

syzygy

Important changes to antibiotic susceptibility reporting: Understanding the new meaning of 'I'

We are changing the way we report antibiotic susceptibility. From this month, our reports will use a new meaning for the term 'I'. Dr Jenny Robson, Pathologist-in-Charge of Infectious Diseases, Microbiology and Molecular Pathology, explains.

At Sullivan Nicolaides Pathology, we use the standardised EUCAST methodology¹ for drug-bug combinations. You will be familiar with microbiology reports containing 'S', 'I' and 'R'.

S and R are straightforward:

- **S - Susceptible, standard dosing regimen:** a high likelihood of therapeutic success using a standard dosing regimen of the antibiotic.
- **R - Resistant:** a high likelihood of therapeutic failure even when there is increased exposure.

However, the previous definition of I - Intermediate - was problematic. It failed to guide clinical practice and most users considered it was "just another R". I and R were lumped together as non-susceptible, so, in real life practice, the previous definitions offered two resistant categories, I and R, and just one susceptible category, S.

This is no longer the case. Forget intermediate or indeterminate. The new meaning of 'I' is:

- **I - Susceptible, increased exposure:** when there is a high likelihood of treatment success because exposure to the agent is increased by adjusting the dosing regimen or by its concentration at the site of infection. The abbreviation for this category in microbiology reports will remain as I.

The modified definition of the I-category means the only difference between S and I is the amount of drug at the site of the infection necessary to achieve an adequate clinical response.

Exposure to a drug can be increased in a number of ways and is a function of:

- mode of administration - oral, intravenous, IV infusion
- increased dose and/or decreased dosing interval
- prolonging the infusion time.

Table 1. Four of the more common organisms and antibiotics where Susceptible, increased exposure (I) is either the routine susceptible category or where there may be both an S - Susceptible, standard dosage or I - Susceptible, increased exposure.²

Organism	Antibiotic	Susceptible (S)	Susceptible, Increased Exposure (I)	
		Standard Dosage (S)	Increased Dosage (I)	
<i>Pseudomonas aeruginosa</i>	Piperacillin-Tazobactam	No Susceptible (S) category; always use Susceptible, Increased Exposure (I)	4 g piperacillin + 0.5 g tazobactam x 4 iv extended 3 hour infusion	
	Cefepime		2 g x 3 iv	
	Ceftazidime		2 g x 3 iv or 1 g x 6	
	Ciprofloxacin		0.75 g x 2 oral or 0.4 g x 3 iv	
<i>Escherichia coli</i>	Cefazolin (<i>E.coli</i> , <i>Klebsiella</i> urinary source)	No Susceptible (S) category; always use Susceptible, Increased Exposure (I)	2 g x 3 iv	
	Ceftriaxone (not meningitis)	2 g x 1 iv	2 g x 2 iv or 4 g x 1 iv	
	Meropenem (not meningitis)	1 g x 3 iv over 30 minutes	2 g x 3 iv over 3 hrs	
<i>Streptococcus pneumoniae</i>	Cefaclor	No Susceptible (S) category; always use Susceptible, Increased Exposure (I)	1 g x 3 oral	
	Penicillin	0.6 g (1MU) x 4 iv	1.2 g (2 MU) x 4 - 6 iv	
	Amoxicillin oral	0.5 g x 3 oral	0.75 - 1 g x 3 oral	
	Clarithromycin	0.25 g x 2 oral	0.5 g x 2 oral	
	Ceftriaxone (not meningitis)	2 g x 1 iv	2 g x 2 iv or 4 g x 1 iv	
<i>Haemophilus influenzae</i>	Amoxil	No Susceptible (S) category; always use Susceptible, Increased Exposure (I)	0.75 - 1 g x 3 oral	
	Amoxicillin-clavulanate		0.875 g amoxil + 0.125 g clavulanate x 3 oral	
	Cefuroxime		0.5 g oral x 2	
	Cotrimoxazole		0.16 g trimethoprim + 0.8 sulfamethoxazole x 2 oral	0.24 g trimethoprim + 1.2 sulfamethoxazole x 2 oral
	Doxycycline		0.1 g x 1 oral	0.1 g x 2 oral

Additionally, EUCAST recommends that the use of gentamicin for *P. aeruginosa* be discouraged. Where systemic therapy is required, aminoglycosides should be used in combination with another active therapy. **Tobramycin**, if susceptible, is the aminoglycoside of choice. Dosage adjustments in renal impairment are required.

References:

¹The European Committee on Antimicrobial Susceptibility Testing (EUCAST). 2022. <https://eucast.org> (accessed March 2022).

²EUCAST Clinical Breakpoint Tables v. 10.0, valid from 2020-01-01. (2020) https://www.eucast.org/fileadmin/src/media/PDFs/EUCAST_files/Breakpoint_tables/Dosages_v_10.0_Breakpoint_Tables.pdf (accessed March 2022).



We have produced a **clinician bulletin** that includes the full version of Table 1 and a sample report for *P. aeruginosa*. Scan the code to view, or contact your medical liaison manager on 1300 767 284 for a copy. For further clinical information, please contact our microbiologists on (07) 3377 8534.



Do you use Best Practice or Medical Director? Start sending electronic pathology requests via SMS.

We understand clinicians and patients need greater convenience and flexibility in all healthcare settings.

Our enhanced eOrder electronic requests service is available for users of Best Practice and Medical Director. This means all eOrder pathology requests may be sent as a barcode via SMS to patients for both in-person and telehealth consultations.

Benefits of eOrder electronic requests:

- reduces risk of missed tests and patient mis-identification
- provides a solution for misplaced request forms
- delivers information in a safe and secure format.

Getting started

Clinics using Best Practice and Medical Director must opt-in to activate this service, and valid mobile phone numbers must be recorded in patient files. We encourage you to discuss this service enhancement with your practice manager.

How it works



The clinician requests pathology using eOrders during a consultation.



The patient receives an SMS with a request form barcode within 2 minutes.



The patient visits an SNP collection centre with their mobile device.



Our collector scans the barcode to start the collection process.

Test exclusions

Pathology requests for histopathology, cervical screening tests, and swabs for MCS and PCR testing will not be sent to patients via SMS as these tests are collected by clinicians. The only exception is COVID-19 PCR, which will continue to be sent to patients.

To find out more, visit snp.com.au/eorders

Pathologist profile



Dr Marie Bertrand-Philippe MBBS PhD FRCPA

Dr Marie Bertrand-Philippe is an anatomical pathologist at our Bowen Hills laboratory where she reports on breast, gynaecological and skin cases.

Dr Bertrand-Philippe graduated in 1998 from the University of Nancy, France, with a Master of Science in microbiology and enzymology, before moving to the UK to intern at the Unilever Health Institute's Cell Biology and Physiology Unit. She later received a British Liver Trust scholarship to complete a PhD at the University of Southampton's School of Medicine, writing her thesis on the regulation of gene transcriptions in the pathogenesis of liver fibrosis.

In 2005, she accepted a postdoctoral position at the Queensland Institute of Medical Research, investigating the molecular pathway triggered by ferritin and its role in the progression of liver fibrosis. She studied medicine at The University of Queensland in 2010, graduating in 2013, and received a Royal College of Pathologists of Australasia student scholarship in 2012 for a research project on triple-negative breast cancer at the UQ Centre for Clinical Research.

After graduating, she undertook a medical internship at Royal Brisbane and Women's Hospital before training in anatomical pathology. She was awarded an RCPA Fellowship in 2021.

Dr Bertrand-Philippe is available for consultation.

P (07) 3377 8605 | **E** marie_bertrand-philippe@snp.com.au

Priority COVID-19 PCR testing for healthcare workers

An expedited pathway for COVID-19 PCR testing to support healthcare workers is available in our service area.

We can supply COVID-19 self-collection kits containing:

- illustrated step-by-step collection instructions
- dedicated request form
- swab and viral transport media tube.

To arrange expedited COVID-19 PCR testing, complete the dedicated self-collection request form using a nominated doctor from your clinic as the referrer.

An instructional video on COVID-19 self-collection is available at: snp.com.au/vids/covidsc

Collected samples may be dropped off into any of our collection centres or picked up along with other specimens by our couriers.

Contact client.services@snp.com.au to order kits for your practice.



Correct at time of publication. April 2022