Appendix A: Summary of evidence from surveillance

2019 surveillance of the 2018 ESPAUR report and antimicrobial prescribing guidelines.

Table 1. Drug/bug combinations monitored in support of the UK 5-year AMR Strategy, 2013-18

Bacteria	Antibiotics
Escherichia coli	ciprofloxacin, third-generation cephalosporins, gentamicin, carbapenems, co-amoxiclav, piperacillin/tazobactam*
Klebsiella pneumoniae	ciprofloxacin, third-generation cephalosporins, gentamicin, carbapenems, co-amoxiclav, piperacillin/tazobactam*
*Klebsiella oxytoca**	ciprofloxacin, third-generation cephalosporins, gentamicin, carbapenems, piperacillin/tazobactam*
Pseudomonas spp.	ceftazidime, carbapenems
Acinetobacter spp.*	colistin
Streptococcus pneumoniae	penicillin, erythromycin
Enterococcus spp.*	glycopeptides
*Staphylococcus aureus**	methicillin
Neisseria gonorrhoeae	ceftriaxone, azithromycin

*Bacteria or antibiotics in the 'Shadow' list (Expert Advisory Committee on Antimicrobial Prescribing, Resistance and Healthcare-Associated Infections has recommended a watching brief on these)

Table 2. ESPAUR content linked to NICE's antimicrobial prescribing guidelines

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
Upper respiratory tract infections				
NG79: Sinusitis (acute): antimicrobial prescribing (October 2017)	Only people presenting at any time who are systemically very unwell, have symptoms and signs of a more serious illness or condition, or are at high risk of complications are offered an immediate antibiotic prescription. People presenting with symptoms for around 10 days or more with no improvement can be considered for a back-up antibiotic prescription. **Antibiotics for adults aged 18 years and over** • First choice is phenoxymethylpenicillin • **First choice if systemically very unwell, symptoms and signs of a more serious illness or condition, or at high risk of complications is co-amoxiclav** • **Alternative first choices for penicillin allergy are doxycycline, clarithromycin or erythromycin** • **Second choice is co-amoxiclav (if not given as first choice)** **Antibiotics for children and young people under 18 years** • First choice is phenoxymethylpenicillin • **First choice if systemically very unwell, symptoms and signs of a more**	PHE promotes antimicrobial stewardship for acute sinusitis in its TARGET programme for reducing primary care prescribing of antibiotics, including leaflets endorsed by NICE. ESPAUR monitors methicillin resistance for *Staphylococcus aureus*. *Streptococcus pneumoniae* is monitored for resistance to penicillin and erythromycin. The 2018 ESPAUR report found that bloodstream isolate resistance levels to penicillin and macrolides were remaining stable at 3-4% and 5-8%, respectively.	No impact	Acute sinusitis is usually caused by a viral infection, with only 0.5% to 2.2% of acute viral sinusitis complicated by a bacterial infection. The most common bacterial causes are *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis* and *Staphylococcus aureus*. *Streptococcus pneumoniae* is monitored for penicillin (which includes phenoxymethylpenicillin) and erythromycin resistance. However, the committee confirmed that the stable 3-4% resistance rates for penicillins and 5-8% for macrolides stated in the ESPAUR report are not thought to have an impact on the recommended antibiotics at this time. Although *Staphylococcus aureus* is monitored to support the UK's AMR strategy, the drug/bug combinations do not overlap with the antibiotics recommended in

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	serious illness or condition, or at high risk of complications is co-amoxiclav • **Alternative first choices for penicillin allergy are clarithromycin or doxycycline (over 12s)** • **Second choice is co-amoxiclav (if not given as first choice)**			NG79. Co-**amoxiclav** is monitored but this is in relation to *Escherichia coli* and *Klebsiella pneumoniae* resistance, which are unlikely to be causes of bacterial sinusitis. The committee confirmed that gram-positive organisms are not included in the monitoring for co-amoxiclav.
NG84: Sore throat (acute): antimicrobial prescribing (January 2018)	An immediate antibiotic prescription is offered for people who are systemically very unwell, have symptoms and signs of a more serious illness or condition, or are at high risk of complications. For people who are most likely to benefit from an antibiotic (FeverPAIN score of 4 or 5, or Centor score of 3 or 4) an immediate antibiotic or a back-up antibiotic can be considered. For people who may be more likely to benefit from an antibiotic (FeverPAIN score of 2 or 3) a back-up antibiotic can be considered. **Antibiotics for adults, children and young people** • First choice is phenoxymethylpenicillin • **Alternative first choices for penicillin allergy are clarithromycin or erythromycin**	Antibiotic prescribing for acute sore throat is part of the TARGET programme for antimicrobial stewardship. None of the common causative organisms for acute sore throat are included in the ESPAUR report.	No impact	Acute sore throat is often caused by a viral infection. The most common bacterial cause is group A beta-haemolytic streptococcus, with groups C or G beta-haemolytic streptococci, *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* also suggested pathogens. The common causative organisms for acute sore throat and antibiotics recommended in NG84 do not overlap with the drug/bug combinations monitored as part of the UK's AMR strategy.

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
NG91: Otitis media (acute): antimicrobial prescribing (March 2018)	An immediate antibiotic prescription is offered for children and young people who are systemically very unwell, have symptoms and signs of a more serious illness or condition, or are at high risk of complications. An immediate or a back-up antibiotic prescription can be considered for children and young people who may be more likely to benefit from antibiotics (those of any age with otorrhoea or those under 2 years with infection in both ears). A back-up antibiotic prescription can be considered for children and young people who may be less likely to benefit from antibiotics. **Antibiotics for children and young people under 18 years** • First choice is amoxicillin • **Alternative first choices for penicillin allergy are clarithromycin or erythromycin** • **Second choice is** co-amoxiclav	Antibiotic prescribing for acute otitis media is part of the TARGET programme for antimicrobial stewardship. *Streptococcus pneumoniae* is monitored for resistance to penicillin and erythromycin as part of the UK AMR strategy. Penicillin and macrolide resistance rates in bloodstream isolates remain stable at 3-4% and 5-8%, respectively.	No impact	Acute otitis media can be caused by both viruses and bacteria. In bacterial infections, the most common causative pathogens are *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis* and *Streptococcus pyogenes.* *Streptococcus pneumoniae* is monitored for penicillin (which includes amoxicillin) and erythromycin resistance. However, the committee confirmed that the stable 3-4% resistance rates for penicillins and 5-8% resistance rates for macrolides stated in the ESPAUR report are not thought to have an impact on the recommended antibiotics at this time. Co-**amoxiclav resistance** is monitored but this is in relation to *Escherichia coli* and *Klebsiella pneumoniae*, which are unlikely to be causes of acute otitis media. The committee confirmed that the causative organisms for acute otitis media are not included in the resistance monitoring for co-

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				amoxiclav.
Urinary tract infections				
NG109: Urinary tract infection (lower): antimicrobial prescribing (October 2018)	A back-up antibiotic prescription or an immediate antibiotic prescription can be considered for women with lower UTI who are not pregnant. An immediate antibiotic prescription is offered for: • Pregnant women and men with lower UTI • Children and young people under 16 years with lower UTI **Antibiotics for non-pregnant women aged 16 years and over** • First choice is nitrofurantoin or trimethoprim (if low risk of resistance) • **Second choice is** nitrofurantoin (if not used as first choice), pivmecillinam or fosfomycin **Antibiotics for pregnant women aged 12 years and over** • First choice is nitrofurantoin • **Second choice is** amoxicillin (only if culture results available and susceptible) or cefalexin • For **treatment of asymptomatic bacteriuria, the choice is** from	*Escherichia coli* and *Klebsiella pneumoniae* are monitored in support of the AMR strategy but not for any of the 6 antibiotics recommended in NG109. Third-generation cephalosporins are monitored but cefalexin (an antibiotic recommended in NG109) is a first-generation cephalosporin. The 2017 ESPAUR report found that antibiotic resistance of *Escherichia coli* in laboratory-processed urine samples was common for trimethoprim (average 35%) but remained at low levels (3%) for nitrofurantoin.	No impact	The most common causative pathogen in uncomplicated UTIs (approximately 70 to 95% of cases) is *Escherichia coli*. *Staphylococcus saprophyticus* accounts for 5 to 10% of cases and occasionally other Enterobacteriaceae, such as *Proteus mirabilis* and Klebsiella species are isolated. Although both *Escherichia coli* and *Klebsiella pneumoniae* are monitored in support of the AMR strategy, the drug/bug combinations do not overlap with the 6 antibiotics recommended in NG109. As outlined in the guideline, resistance of *Escherichia coli* in laboratory-processed urine specimens to the following

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	nitrofurantoin, amoxicillin or cefalexin based on recent culture and susceptibility results **Antibiotics for men aged 16 years and over** • First choice is trimethoprim or nitrofurantoin **Antibiotics for children and young people under 16 years** • First choice is trimethoprim (if low risk of resistance) or nitrofurantoin • **Second choice is** nitrofurantoin (if not used as first choice), amoxicillin (only if culture results available and susceptible) or cefalexin			antibiotics (as of March 2018) was: nitrofurantoin: 2.5% (varies by area from 2.0 to 3.6%) trimethoprim: 30.3% (varies by area from 27.1 to 33.4%) pivmecillinam: 7.5% (varies by area from 4.1 to 15.7%) cefalexin: 9.9% (varies by area from 8.1 to 11.4%) The committee confirmed that resistance levels of *Escherichia coli* for nitrofurantoin, pivmecillinam and cefalexin remain low enough not to have an impact on the recommended antibiotics at this time. The high level of resistance to trimethoprim is already accounted for in the recommendations.
NG110: Prostatitis (acute): antimicrobial prescribing (October 2018)	An antibiotic is offered to people with acute prostatitis. **Antibiotics for adults aged 18 years and over** • **First choice oral antibiotic (guided by susceptibilities when available) is ciprofloxacin or ofloxacin** • **Alternative first choice oral antibiotic for adults unable to take a fluoroquinolone (guided by**	There are low levels of gentamicin resistant bloodstream infections across *Escherichia coli* (6.1% in 2017), *Klebsiella pneumoniae* (3.1% in 2017), *Klebsiella oxytoca* (0.7% in 2017), which have been	No impact	Acute prostatitis is a serious bacterial infection caused by urinary tract pathogens, most commonly gram-negative bacteria such as *Escherichia coli*, Proteus species, Klebsiella species and Pseudomonas species. Other pathogens include Enterococci, *Staphylococcus aureus*, and rarely Bacteroides species.

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	susceptibilities when available) is trimethoprim • **Second choice oral antibiotic (after discussion with specialist) is levofloxacin or co-trimoxazole** • **First choice intravenous antibiotics (which may be combined if sepsis a concern) are ciprofloxacin, levofloxacin, cefuroxime, ceftriaxone,** gentamicin or amikacin	consistent between 2013 and 2017. There has been a 5% rise from 2013-17 in ciprofloxacin resistance among bloodstream infections caused by *Escherichia coli* (8.9% in 2017) and *Klebsiella pneumoniae* (3.2% in 2017). Ciprofloxacin resistance levels among *Klebsiella oxytoca* (0.6% in 2017*)* have remained stable.		As outlined in the guideline, resistance of *Escherichia coli* in laboratory-processed urine specimens to the following antibiotics (as of March 2018) was: ciprofloxacin: 10.6% (varies by area from 7.8% to 13.7%) trimethoprim: 30.3% (varies by area from 27.1% to 33.4%) The committee confirmed that the rise in resistance of *Escherichia coli* to ciprofloxacin would not affect the guideline recommendations at this time because fluoroquinolones remain the most suitable first-line oral options for acute prostatitis. The high level of resistance to trimethoprim is already accounted for in the guidelines. The stable levels of gentamicin resistance were discussed with the committee and no impact was anticipated at this time due to the resistance patterns remaining similar over the past 5 years.

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
NG111: Pyelonephritis (acute): antimicrobial prescribing (October 2018)	People with acute pyelonephritis are offered an antibiotic. **Antibiotics for non-pregnant women and men aged 16 years and over** • **First choice oral antibiotics are** cefalexin, co-amoxiclav (only if culture results available and susceptible), trimethoprim (only if culture results available and susceptible) or ciprofloxacin • **First choice intravenous antibiotics (which may be combined if susceptibility or sepsis a concern) are** co-amoxiclav (only in combination or if culture results available and susceptible), cefuroxime, ceftriaxone, ciprofloxacin, gentamicin or amikacin **Antibiotics for pregnant women aged 12 years and over** • **First choice oral antibiotic is cefalexin** • **First choice intravenous antibiotic is** cefuroxime **Antibiotics for children and young people under 16 years** • **First choice oral antibiotics are** cefalexin or co-amoxiclav (only if culture results available and susceptible) • **First choice intravenous antibiotics (which may be combined if susceptibility or sepsis a concern) are** co-amoxiclav (only in combination or if	The proportion of bloodstream isolates of *Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella oxytoca* and Pseudomonas species resistant to key antibiotics remained broadly stable between 2013 and 2017. In terms of *Escherichia coli,* non-susceptibility to co-amoxiclav, this appeared to increase slightly between 2016 and 2017.	No impact	Gram-negative bacteria are the most common causative pathogens in acute pyelonephritis, with *Escherichia coli* causing 60% to 80% of uncomplicated infections. Other gram-negative pathogens include *Proteus mirabilis* (responsible for about 15% of infections) as well as Klebsiella (approximately 20%), Enterobacter, and Pseudomonas species. Less commonly, gram-positive bacteria such as *Enterococcus faecalis*, *Staphylococcus saprophyticus*, and *Staphylococcus aureus* may be seen. As outlined in the guideline, resistance of *Escherichia coli* in laboratory-processed urine specimens to the following antibiotics (as of March 2018) was: cefalexin: 9.9% (varies by area from 8.1 to 11.4%) ciprofloxacin: 10.6% (varies by area from 7.8 to 13.7%) co-amoxiclav: 19.8% (varies by area from 10.8 to 30.7%) trimethoprim: 30.3% (varies by

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	culture results available and susceptible), cefuroxime, ceftriaxone, gentamicin or amikacin			area from 27.1 to 33.4%). Co-amoxiclav resistance is being monitored for *Escherichia coli and Klebsiella pneumoniae.* Although the ESPAUR report indicates there is increasing resistance to co-amoxiclav, NG111 clearly states to use only if susceptibility results are available so no impact on current recommendations is anticipated. The committee agreed that the statement on susceptibility results in the guideline recommendations was sufficient. Third-generation cephalosporin (such as ceftriaxone) resistance is monitored for *Klebsiella pneumoniae* and *Escherichia coli* but rates are generally low and stable.
NG112: Urinary tract infection (recurrent): antimicrobial prescribing (October 2018)	Antibiotic prophylaxis is recommended only in certain circumstances. **People aged 16 years and over (on specialist advice only for children)** • First choice is trimethoprim or nitrofurantoin • Second choice is amoxicillin or cefalexin	*Escherichia coli* and *Klebsiella pneumoniae* are monitored in support of the AMR strategy but not for any of the antibiotics recommended in NG112.	No impact	The most common causative pathogen in uncomplicated UTIs, in 70 to 95% of cases, is *Escherichia coli*. *Staphylococcus saprophyticus* accounts for 5 to 10% of cases and occasionally other Enterobacteriaceae, such as *Proteus mirabilis* and Klebsiella

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		Third-generation cephalosporins are monitored but cefalexin (an antibiotic recommended in NG112) is a first-generation cephalosporin.		species are isolated. Although both *Escherichia coli* and *Klebsiella pneumoniae* are monitored in support of the AMR strategy, the drug/bug combinations do not overlap with the 4 antibiotics recommended in NG112.
NG113: Urinary tract infection (catheter-associated): antimicrobial prescribing (November 2018)	An antibiotic is offered to people with a catheter-associated UTI. **Antibiotics for non-pregnant women and men aged 16 years and over** • **First choice oral antibiotics if no upper UTI symptoms are** nitrofurantoin, trimethoprim (if low risk of resistance) or amoxicillin (only if culture results available and susceptible) • **Second choice oral antibiotic if no upper UTI symptoms is** pivmecillinam • **First choice oral antibiotics if upper UTI symptoms are** cefalexin, co-amoxiclav (only if culture results available and susceptible), trimethoprim (only if culture results available and susceptible) or ciprofloxacin • **First choice intravenous antibiotics (which may be combined if susceptibility or sepsis a concern) are** co-amoxiclav (only in combination, unless culture results confirm susceptibility),	The proportion of bloodstream isolates of *Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella oxytoca* and Pseudomonas species resistant to key antibiotics remained broadly stable between 2013 and 2017. In terms of *Escherichia coli*, non-susceptibility to co-amoxiclav, this appeared to increase slightly between 2016 and 2017. There has been a 5% rise from 2013-17 in ciprofloxacin resistance among bloodstream infections caused by *Escherichia coli* (8.9% in 2017) and *Klebsiella pneumoniae* (3.2% in 2017). Ciprofloxacin	No impact	The most common uropathogen causing urinary tract infection is *Escherichia coli*. In men, *Escherichia coli* accounts for approximately 70% to 95% of cases and in women for about 80% of cases. *Staphylococcus saprophyticus* accounts for 5% to 10% of cases. Other causative organisms are *Staphylococcus species, Proteus mirabilis, and Enterococci.* Common organisms causing urinary tract infection in children include *Escherichia coli* (about 75% or more of cases), *Klebsiella species*, and *Staphylococcus saprophyticus.* However, catheter-associated urinary tract infection is usually associated with more than one bacterial species and is often caused by organisms that are antibiotic resistant.

	cefuroxime, ceftriaxone, ciprofloxacin, gentamicin or amikacin **Antibiotics for pregnant women aged 12 years and over** • **First choice oral antibiotic is** cefalexin • **First choice intravenous antibiotic is** cefuroxime **Antibiotics for children and young people under 16 years** • **First choice oral antibiotics are** trimethoprim (if low risk of resistance), amoxicillin (only if culture results available and susceptible), cefalexin or co-amoxiclav (only if culture results available and susceptible) • **First choice intravenous antibiotics (which may be combined if susceptibility or sepsis a concern) are** co-amoxiclav (only in combination unless culture results confirm susceptibility), cefuroxime, ceftriaxone, gentamicin or amikacin	resistance levels among *Klebsiella oxytoca* (0.6% in 2017*)* have remained stable.		As outlined in the guideline, resistance of *Escherichia coli* in laboratory-processed urine specimens to the following antibiotics (as of March 2018) was: nitrofurantoin: 2.5% (varies by area from 2.0 to 3.6%) trimethoprim: 30.3% (varies by area from 27.1 to 33.4%) pivmecillinam: 7.5% (varies by area from 4.1 to 15.7%) cefalexin: 9.9% (varies by area from 8.1 to 11.4%) ciprofloxacin: 10.6% (varies by area from 7.8 to 13.7%) co-amoxiclav: 19.8% (varies by area from 10.8 to 30.7%) Co-amoxiclav resistance is being monitored for *Escherichia coli and Klebsiella.* Although the ESPAUR report indicates there is increasing resistance to co-amoxiclav, NG113 clearly states to use only if susceptibility results are available so no impact on current recommendations is anticipated. The committee agreed that the statement on susceptibility results prior to prescribing co-amoxiclav was sufficient.

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				The increase in resistance to ciprofloxacin was discussed by the committee who stated that despite the trends in resistance it is still an important antibiotic that should be available for use in people with catheter-associated UTIs.
Chronic respiratory conditions				
NG114: Chronic obstructive pulmonary disease (acute exacerbation): antimicrobial prescribing (December 2018)	An antibiotic can be considered for people with an acute exacerbation of COPD. **Antibiotic treatment for adults aged 18 years and over** • **First choice oral antibiotics (empirical treatment or guided by most recent sputum culture and susceptibilities) are amoxicillin, doxycycline or clarithromycin** • **Second choice oral antibiotics (guided by susceptibilities when available) are** an alternative first choice (from a different class) • **Alternative choice oral antibiotics (if person at higher risk of treatment failure; guided by susceptibilities**	*Streptococcus pneumoniae* is monitored for resistance to penicillin and erythromycin as part of the UK AMR strategy. The 2018 ESPAUR report found that bloodstream isolate resistance levels to penicillin and macrolides were remaining stable at 3-4% and 5-8%, respectively.	No impact	A number of factors are known to trigger an acute exacerbation of COPD, such as a respiratory tract infection (which can be viral) and environmental factors (such as smoking). Only about half of exacerbations are thought to be caused by bacterial pathogens, which include *Streptococcus pneumoniae*, *Moraxella catarrhalis* and *Haemophilus influenza.* *Streptococcus pneumoniae* is monitored for penicillin (which includes amoxicillin) and erythromycin (which is a macrolide similar to clarithromycin) resistance.

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	when available) are co-amoxiclav, levofloxacin or co-trimoxazole • **First choice intravenous antibiotics (guided by susceptibilities when available) are amoxicillin, co-amoxiclav, clarithromycin, co-trimoxazole or** piperacillin with tazobactam			However, the committee confirmed that the stable 3-4% resistance rates for penicillins and 5-8% resistance rates for macrolides stated in the ESPAUR report are not thought to have an impact on the antibiotics recommended in NG114, because there has been no change since the guideline was developed.
NG117: Bronchiectasis (non-cystic fibrosis), acute exacerbation: antimicrobial prescribing (December 2018)	People with an acute exacerbation of bronchiectasis are offered an antibiotic. **Antibiotics for adults aged 18 years and over** • **First choice oral antibiotics for empirical treatment in the absence of current susceptibility data (guided by most recent sputum culture and susceptibilities where possible) are amoxicillin, doxycycline or clarithromycin** • **Alternative choice oral antibiotics (if person at higher risk of treatment failure) for empirical treatment in the absence of current susceptibility data (guided by most recent sputum culture and susceptibilities where possible) are co-amoxiclav or levofloxacin** • **First choice intravenous antibiotics for empirical treatment in the absence of current susceptibility data (guided by**	ESPAUR monitors methicillin resistance for *Staphylococcus aureus.* *Streptococcus pneumoniae* is monitored for resistance to penicillin and erythromycin. The 2018 ESPAUR report found that bloodstream isolate resistance levels to penicillin and macrolides were remaining stable at 3-4% and 5-8%, respectively. *Pseudomonas* species is monitored for resistance to ceftazidime and carbapenems, but these antibiotics are not recommended in NG117 for the empirical treatment of an acute exacerbation of bronchiectasis.	No impact	Acute exacerbations of bronchiectasis can be caused by a spectrum of bacteria including: *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae*, *Moraxella catarrhalis* and *Pseudomonas aeruginosa*. *Streptococcus pneumoniae* is monitored for penicillin (which includes amoxicillin) and erythromycin resistance. However, the committee confirmed that the stable 3-4% resistance rates for penicillins and 5-8% resistance rates for macrolides stated in the ESPAUR report are not thought to have an impact at this time, because these rates were the same when the

NICE guideline	Relevant guideline recommendations	Relevant ESPAUR data/content	Impact on guideline	Rationale
	most recent sputum culture and susceptibilities where possible) are co-amoxiclav, piperacillin with tazobactam or levofloxacin **Antibiotics for children and young people under 18 years** • **First choice oral antibiotics for empirical treatment in the absence of current susceptibility data (guided by most recent sputum culture and susceptibilities where possible) are amoxicillin, clarithromycin and doxycycline (over 12s)** • **Alternative choice oral antibiotics (if person at higher risk of treatment failure) for empirical treatment in the absence of current susceptibility data (guided by most recent sputum culture and susceptibilities where possible) are co-amoxiclav or** ciprofloxacin (on specialist advice) • **First choice intravenous antibiotics for empirical treatment in the absence of current susceptibility data (guided by most recent sputum culture and susceptibilities where possible) are co-amoxiclav,** piperacillin with tazobactam or ciprofloxacin (on specialist advice)			guideline was developed. Although, *Staphylococcus aureus* and Pseudomonas species are monitored to support the UK's AMR strategy, the drug/bug combinations do not overlap with the antibiotics recommended in NG117.