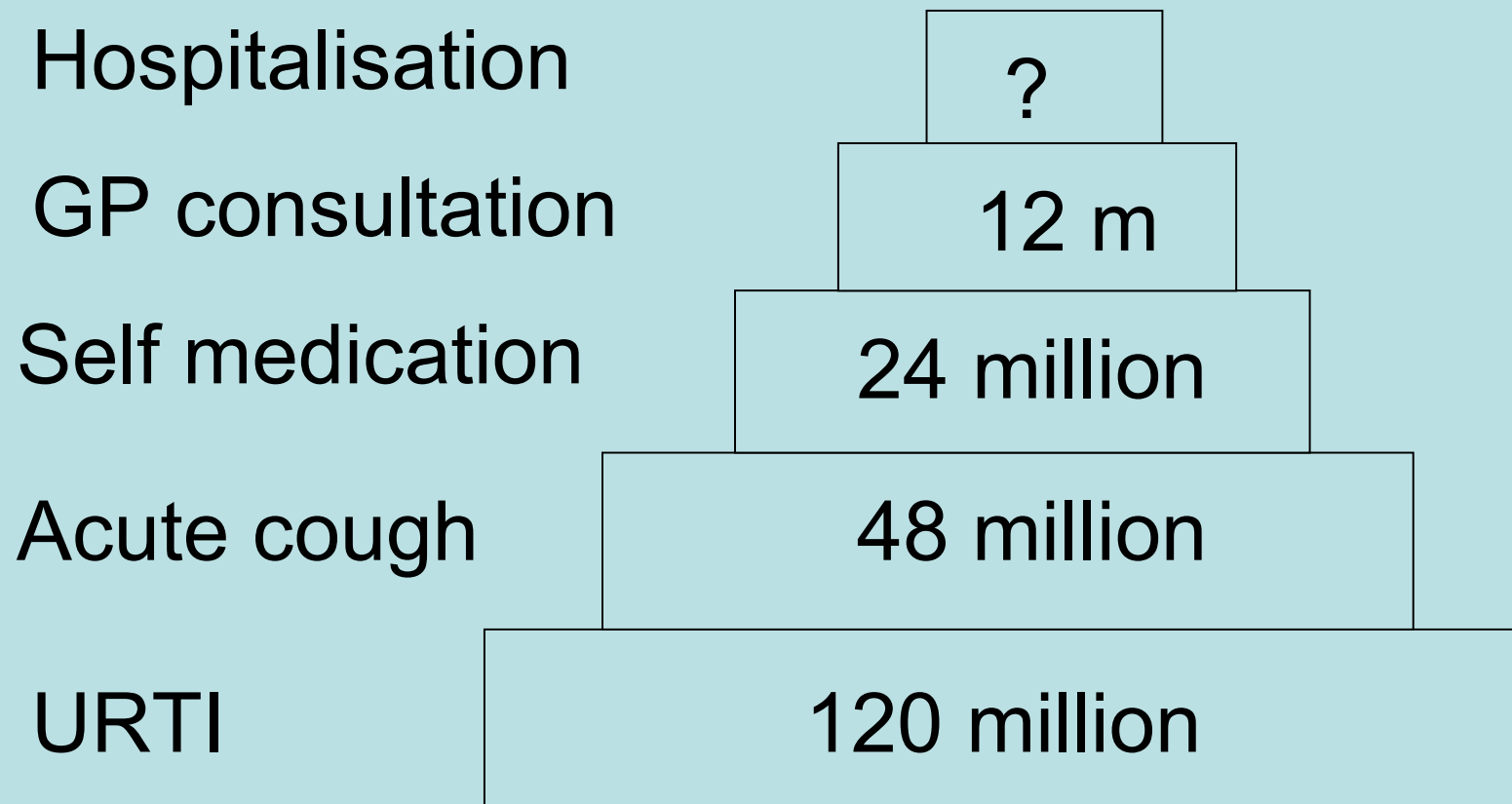
- Delaying or avoiding antibiotics reduces overall use of antibiotics for RTIs
- Delay may reduce patient satisfaction
- Delayed antibiotics overall have little benefit over not prescribing them at all when safe to do so

# Acute cough



- Lasts < 3 weeks
- More common in women
- Post-viral cough can last beyond 3 weeks
- Usually settles within 8 weeks

# Incidence of acute cough



# Pharmacological Treatments



- Most cough suppressants are ineffective
- Limited evidence for:
  - Dextromethorphan
  - Menthol

# Who to CXR



- Haemoptysis
  - Weight loss
  - Breathlessness
  - Fever (?> 4 days)
  - Chest pain
  - Suspicion of inhaled foreign body
- } Suspicion of cancer

# Pneumonia



- No reliable set of clinical signs or symptoms can diagnose pneumonia<sup>1</sup>
- Clues...
  - Fever
  - Respiratory rate
  - Heart rate
  - Abnormal signs (crackles, bronchial breathing)

1. Metlay, JP, Kapoor, WN, Fine, MJ Does this patient have community-acquired? Diagnosing pneumonia by history and physical examination. JAMA 1997; 278 (17) 1440-1445.

# CRB-65



- Confusion (MTS  $\leq$  8/10)
- Respiratory Rate  $>30$
- Blood pressure  $<90$ mmHg s /  $\leq 60$  mmHg d
- $\geq 65$  years
  
- 0=1.2% mortality
- 1=5.3% mortality
- 2=12.2% mortality
- 3=32.9% mortality
- 4=18.2% mortality

Lim W S, van der Eerden M M, Laing R, Boersma W G, Karalus N, Town G I, Lewis S A and Macfarlane J T  
Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study Thorax 2003;58;377-382.

# COPD



- Increased sputum purulence
- Increased sputum volume
- Increased breathlessness
- Standby antibiotics; standby steroids
- Contact primary care team if symptoms not improving
- Liaison with specialist respiratory nurses

# Asthma



- Dry cough & SOB
- Increased inhaled medication
- Oral prednisolone 40mg/day ( $\geq 5$  days)
- Assess for admission
- Antibiotics?
  - Purulent sputum (mucus plugging??)
  - Suspicion of pneumonia

# Bronchiectasis



- Increased volume of sputum
- Increased purulence of sputum
- Haemoptysis
- Increased breathlessness
- Sputum culture
- 14 days of antibiotics (standby)
- Chest physio
- Liaison with secondary care if not improving



- BTS statement on criteria for specialist referral, admission, discharge and follow-up for adults with respiratory disease

British Thoracic Society Standards of Care  
Committee

Thorax 2008; 63: i1-i16

*(March 2008)*

# Red Flags



- Haemoptysis
- History suggestive of inhaled foreign body
- Change in voice quality
- Fever/malaise/purulent sputum
- Increasing breathlessness

# Case History 1



- Mr B.O.
- 47 yrs old
- Normally fit and well
- 4 day history
- Sore throat
- Sneezing
- Nasal discharge





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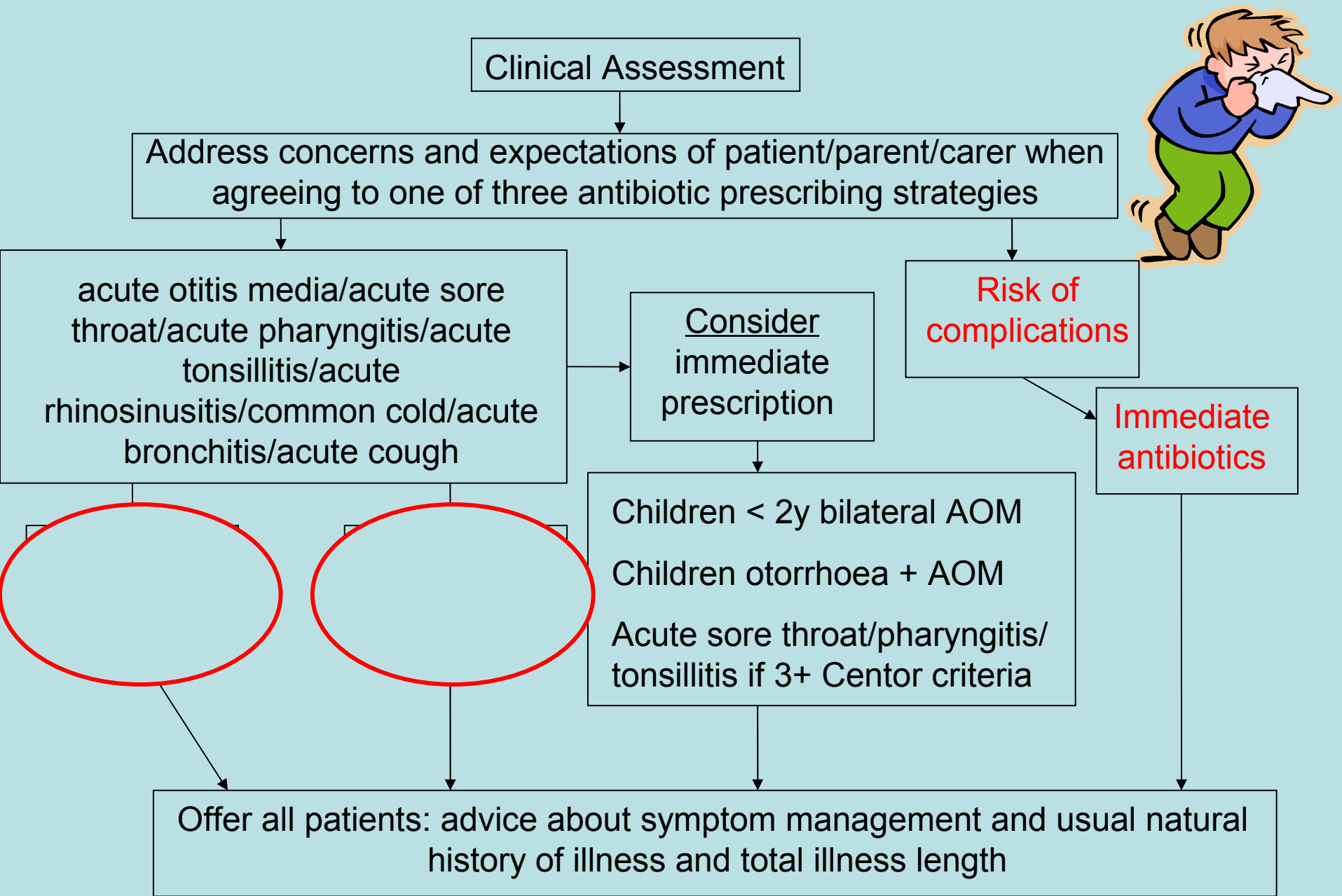
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# Case History 2



- Mrs D.C.
- 79 yrs old
- COPD since 2003
- Still smoking 20/day
- 1 week history SOB
- Eggcupful green sputum
- Flecks of haemoptysis



[www.blogs.orange.co.uk  
/tv/2007/06/index.htm](http://www.blogs.orange.co.uk/tv/2007/06/index.htm)



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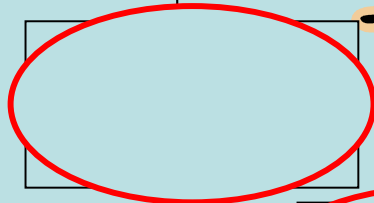


Clinical Assessment

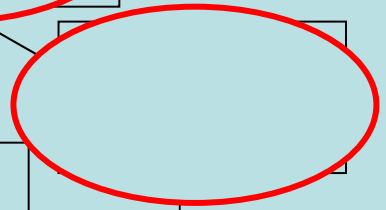
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# Case History 3



- Mr S.R.
- 48 yrs old
- Type 1 Diabetic
- 2 day history of fever
- Acute cough
- Clear sputum



<http://www.steveredgrave.com/fiveg.htm>



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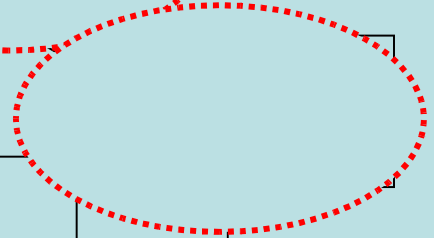
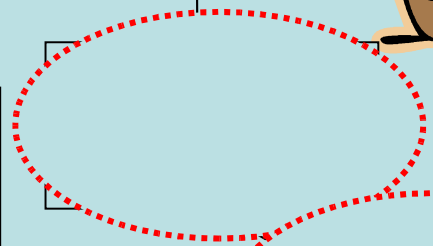
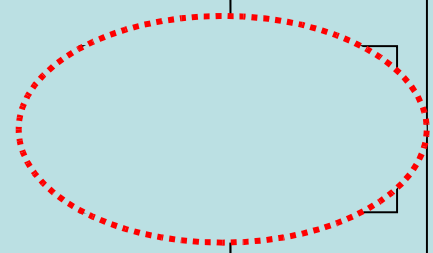
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# Summary



- Offer a clinical assessment
- Assess risk of complications
- Assess severity of illness
- Agree 1 of 3 prescribing strategies with patients
- Advise likely disease pattern
- Confirm when patient should reattend

# Useful Internet Resources



- NICE      [www.nice.org.uk](http://www.nice.org.uk)
- National Library for Health  
[www.library.nhs.uk](http://www.library.nhs.uk)
- BTS      [www.brit-thoracic.org.uk](http://www.brit-thoracic.org.uk)
- ERS      [www.ersnet.org](http://www.ersnet.org)