Lab Update August 2020

Southern Community Laboratories Hawke's Bay

eOrders

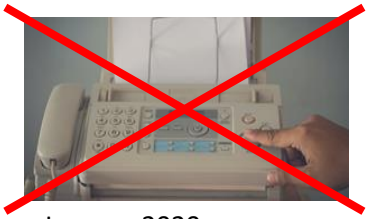
We are delighted to announce that **Electronic Ordering** of lab tests (eOrders) is **now available in Hawkes Bay**. The eOrder system offers significant benefits for both requestors and the laboratory. eOrders are generated straight out of your Practice Management System. It is similar to the current Medtech lab form for manual orders, but with added features. eOrders streamline the flow of work into the laboratory and reduce any risk of clerical errors. eOrders are especially advantageous in our new Covid-19 environment, where many patient consultations are being done by telephone. Adding additional tests to an existing request already in the lab is also very easy. More information is available here: https://eorder.co.nz/

We have trialled the system at one local surgery and are now ready to roll it out more widely. We will be in contact in due course, but if you are particularly keen to get started please contact the Hawkes Bay Manager Andrew Milne andrew.milne@sclabs.co.nz or 027 439 3006.

Note that this is only available for surgeries whose blood samples are tested at SCL. We are unable to offer eOrders for those whose bloods are tested at the Hospital lab as they use a different laboratory computer system.

Replacement of Faxing- Axe the Fax!

In June 2019 the Ministry of Health and Accident Compensation Commission released a joint communique defining secure communication within the New Zealand health sector, specifically in regards to email and faxing.



The two recommendations are:

1. All emails be transmitted using Transport Layer Security (TSS) no later than January 2020.
2. All analogue faxing to be migrated to a fully digital, security-assessed communications solution such as email no later than December 2020.

Healthscope has complied with the first recommendation and has notified the Ministry of Health as requested.

To implement the second recommendation, Healthscope will be phasing out all faxing, including faxing of laboratory results, by the end of this year and will be offering a secure email alternative. We will continue to offer other result delivery methods including paper and HL7 electronic results.

HL7 electronic results are the only delivery method where the laboratory is notified that you have received the result and, as such, is our preferred option.

Over the next few months you will be contacted by the laboratory to obtain the necessary information to enable us to send you secure emails. This may be a good opportunity for you to review your processes for receiving such results.

In addition to laboratory results, there may be other exchanges with the laboratory involving faxing, for example requesting a home visit; each laboratory will be reviewing these and providing you with the alternative solution.

Brent Glanville
Healthscope CIO

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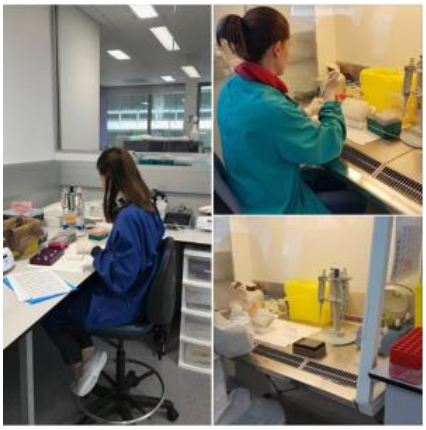
Pre departure Covid-19 testing

Pre-departure Covid-19 testing is now available through SCL for travellers who require a negative test prior to boarding their plane.

The Ministry of Health does not fund this, and the cost to the traveller is $120 +GST. Travellers need to contact their Medical Practice to arrange testing. Payment is to be made directly to the medical practice for all associated costs of testing including the laboratory analysis. We will invoice you for the laboratory analysis portion.

Some countries require the swab to be collected within a set timeframe, typically within 72 or 96 hours of departure. Please collect swabs as early as possible to allow plenty of time for testing. There is considerable pressure on all Covid-19 testing facilities in NZ at present- **please contact us in advance** so we can ensure results are available prior to flight departure.



Reminder - Nurse ordering of lab tests

The lab continues to see lab forms where the requestor is a practice nurse. Under our contract with HBDHB, the only nurses allowed to order lab tests are Nurse Practitioners and Smeartakers (cervical smears and associated swabs only).

The laboratory is obligated to ensure results are returned to an approved referrer who will take clinical responsibility for test follow-up. Where a Practice nurse is ordering tests, please ensure an appropriate clinician is listed as the test requestor. Practice Nurses can be listed as a "copy to".

Faxing lab forms to collection centres

A gentle reminder – any lab forms faxed to the lab must be **faxed to our main number 06 878 6538**

Please DO NOT fax them to any other number. Please check the programmed numbers in your fax machines and update if required. Some of our collection centres continue to have forms faxed directly to them, which is not helpful. Alternatively, you can email lab forms to hbay@sclabs.co.nz , and home visit forms to hbayhomevisit@sclabs.co.nz

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Community Bacterial Resistance/Susceptibility to Antibiotics 2019

We are pleased to release the antibiotic susceptibility profiles of pathogens most frequently isolated from specimens you have submitted for microbiological investigations at Hawkes Bay Southern Community Laboratories. The agents reported are those which you would commonly use for treatment.
The data are provided for discussion, but we would not recommend any major changes to empiric antibiotic guidelines on the basis of this data alone.

Hawkes Bay Community antibiogram 2019

		First line antibiotics											Second line antibiotics			
	No. strains	Amoxycillin	Amoxycillin-clavulanate: systemic	Amoxycillin-clavulanate: cystitis	Cephalexin	ESBL	Erythromycin	Flucloxacillin	Nitrofurantoin	Co-trimoxazole	Trimethoprim	Penicillin	Doxycycline	Clindamycin	Ciprofloxacin	Fusidic acid	Mupirocin
Urinary sites																	
Escherichia coli from urine	4285	53	62	85	93	4			98	71	71			92			
Escherichia coli from urine > 80 yrs	880	46	59	83	91	3			98	67	67			88			
Non *E. coli* Coliform	351	IR	67	72	75	2			22	77	77			90			
Enterococcus spp from urine	149	97		IR	IR				100								
Pseudomonas aeruginosa from urine	97	IR	IR	IR	IR		IR	IR	IR					94			
Klebsiella spp from urine	84	IR	87	92	92	3				87	87			92			
S. saprophyticus	139	95		95	97				100		94			97			
Non urinary sites																	
Staphylococcus aureus community	3079		90		90	90	89	90		98			98	89		78	72
Streptococcus pyogenes	3565	100		100	100		98	100				100		98	IR		
Group B strep	327	100		100	100							100			IR		
MRSA community	292	IR			IR		82	IR		98		IR	99	83	77	70	90
Streptococcus pneumoniae	78	87										87	75				
Haemophilus influenzae	235	61	76							70			99		100		

Notes: numbers refer to percent susceptible
Results assume standard EUCAST doses of antibiotics are used:
https://www.eucast.org/fileadmin/src/media/PDFs/EUCAST_files/Breakpoint_tables/Dosages_v_10.0_Breakpoint_Tables.pdf

The main take home messages are:

- Nitrofurantoin remains the most effective antibiotic for cystitis by far, and we look forward to the macrocrystaline preparation becoming available, which can be given twice daily
- Cefalexin is running a close second, but can only be reliably used for cystitis, not pyelonephritis. It may also be used for skin/soft tissue infections, but not respiratory tract infections.
- Ciprofloxacin resistance keeps creeping up, and remains an antibiotic that should be only used for pyelonephritis or when there are no other active alternatives
- Pivmecillinam and fosfomycin are available after discussion with a microbiologist and are used for difficult to treat urinary tract infections
- Chest infections need higher doses of antibiotics: 750 – 1000 mg tds of amoxicillin or amoxicillin 500 mg **and** amoxicillin-clavulanate 625 mg tds are typical adult doses for haemophilus or pneumococcus
- The susceptibility of pneumococcus to penicillin increases to 94% if high dose penicillin or amoxycillin is prescribed
- Please provide clinical details: it does affect how we work up and report microbiology results

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Interpretation of intermediate antibiotic susceptibility

The definition of intermediate, or "I", has changed to mean *susceptible, increased exposure*. Organisms reported as intermediate to a given antibiotic can be effectively treated so long as increased exposure (e.g. through higher dosing) can be achieved. Intermediate susceptibility should not be considered the same as resistant, neither should the antibiotic automatically be avoided.

Susceptibility results only apply if particular dosing regimens are used, as published in our laboratory clinical breakpoints document. If doses used are lower than the specific published recommendations, a susceptible result may not be valid.

Intermediate susceptibility – what does it mean and what should we do about it?

In the microbiology laboratory the most useful part of the reports we issue is often the susceptibility result. Whether or not a given organism is "S" or "R" to a given antibiotic in most instances will tell us which antibiotic to use (assuming infection is present of course). But what about "I"? And does "I" even matter?

The laboratory follows strict criteria, known as the clinical breakpoints, to determine how to interpret susceptibility test results. These clinical breakpoints are determined by the European Committee on Antimicrobial Susceptibility Testing (EUCAST) and are published every year (available here: http://bit.ly/2KHCciB). For microbiologists, 2019 saw some major changes to important aspects of susceptibility testing criteria and a shift in the way we view the "I" category.

In line with the new EUCAST definitions, our reports now display interpretation of results as follows:

- S = Susceptible, standard dose
- I = Susceptible, increased exposure

R = Resistant

You will notice that intermediate organisms are now clearly placed in the susceptible group. Increased exposure of a given antibiotic may be achieved by using a higher dose, more frequent dosing or changing the mode of administration. Alternatively, if the antibiotic is already well concentrated at the site of action, for example trimethoprim for urinary tract infections, standard dosing should be sufficient. Intermediate should no longer be viewed as an uncertain result or lumped together with resistant organisms, but rather, the antibiotic dosing regimen should be optimised to ensure therapeutic success.

There are not very many situations where we will be reporting "I" but should you see it and are unsure what to do, think about whether you can up the dose, up the frequency or whether the drug is already concentrated at the site where it's needed. If you are still unsure, we invite you discuss with a clinical microbiologist, available via your local microbiology laboratory or DHB hospital switchboard.

Does dosing matter?

Did you know that the laboratory clinical breakpoints, which determine whether we report S, I or R, are only valid if a particular dose of an antibiotic is being used? Dosing tables are provided at the end of the EUCAST breakpoints document we use in the microbiology laboratory to determine susceptibility test results (available here: http://bit.ly/346BLWB).

These recommended dosing regimens are published following careful consideration of a number of factors, including the minimum inhibitory concentration (MIC) of the organism, the pharmacokinetics and pharmodynamics (PK/PD) of the antibiotic, as well as clinical (in vivo), laboratory (in vitro) and predictive modelling studies.

Table1. Common antibiotic doses published by EUCAST.

Antibiotic	Standard dose	High dose	Comment
Flucloxacillin	1g TDS	1g QID	
Amoxicillin	500mg TDS	0.75-1g TDS	*H. influenza* high dose only
Co-amoxiclav	625mg TDS	1g TDS	*H. influenza* high dose only
Cefalexin	250mg-1g BD or TDS*		Depends on species and/or type of infection
Doxycycline	100mg OD	200mg OD	
Ciprofloxacin	500mg BD	750mg BD	*Pseudomonas* high dose only
Co-trimoxazole	960mg BD	960mg TDS or 1.44gBD	

**Skin and soft tissue infections require 1g whereas urinary tract infections may respond to lower dosing regimens due to concentration of the antibiotic within the urinary tract.*

Worth a particular mention are *Haemophilus influenzae* and *Pseudomonas aeruginosa* where a higher dose should always be used. Therapeutic failure is not always due to bacterial resistance. Dose optimisation has an extremely important part to play. See Table 1.

Where intermediate sensitivity is reported (see section above) it will be important to use the higher dose listed.
It is timely to review the current dosing recommendations available from the various different sources such as BPAC, NZF and HealthPathways, to ensure they align with what
EUCAST require us to report in the laboratory.