

Laboratory Update

6 April 2017

Topics in this newsletter:

- Pre and post analytical errors
- New test referral restrictions
- Blood cultures in general practice
- Requests for Troponin I or T and myocardial enzymes

From our medical director



I recently attended an informatics seminar run by the Royal College of Pathologists of Australasia (RCPA). One aspect that was repeatedly touched on by the speakers was errors pertaining to laboratory results as part of the provision of healthcare. It is believed now that only a quarter of errors related to a laboratory report are actually due to the laboratory, with the remaining 75% being due to pre-analytical and post-analytical errors. A pre-analytical error could be the referring healthcare professional selecting the wrong test in the first place, collecting a contaminated specimen, or the phlebotomist mislabelling of the sample, etc. Examples of post-analytical errors include the referrer not accessing and acting on the result in a timely fashion, and the interpretation of the result being incorrect.

I was particularly interested to hear several speakers' views on extending our current laboratory-based quality assurance programs to include the pre-analytical and post-analytical stages of the pathology 'journey'. While this may present logistical challenges, and be professionally confronting to referrers, I believe it is valid and vital for the continued improvement of patient care.

One pathologist presenting at the meeting spoke eloquently on the difference between doing a test and producing a result, and doing a test and producing an actual health outcome (benefit). This is what I call the "an HbA1c is not a jog and a bowl of lentil soup" paradigm. In 2015 Labtests produced approximately one million HbA1c test results, compared with 278,269 (or nearly 0.3 million) in 2010. Despite these extraordinary numbers (for a population of 1.4 million) is there any evidence of reduced rates of obesity, improved diabetes control, and a reduction in diabetes complications such as renal failure and heart disease? While the diagnosis of impaired glucose tolerance or diabetes is a start, the clinical outcome results from the jogging, a low glycaemic index eating way of life, and the compliance with metformin, etc. In other words, the HbA1c on its own has no impact without the post-analytical interventions.

This presenter also pointed out that we should not be doing low yield tests that have minimal or no clinical benefit. An example of this in my view is Quantiferon (QFN) gold testing. This is not an appropriate test for patients presenting with fever, sweats and cough. If these symptoms are due to TB it is active TB by definition and the correct test is mycobacterial culture (e.g. of sputum or lymph node tissue). The QFN, whether it is positive or negative, does not change required intervention and management. If the QFN is negative, we are still faced with the patient with fever, sweats, and cough who needs a diagnosis and effective treatment, and if the QFN is positive, ditto. In other words, all roads lead to mycobacterial culture and the QFN test does not change this, therefore it should not be performed in this clinical setting.

So what does this mean for laboratory referrers? In order to improve the quality of healthcare provided to our community (as it relates to laboratory testing) we need to have a more interactive relationship. Electronic ordering is an important tool in creating such an interactive relationship. Northland Pathology is in the process of setting up a pilot site

for electronic ordering which we hope to complete later this month, with further roll out of electronic ordering of laboratory tests into other Northland primary care practices being planned for later this year.

Dr Arlo Upton

Microbiology and Medical Director

Labtests / Northland Pathology

Arlo.upton@labtests.co.nz

Restrictions on some tests

Recently referral restrictions were put in place (after consultation) for:

- Rotavirus
- Scabies

Be aware also that it is the referrers responsibility to declare whether or not the patient is eligible for DHB funding for the laboratory tests for which she/he is referred in that instance. There are funding restrictions for some referrals especially when employment or travel related, or when for immigration purposes. See www.moh.govt.nz/eligibility for more details.

Please check our website (www.norpath.co.nz) for details of these restrictions.

New equipment in our laboratory

We have introduced a new coagulation analyser in our laboratory late March.

At the moment the system is being thoroughly tested.

Expectation is that as from May we will be performing all our coagulation testing on this new Siemens CS2500 system



Blood cultures in General Practice.

Labtests and Northland Pathology receive around 2500 blood culture sets per year from general practices and private hospitals in Auckland and Northland. Positive blood cultures are uncommon at our laboratory with 3% growing pathogens, 1% skin contaminants. The effect that these results have on patient management is uncertain, and we believe that referrers need to consider the benefits and limitations before requesting blood cultures for community patients.

Limitations

In our laboratory, blood cultures positive for skin contaminants such as coagulase negative *Staphylococci* outnumber those positive for *S. aureus*, a serious pathogen. These organisms appear identical in the initial Gram stain, which can lead to unnecessary interventions including hospitalisation for patients.

There is almost no role for taking blood cultures in the community for patients that warrant referral to hospital based on clinical assessment. They can be performed in hospital if required.

Though patients may present to general practice with undifferentiated febrile illnesses, at hospital review half of patients with positive blood cultures found in our laboratory have gastroenteritis, pneumonia, urinary tract infections, or cholecystitis. Focused testing for these infections in the community is more sensitive, and provides more timely and relevant information than blood cultures. For febrile patients without an obvious source, in the first instance testing a patient's urine and liver function tests may be appropriate to help localise an infection.

It should be noted that POAC currently requires a blood culture to be taken before patients with pyelonephritis are eligible to receive intravenous antibiotics in the community.

Who to test

Blood cultures in the community are best reserved for the following febrile patients:

- Those with risk factors for specific illnesses including: infective endocarditis, typhoid fever, and indwelling vascular catheters
- Immuno-compromised patients in whom severe infections may present atypically
- Persistently febrile patients without a focus after thorough clinical assessment and initial investigations
- Pregnant women presenting with fever and 'flu-like symptoms

Summary

Many patients present to general practice with febrile illnesses. Focused diagnostic testing based on history and examination should be performed. Though blood cultures have a key role for diagnosis of certain conditions, outside these blood cultures are of doubtful benefit for community patients.

Dr Gary McAuliffe, Microbiologist
Labtests / Northland Pathology
Gary.mcauliffe@labtests.co.nz

Requests for Troponin T (or I) and myocardial enzymes

It is very important that we clearly understand what tests you require when investigating cardiac conditions.

If an MI is considered, please use the term 'Troponin' as the appropriate test to be specifically requested, and include clear clinical and contact details. We make it a policy to phone elevated troponin results, even though clinical suspicion for requesting this test in the community should be low risk.

Please delete the term 'Myocardial enzymes' from PMS systems. A serum CK should be ordered if muscle injury is suspected. If cardiac involvement is also suspected then Troponin can also be ordered, but the request form should have clear details to indicate that an MI is not suspected.

Background

We still sometimes get requests for either “Myocardial enzymes”, or for “Myocardial Enzymes (CK and AST)”. In these cases, in the absence of clinical information, it is not clear whether a myocardial infarct is suspected. Our investigations suggest that requests for “Myocardial Enzymes” are most often due to this term being a Group title for CK and AST in practice management systems, and that a troponin test is not required. This causes needless stress on requestors, laboratory and patients.

CK, AST and LD are raised in inflammation or injury of any muscle tissue (and less commonly also of a range of other tissues). Of these enzymes, CK is the most sensitive and specific test for muscle injury and CK measurement alone (not AST or LD) is recommended if this is suspected.

Troponin is the critical test for myocardial injury, including MI. Enzyme analysis (CK, AST, LD) is no longer considered standard of care for the diagnosis of myocardial infarction, due to the change in international diagnostic criteria from the previous WHO criteria 15 years ago. For clarification also, Troponin (T or I) is *not* an enzyme but a specific cardiac protein.

When chronic myocardial injury, e.g. myocarditis, is considered both troponin and CK may be requested, but the details should be clear that acute ischaemic injury (i.e. myocardial infarction) is *not* suspected. If this is not clear on the request then the order is treated as urgent.

We have therefore decided on the following approach (starting 10 April 2017):

- if “Myocardial Enzymes (CK and AST)” is requested, then only these tests (CK and AST) will be performed. It will be taken that the requestor, having thought about the possibility, does not wish for troponin to be analysed.
- if only “Myocardial Enzymes” (without mentioning CK or AST) is requested only CK will be performed unless other tests (Troponin, AST) are specifically requested.

Dr Charles Ng
Chemical Pathologist, Labtests Auckland
574 7291 // 021 0215 6042
Charles.ng@labtests.co.nz

Dr Samarina Musaad
Chemical Pathologist, Labtests Auckland
574 7283 // 021 404 769
Samarina.musaad@labtests.co.nz

Dr Cam Kyle
Chemical Pathologist, Labtests Auckland
027 276 038
Cam.kyle@labtests.co.nz

Laboratory contact numbers for test results

Note: this access is only for health professionals.

During office hours: 09 438 4243 or 0800 667 522 (0800 NORLAB)

After hours: 0800 667 522 (0800 NORLAB)

If you want our staff to phone test results through after hours: please ensure that a mobile number is provided on the referral form.