THE PATHCARE NEWS

PREPARING FOR THE WINTER RESPIRATORY SEASON IN THE EASTERN CAPE:

A REVIEW OF 2018 ANTIMICROBIAL SURVEILLANCE DATA FOR COMMON COMMUNITY-ACQUIRED RESPIRATORY TRACT ORGANISMS

Below we present the PathCare susceptibility data for common community-acquired respiratory tract organisms isolated from lower respiratory tract samples of patients in the Eastern Cape during 2018. As this data reflects the susceptibility of all isolates, including those from hospitalised patients, resistance rates in community-acquired infections may be lower.

Streptococcus pneumoniae

Antibiotic	% Susceptible
Penicillin (MIC ≤2 ug/ml)	100
Cefuroxime	100
Ceftriaxone	100
Erythromycin	78
Clindamycin	83
Moxifloxacin	100

Haemophilus influenzae

Antibiotic	% Susceptible
Amoxicillin/Ampicillin	87
Amoxicillin-clavulanate (co-amoxiclav)	97
Cefuroxime	97
Ceftriaxone/Cefotaxime	99
Azithromycin/ Clarithromycin	95
Sulfa-trimethoprim	34
Tetracycline	95
Moxifloxacin	91

The current susceptibility data for *S. pneumoniae* and *H. influenzae,* the two most common respiratory bacterial pathogens, are similar to susceptibility patterns observed in the Western Cape[1], which in turn are largely unchanged from data reported for both provinces in 2012[2] and 2016[3]. Slight differences may be due to the smaller number of isolates in the Eastern Cape, with correspondingly wider 95% confidence intervals.

With 100% of *S. pneumoniae* susceptible to penicillin (MIC ≤2 ug/ml), high dose amoxicillin and formulations of oral co-amoxiclav containing a higher dose of the amoxicillin component will be effective (1g 8h or 2g SR 12h or 90mg/kg/day divided twice daily).

The clavulanate component in co-amoxiclav inhibits the beta-lactamases produced by most of the 13% *H. influenzae* isolates that test resistant to amoxicillin. Virtually all isolates remain susceptible to ceftriaxone and cefotaxime.

Resistance to the macrolides and clindamycin is high in *S. pneumoniae*. Resistance in *H. influenzae* is currently modest in Eastern Cape isolates, in contrast to the Western Cape where only approximately 80% of isolates are susceptible. These agents are only recommended for directed therapy once susceptibility is confirmed.

Fluoroquinolones with enhanced pneumococcal activity such as levofloxacin and moxifloxacin may be considered in patients with severe beta-lactam allergies, but should NOT be used as first line therapy because of possible side-effects and their activity against tuberculosis (use as a single agent in persons with undiagnosed TB selects for drug-resistant TB).

These data support the current South African community-acquired pneumonia guidelines (see table below)[4] and Standard Treatment Guidelines and Essential Medicines List[5] which both recommend amoxicillin (high dose) or IV ampicillin as first line therapy for non-severe community-acquired pneumonia in persons <65 years, with no recent antibiotic use in past 90 days and no co-morbidities. High dose amoxicillin is also recommended as first line therapy for acute otitis media and sinusitis.[5]

Table 1 Empiric choice of antibiotics for CAP

Setting	Route	< 65 years old, no antibiotics within 90 days and no comorbidities	≥ 65 years old, no antibiotics with 90 days or comorbidity*	Alternative
Outpatient	PO	Amoxicillin	Amoxicillin-clavulanate or a second generation cephalosporin	Moxifloxacin or levofloxacin
Inpatients (non-severe)	PO/IV	Amoxicillin	Amoxicillin-clavulanate or cefuroxime or a third generation cephalosporin	Moxifloxacin or levofloxacin
Inpatients (severe/ICU)	IV	Amoxicillin-clavulanate or cefuroxime or a third generation cephalosporin plus a macrolide/ azalide	Amoxicillin-clavulanate or cefuroxime or a third generation cephalosporin plus a macrolide/ azalide	Moxifloxacin or levofloxacin plus Amoxicillin-clavulanate or cefuroxime or a third generation cephalosporin

* , cardiovascular disease, chronic respiratory disease, chronic renal failure, diabetes mellitus, HIV infection. CAP, community-aquired pneumonia.

The 2019 influenza season has started[6]. A protective antibody response takes about 2 weeks to develop. However, it is never too late to vaccinate! Individuals at increased risk of severe influenza disease include pregnant women, HIV infected adults, children under 5, the elderly and those vulnerable due to pre-existing illnesses or risk factors and others. Antibiotics are not indicated for treatment of uncomplicated influenza and other viral upper respiratory tract infections. Organisations like the Centers for Disease Control and Prevention provide useful patient-centred information on symptom relief from viral illnesses.[7]

Diagnostic tests for detection of influenza and other respiratory pathogens from respiratory samples are available locally[8]. In addition to the Comprehensive Respiratory Panel, performed on the BioFire FilmArray, which detects 20 respiratory pathogens simultaneously, we are now also offering the more focussed Flu/RSV Panel, performed on-site on GeneXpert. The Flu/RSV panel provides a cost-effective option for testing of Influenza (A & B) and RSV. This test is especially useful during influenza season. Please note that a comprehensive respiratory panel is not advised following a negative result on a Flu/RSV Panel as most medical aids do not reimburse two different respiratory PCRs. Hence if the differential diagnosis includes atypical bacterial pathogens, such as pertussis, mycoplasma and chlamydia, and a wider range of viruses, including adenovirus, para-influenza viruses, human metapneumovirus, etc it is better to choose a Comprehensive Respiratory Panel initially. Blood tests like procalcitonin can also be useful in determining the need for antibiotics in patients with a range of respiratory illnesses[9].

References:

1. PathCare Laboratory Update May 2019. Antimicrobial surveillance data for common community-acquired organisms: March 2018 – February 2019.
2. PathCare Laboratory Update August 2013. Antimicrobial surveillance data for common community-acquired organisms: July – December 2012.
3. PathCare Laboratory Update August 2017. Antimicrobial surveillance data for common community-acquired organisms: January – December 2016.
4. South African guideline for the management of community-acquired pneumonia in adults. J Thorac Dis 2017;9(6):469-1502
5. Republic of South Africa. Essential Drugs Programme. Hospital level (Adults) Standard Treatment Guidelines and Essential Medicines List. 4th ed. Republic of South Africa: National Department of Health; 2015.
6. http://www.nicd.ac.za/influenza-season-has-started-2 accessed 20/5/2019
7. https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/CDC-AU_RCx_Relief_for_Viral_Illness_sm_v8_508.pdf- Accessed 20/5/2019
8. PathCare Laboratory Update June 2017. Respiratory Tract Infections: molecular identification of the cause.
9. PathCare Laboratory Update March 2019. Minimum repeat intervals for procalcitonin and C-reactive protein.