PLANNING IS KEY TO A SUCCESSFUL FUTURE

Welcome to our first Aotea News for 2011. The start of the year has been a very positive time for us but sadly tempered by the earthquakes in Christchurch and Japan.

We were very pleased to confirm in late December our agreement for a $75 million, three-year extension to our contract with the District Health Boards. The extension gives us a lot more certainty for the future and allows us to plan ahead and invest in services and infrastructure to further improve the services we offer you.

One project already in place is a review of all our collection rooms with a view to upgrading those that need it.

It is important that our patients are comfortable and relaxed when they come to visit us and a pleasant collection room goes a long way to helping that.

Our rooms in Petone have been the first to get a spruce-up and I’m sure our patients there will be happy with the improvements.

‘GETTING IT RIGHT’ IS IMPORTANT TO US

‘Getting it right’ is central to how we work at Aotea Pathology, and that also means understanding how and why we may have got it wrong on the rare occasions that mistakes slip through our systems.

We use an electronic system – iTrack – to record and help put right any patient complaints. The system guides any complaint through a formal review process that includes the input of at least three Aotea Pathology managers.

It is important for you or your patients to let us know of any concerns they have, so we can, firstly, fix any problem and, secondly, learn from it to prevent it happening again.

iTrack gives us the tools to do that well.

Vicki McKnight, our quality and safety manager, explains below what patients should do if they have problems with our service.

How to make a complaint
You or your patient can telephone, email, or write to us, or log a complaint on our website.

How we act on complaints
When we receive a complaint we will:

• advise you or your patient of the action we will take in response to the complaint.

How we log complaints
• We log all complaints into iTrack.
• iTrack notifies the relevant manager who then ‘owns’ and is responsible for resolving the issue.
• Our customer liaison manager and quality manager also receive emails advising them of the complaint. If a complaint is serious, an email is sent to our chief executive and other senior staff.
• The issue owner investigates and determines appropriate actions to resolve it. They will electronically assign actions to other staff if needed.
• Once resolved, the issue owner “signs off” the issue.
• We categorise all issues so we can spot any trends or problem areas.

A patient chats to our reception team before an appointment.
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Another project currently under way is a review, in conjunction with Wellington Hospital, of how we carry out thrombophilia testing.

You will have received information on the new request protocol which starts at the end of May and we welcome your feedback.

Our thoughts recently have been with friends, family and professional peers in Christchurch as they work to get their everyday lives and businesses back on track – the ongoing aftershocks cannot be easy.

After the February quake, the two community laboratories in the Christchurch central business district were unable to be occupied.

We offered support and assistance to both labs to help get them up and running again.

The quakes also focused our minds, here at Aotea, on our own emergency planning. Following a natural disaster, we will need to be able to offer essential services, even under adverse conditions.

Doctors will be faced with diseases and injuries that they might not normally see in their routine work – for example, from the effects of contamination and people in close living arrangements. Our ongoing ability to support them will be crucial.

The Japanese earthquake has given us clear insights into how we will need to work.

Ryuki Kassai, a Japanese medical professor in a quake affected area, writing after the quake, said that a key lesson he saw was a need to get information networks running as quickly as possible for good collaboration with officials, police and other medical staff.

While our heartfelt sympathy goes out to the many people in Japan living with great stress and uncertainty right now, we are also absorbing all the medical information we can from their experiences.

Following any major emergency in Wellington, we want to have systems in place that allow us to continue providing pathology services to support essential primary care throughout the region.

Dr Karen Wood

FOLLOW-ON TESTS
– HOW TO REQUEST THEM

Occasionally, abnormal test results indicate additional testing is needed, and we perform a number of these follow-on – or ‘reflex’ – tests as part of our standard testing protocols. We can also do follow-on testing after a referring practitioner has received a result, assessed it, decided that additional testing is required and informed us of this.

The laboratory is not, however, able to respond to ‘If...then’ requests from referrers. (By ‘If...then’ we mean: ‘Please perform Test A, and if the result is X then please add Test B.’)

The difficulties of “If...then” testing

Follow-on testing may shorten the time to diagnosis and save the patient from having a second specimen collected, but it creates many difficulties for the laboratory. For instance:

- the sample needed for the reflex testing may not be available
- the time taken for the initial testing compromises the quality of the specimen
- the patient may not have been properly prepared (fasted, for example)
- the request received is not sufficiently specific as to what tests are needed.

In addition, in a high volume laboratory such requests are extremely difficult to handle and are more error prone, where the necessary specimen collection, payment for testing, and in-house handling falls outside routine practice.

How can we help you get additional testing?

We store serum for 5-7 days. As most routine results are available within 24 hours, time is available for the referrer to contact the laboratory and request additional tests.

If you need advice over whether to request follow-on testing for a particular sample, please contact an Aotea pathologist to discuss the sample’s first test results. They will be pleased to advise you.

Reflex tests routinely covered by our internal protocols are listed on our website at www.apath.co.nz/sites/default/files/specialist_reflex_testing.pdf

HAVE YOU VISITED OUR NEW WEBSITE YET?

Our new website, launched earlier this year, holds everything your patients need to know about coming to see us as well as a lot of information for medical practitioners about our services.

It gives you information on: the tests we offer; how patients should prepare for a test; rules around eligibility for DHB-funded tests; good practice for taking samples; house call information; useful medical websites; news from Aotea Pathology; and much more.

We’ve worked hard to make it easy for you to find information on the site. There is a comprehensive search engine and much-improved navigation to make it easy to get around.

We also plan to put every edition of this newsletter on the site so you can find back copies if there is anything interesting or informative you might want to read again but do not have a paper copy of the newsletter.

Please visit http://www.apath.co.nz and get back to us with any feedback because the site is only worthwhile to us if it’s worthwhile to you and your patients.
The high sensitivity test for troponin T, introduced last year at Aotea Pathology, has significant benefits for the early recognition of patients with evolving acute myocardial infarction, especially in a hospital setting.

It does, though, present challenges in interpretation when used in primary care.

The best information is obtained from high-sensitivity troponin T when serial testing is carried out during the first 12–24 hours after the clinical event that suggested an acute coronary syndrome, especially when clinical features and ECG are inconclusive.

Changing values, with either a rising or falling pattern, are used as a determinant of myocardial infarction.

Serial testing is rarely done in primary care.

Patients with a high probability of acute coronary syndrome on clinical grounds should be sent to hospital without waiting for even a single result of biochemical markers of cardiac ischaemia.

Use in rule-out of myocardial infarction
A traditional use of testing for troponins in primary care has been for rule-out of myocardial infarction in a stable patient with atypical or inconclusive symptoms and a low prior probability of MI.

Patients with a high probability of acute coronary syndrome on clinical grounds should be sent to hospital without waiting for even a single result of biochemical markers of cardiac ischaemia.

Often the symptoms may have occurred more than 12 hours before presentation, have now resolved and ECG has been unhelpful.

The presence of a ‘normal’ result then provides a very low post-test probability of myocardial infarction, essentially a rule-out. A raised result in these circumstances is much more difficult to interpret.

It has been suggested that the high-sensitivity test is not as good at rule-out of myocardial infarction as was the previous test for troponin T because the new test gives a high frequency of false positive results (nonspecific). This is incorrect: rule-out is related to sensitivity, not specificity.

The previous test did not provide very high probability of rule-out of myocardial infarction because it gave false negative results, but a normal result with the new test is a very secure rule-out.

The old test could not measure at the levels specified as important in the universal definition of myocardial infarction.

This level is defined as that found at the 99th centile of a normal reference population.

Thus, only one in a hundred healthy people will have a result above this and even then it will not be more than a few units higher.

The 99th centile for high-sensitivity troponin T is considered to be 13ng/L.

By way of comparison, the old test was unable to measure reliably at levels below 0.03ug/ml, and this corresponds to a level somewhere between 40 and 50ng/L with the new test. (The conversion is not simply a matter of x1000 to convert ug/ml to ng/L.)

This means that elevations of three to four times above the 99th centile could not be detected with the old test.

A result stated as <0.03 was not necessarily a rule-out of myocardial infarction but could have been a false negative.

The new test is so sensitive it measures levels of 4.5ng/L, giving greater security of rule-out.

Use in rule-in of myocardial infarction
It is true that results higher than the 99th centile will be seen more frequently in patients who do not have myocardial infarction than was observed with the old test.

The clinical conundrum is that a single raised result neither rules in nor rules out myocardial infarction.

The point is that raised Troponin is a marker of myocardial damage caused by many conditions, not just acute myocardial ischaemia. (Refer to table.)

Some of these elevations may be quite small but there is no specific level for a single result at which the result can be said to be definitely myocardial infarction or not.

Causes of raised cardiac Troponin other than myocardial infarction
- Congestive heart failure
- Tachyarrhythmia, heart block
- Endurance exercise
- Cardiomyopathy
- Myocarditis, pericarditis
- Blunt chest trauma
- Pulmonary embolism
- Renal failure
- Severe sepsis
- Aortic valve disease
- Cerebrovascular accident
- Cardiotoxic drugs

High-sensitivity testing learning points
The increased analytical sensitivity of the new test is a blessing and a curse:

- A normal result provides a more secure rule-out of myocardial infarction than was possible with the old test.
- There will be a higher frequency of difficult-to-interpret small increases.
  - These are not false positive results as they fall in a clearly abnormal range. However, they do not necessarily indicate myocardial infarction. Troponin is increased by other pathological conditions which affect the myocardium.
  - Clinical context and judgement are crucial. A small increase in a single specimen in a patient with a low prior probability of myocardial infarction does not establish the diagnosis but is strongly predictive when prior probability is high.
- Specificity for myocardial infarction is improved by serial testing, best done in a hospital setting.
- If prior probability of myocardial infarction is low the presence of other causes of raised troponin should be looked for. This may prevent unnecessary acute referral to hospital.
Any elevation of troponin above the 99th centile should be considered to be abnormal but must be interpreted carefully in the clinical context in which it was ordered. If the probability of myocardial infarction seems to be very low on clinical grounds then the possibility of a non-ischaemic cause should be investigated.

This was also the case with the old test but small elevations will be more apparent with the high sensitivity test. Some of these causes of raised troponin may themselves be grounds for acute referral.

The increased frequency of elevated results seen with the high-sensitivity test has lead to the development of algorithms to improve the specificity for diagnosis of myocardial infarction.

These algorithms are still in development but the one in use nationally for high-sensitivity troponin T requires an increase above the 99th centile and a serial result showing an increase of 50 per cent when the first result is less than 50ng/L, or an increase of 20 per cent when it is 50ng/L or more.

The detailed algorithm has been circulated previously, although it is expected to be used mainly in hospital practice.

The previous test did not provide very high probability of rule-out of myocardial infarction because it gave false negative results, but a normal result with the new test is a very secure rule-out.

Inappropriate use
A good rule is not to order troponin unless there has been some acute event which raises reasonable suspicion of myocardial ischaemia.

Some people request troponin as part of what appears to be routine cardiovascular risk screening, with no clear reason nor with any strategy to interpret and use the results.

Current research shows that in completely asymptomatic people, especially older populations with increased cardiovascular risk, such screening will give a frequency of raised troponin in up to 5 per cent of cases. However, none of these studies have defined any useful cut points nor have they provided information to guide therapy in primary prevention. This use of troponin should remain firmly in the research area.

Current funding does not support the use of troponin in screening and Aotea Pathology regards all requests as urgent.

Please provide contact details so we can contact you about abnormal results at any time, including out of hours.

## High-sensitivity Troponin Case Studies

### A 63-year-old man with a 10 year history of type 2 diabetes

The patient has a dizzy spell while mowing his lawn. Hypoglycaemia is not an issue and he recovers quickly after resting but he is sufficiently worried to come to you the next morning.

There are no clinical findings but there seems to be a possibility of a silent infarct so you request high sensitivity troponin T in a specimen taken 18 hours after the event. The result is 6ng/L.

**Interpretation**

This result is well under the 99th centile and, given the time since the symptoms, rules out myocardial infarction.

### A 75-year-old patient with atrial fibrillation and mild congestive heart failure

A patient has an episode of minor chest discomfort overnight and has become slightly more breathless than usual, but is not seriously distressed.

High sensitivity Troponin T about 12 hours after the pain is 52ng/L.

You are surprised and worried by this result as you had considered myocardial infarction to be unlikely and were hoping for confirmation through a normal result.

With some difficulty you persuade the cardiology registrar to review the patient at A&E. Repeat troponin at 18 hours is 50ng/L.

The patient is kept overnight and a further specimen at 24 hours is again 52ng/L.

**Interpretation**

The stable pattern of abnormal results does not support myocardial infarction but is quite typical in patients with tachycardias or heart failure, even when there has not been clinical deterioration.

The difficulty for you is in assessing the significance of the first result and deciding whether to refer or manage yourself.

The latter course requires you to seriously consider repeat testing for troponin as the first result has not allowed you to rule in or rule out myocardial infarction.

A question to consider might be whether it would influence your decision if the first result in this patient had been 26 rather than 52.