

AoteaNews



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EDITORIAL



Dr Karen Wood
Aotea Pathology
Chief Executive

THE VALUE OF PATHOLOGY

Welcome to this first edition of *Aotea News* in its refreshing, new format.

We like the look, but, more than that, the layout is designed so the information you need to run your practice is easy to find.

In many ways, this new *Aotea News* is much like our mission here at Aotea Pathology: to provide a quality pathology service that is accessible, sustainable and of value to all.

We know, to achieve this aim, that the best community pathology services are planned, commissioned and delivered as part of a community health care network.

To help develop that goal, we continue to pursue opportunities to work collaboratively with health care providers, decisions makers and funders to revise and improve the delivery of laboratory information.

A good current example is the development of electronic ordering for laboratory tests.

The system aims to improve test selection and streamline test ordering, and we look forward to piloting this new initiative soon.

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Eleanor Brinfield, Cytology Department medical laboratory assistant, handles cytology samples.

COMPUTER-ASSISTED SCREENING OF CERVICAL SMEARS APPROVED

Aotea Pathology is delighted to announce it has approval from the National Cervical Screening Programme to begin computer-assisted screening of cervical smears.

This approval follows a lengthy and rigorous certification process for the laboratory and its cytology staff in the use of this advanced technology.

The adoption of computer-assisted screening is the second part of a major evolution in the way the laboratory collects and reports cervical cytology.

The first part came last year when we moved to a liquid-based collection system using the BD Diagnostic SurePath technology. We have now coupled this with the BD FocalPoint GS (guided screener) Imaging System which uses an automated primary screening system, digital imaging and an

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EDITORIAL CONTINUED

Overall, pathology testing plays an essential role in disease prevention, medical diagnosis, chronic disease management and guiding clinical decisions.

One estimate is that 70 per cent of all clinical decisions are underpinned by pathology. It's hard to quantify an exact number, but we do know that as medicine becomes increasingly complex, diagnostic pathology around the world is used to identify complex health states, identify predisposition to disease, characterise an individual's state of wellbeing and inform clinical decision making about personalised health care delivery.

A good example of this is in cancer medicine, where almost every diagnosis relies on pathology laboratory medicine.

Internationally there is a need and an expectation for clinical laboratories to deliver value for patients and population health. This goes far beyond simply diagnosing disease – we know that the effectiveness of screening and prevention programmes is enhanced by access to quality laboratory medicine.

As we said to our patients in their recent newsletter, Aotea Pathology works not only to ensure the best quality test results are available but also to play an important role in each patient's cycle of care and, in the community, to facilitate good health and lessen the burden of ill health.

Our work with you over the coming year and beyond will help strengthen that role.

Dr Karen Wood
Aotea Pathology
Chief Executive

COMPUTER-ASSISTED SCREENING OF CERVICAL SMEARS APPROVED CONTINUED

automated microscope to locate abnormalities in SurePath prepared slides.

The use of both liquid-based cytology and computer-assisted screening has been shown to significantly reduce the rate of false negative reports, which are recognised limitations of manual cytology screening.

How we use the computer system to screen smears

All cervical smears will now first be screened by the computer system which uses powerful and robust algorithms to identify potentially abnormal cells on the slide; then, with the use of robotic microscopes, the computer directs the human user to the cells of concern.

Our highly trained cytology staff will still make the final interpretation of the slide,

Jennifer Sigley, a medical laboratory scientist in the Cytology Department

and all smears still receive an examination by human eyes.

Minor changes in reporting

The reports you receive will look essentially the same and the reporting criteria and recommendations remain unchanged.

The only alteration will be a statement that will appear at the bottom of reports to reflect utilisation of automated screening technology for that case.

Aotea Pathology at the forefront of cervical cytology

From the introduction of the National Cervical Screening Programme, Aotea Pathology (with its parent laboratories Medical Laboratory Wellington and Valley Diagnostics) has been an established leader in cytology, and we are excited to remain at the forefront of continual improvement in the accuracy of cervical cytology with our new technology.



LATEST UPDATE ON GUIDELINES FOR HIGH RISK HPV TESTING

The referrer should request HrHPV on women:

- with recent colposcopic treatment of high grade squamous lesions (within the past three years).
- with historical high grade squamous lesions (more than three years), treated or not treated colposcopically.

A specialist/colposcopist may request HrHPV on women with discordant cytology/histology/colposcopy.

The laboratory will automatically perform HrHPV testing on the Surepath cytology sample for women 30 years and older whose current smear shows atypical/low grade squamous changes and where there have been no abnormalities in the last 5 years.

Note: Aotea Pathology will apply the appropriate recall based on cytology and HrHPV results and the patient's history according to NCSP guidelines.

For more detailed information see this useful website:

[http://www.nsu.govt.nz/files/NCSP/NCSP_Guidelines_ALL_small\(1\).pdf](http://www.nsu.govt.nz/files/NCSP/NCSP_Guidelines_ALL_small(1).pdf)



Alex Beavis, Haematology
Department team leader,
operates the ESR equipment

ESR TEST REQUEST PROTOCOL FINALISED

Thank you to all the clinicians who provided comment on the Erythrocyte Sedimentation Rate (ESR) request protocol during its recent development and implementation.

When we installed our new ESR analyser at our laboratory in January we also introduced the comprehensive test request protocol, and as a result of all the excellent feedback we have refined the protocol. Thank you to all referring clinicians who are providing relevant clinical information when ESR testing is requested.

The high level of protocol compliance helps us complete testing without delay. Interestingly, the overall number of ESR requests has decreased and the proportion of requests for ESR accompanied by relevant clinical information has increased significantly.

For further information contact:

Dr Ken Romeril, (04) 381 5900,
kromeril@apath.co.nz,
Dr Karen Wood, 04 381 5934,
kwood@apath.co.nz



TRICHOMONAS TESTING – NEW IMPROVED TECHNIQUE

We have recently introduced a new method of testing trichomonas in vaginal specimens. This involves culturing of Trichomonads and is regarded as the "Gold Standard" method.

The new method allows trophozoites to multiply and become more motile and therefore very easily detected. It provides 100 per cent specificity.

Previously we had performed direct microscopy on all vaginal specimens. This method relied on large numbers of highly active trophozoites being present in the sample which was not always the case when many of our specimens have 'travel time'.

Swabs for Antenatal Group B Streptococci (ANGB)

Please note that we are unable to perform routine vaginal swab testing (including Trichomonas testing) and ANGB screening on the same specimen. Both these tasks involve inoculating a broth, with most of the patient material being lost from the swab after the first inoculation.

A separate swab is required for each test.

GIARDIA/CRYPTO TESTING CHANGES

For children under the age of six or for liquid stool specimens, we no longer routinely add on a Giardia/Cryptosporidia antigen test on faecal specimens. Testing will be performed only where the referring clinician has requested it.

Review of our data showed that a positive result was statistically unlikely in samples where add-on testing was undertaken, with the majority of positive results following specific requests for the test.

Where Giardia/Cryptosporidia antigen testing has not been requested and other microbiology tests are negative, we will ask you to consider other causes of infectious

diarrhoea and submit a further faeces specimen for testing, if clinically indicated.

For guidelines for testing see:

Laboratory investigation of infectious diarrhoea, January 2008, www.bpac.org.nz

For further information contact:

Anita Worrall, 04 381 5961,
aworrall@apath.co.nz

VITAMIN D SUPPLEMENTS WILL HELP REDUCE BONE LOSS, FRACTURES AND DISEASE



MICHAEL CROOKE
Chemical Pathologist

Aotea Pathology and doctors generally are concerned by evidence showing widespread vitamin D deficiency in people in New Zealand. For older people this is contributing to bone loss and consequent fractures, and in the general population there may be increased risk of a range of serious diseases.

Our advice is that providing vitamin D supplements is a safe, cost-effective and, indeed, necessary treatment.

Supplements instead of testing for asymptomatic, at-risk people

Measuring vitamin D is comparatively expensive and it is reasonable to provide supplements to asymptomatic, at-risk people without testing. In fact, routine testing of vitamin D levels is not usually necessary before or after starting vitamin D supplementation.

Sunlight important but insufficient in winter

The Cancer Society agrees that there is benefit from moderate exposure to sunlight during summer, but sunburn must be avoided. Sufficient vitamin D to reach optimal levels can be made by exposing the hands, arms and face for a few minutes each day.

Prolonged sun exposure during the summer will not provide the body with sufficient vitamin D for throughout the winter. It will, however, increase the risk of skin cancers.

Autumn is a good time to get out in the sun and to top-up vitamin D levels, as the sunburn risk is lower.

It is estimated that 50-80 per cent of New Zealand's population has vitamin D insufficiency in winter, because of our southerly latitude. There is almost no vitamin D produced by sunlight between May and September.

Who is at most at risk of severe vitamin D deficiency?

Vitamin D and calcium supplementation is appropriate for people at high risk

who cannot increase their sun exposure. This includes:

- older people in residential care
- older people admitted to hospital
- patients with hip fracture
- dark-skinned men and women (particularly if veiled)
- mothers of infants with rickets
- people unable to get regular sun exposure.

Recommendations for supplementation

To achieve the recommended level of at least 50nmol/L in winter, supplementation is, ideally, required for everyone.

For most people, this is best achieved by taking 1.25mg vitamin D3, 50,000 units as a once monthly dose from May until September.

There is no need to measure vitamin D first in most people as they will be insufficient during winter.

There is no need to check levels after the standard dosing as this will raise most people to sufficient levels and there is no danger of toxicity.

It is estimated that 50–80 per cent of New Zealand's population has vitamin D insufficiency in winter, because of our southerly latitude.

Measurement may be considered in high-risk people as very low levels may dictate more aggressive replacement.

Supplementation reduces the risk of fractures in the elderly, particularly those in institutions, but must be combined with an adequate calcium intake.

What is the risk of toxicity with excessive supplementation?

The current recommended daily dose is only half the amount in a teaspoon of pure cod liver oil and is insufficient to provide optimal levels!

There has been extreme caution in recommending supplements containing higher doses of vitamin D because of misplaced concern about toxicity.

Recent literature suggests a 'no adverse effect' limit of 50 ug or 2000IU daily, but this is probably much lower than the toxic dose.

Toxicity has never been observed at blood levels <220nmol/L and in most cases with clear hypercalcaemia, levels have been over 600nmol/L.

10,000 units daily produces levels only around 140nmol/L and most documented toxicity has involved doses of more than 1000ug daily, that is, 40,000IU.

Are there benefits of vitamin D apart from bone health?

Vitamin D has a wide range of biological actions apart from the well-known effects on calcium and bone metabolism. Although there is not yet absolute evidence of causation in other diseases, the associations are strong and it seems prudent to maintain levels at least above 50nmol/L and probably above 75nmol/L.

- Brain, prostate, breast and colon tissues, as well as immune cells, have a vitamin D receptor.
- 25OH vitamin D controls over 200 genes, including those responsible for cellular differentiation, apoptosis and angiogenesis.
- It is also immunomodulatory, promoting activity of macrophages and monocytes.
- There are effects to increase production of insulin and inhibit synthesis of renin.

- Prospective and retrospective studies indicate that levels of 25OH vitamin D below 50nmol/L are associated with a 30–50 per cent increased risk of colon, prostate and breast cancer.
- There has been no controlled trial but data suggest that those with intake of 250–600 units/day have about half the risk of colorectal cancer as those with an intake under 100 units/day.
- There is similar data for breast cancer.
- In a study of men with prostate cancer, those who worked outdoors developed the disease three to five years later than indoor workers.
- Vitamin D deficiency has also been linked to schizophrenia, depression, hypertension lung function, wheezing illnesses, polycystic ovarian disease, menstrual problems and infertility.

When testing is appropriate

Vitamin D testing is appropriate for:

- unexplained raised serum alkaline phosphatase or low calcium or phosphate
- atypical osteoporosis

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TESTING FOR SUSPECTED VENOUS THROMBOEMBOLISM



CHANI TROMOP-VAN-DALEN
University of Otago
trainee intern

Venous thrombi are composed of red blood cells and fibrin, and form at areas of slow blood flow with low shearing forces.¹

D-dimers are the breakdown products of the fibrin clot, and a negative D-dimer assay (<500ng/mL) can be used to rule out the presence of venous thromboembolism (VTE).

The test can only be used to rule out the diagnosis as there are many other conditions that may activate the coagulation system, raising the level of D-dimers in the blood.² These include common conditions such as trauma, cancer, pregnancy, diabetes, older age and the post-surgical state.²

Just as there are conditions that can give false positive D-dimer assay results, there are those that can give false negative results. Prior Low Molecular Weight Heparin treatment and thromboembolism present for longer than 10 days or less than 24 hours may give a lower than expected D-dimer result.³ For these reasons it is important that doctors

clinically assess a pre-test probability before requesting D-dimer tests.

Use the Wells score to assess the pre-test probability of VTE

The Wells score is one of several scoring systems used to assess the pre-test probability of VTE. It has been shown to be more useful than empirical judgement as it is a standardised and reproducible assessment of pre-test probability of VTE.⁴

A high Wells score markedly increases the probability of deep venous thrombosis (DVT), indicating the need for further definitive testing: leg ultrasound for suspected DVT, or CT pulmonary angiogram (CTPA) for pulmonary embolism (PE).

A low Wells score markedly reduces the probability of DVT, indicating the need for a simple, non-invasive test such as a D-dimer blood test to further exclude the diagnosis.⁵

The Wells score should be completed before D-dimer testing so that clinicians are not influenced by a normal D-dimer result when evaluating clinical probability.⁶

In practice, if VTE is clinically suspected, a Wells score should be determined.

If the Wells score is high (PE score ≥ 2 , DVT score ≥ 1) then the patient should be further investigated with ultrasound scan or CTPA in the emergency department.

A high Wells score markedly increases the probability of deep venous thrombosis, indicating the need for further definitive testing.

If the Wells score is low (PE score <2, DVT score <1) and the D-dimer is negative, the clinician can be relatively reassured as this has been shown to be a safe way of excluding the diagnosis of DVT and PE.^{2, 3, 8-10}

In the scenario of a low Wells score and a high D-dimer, the clinician will need to "make an assessment as to the significance of this result, taking into account the factors that may be present that may have falsely elevated the D-dimer. Any uncertainty around the result warrants further discussion.

If you have any clinical enquiries about the interpretation of D-Dimers, contact Dr Ken Romeril (04 381 5900, kromeril@apath.co.nz).

Chani Tromop-van-Dalen is a trainee intern (6th year student) at the University of Otago, Wellington School of Medicine and Health sciences. In the 2008/09 university holidays, Chani completed a University of Otago Summer Studentship Project entitled

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The Wells score as used in the Wellington Public Hospital Emergency Department Suspected Venous Thromboembolism guidelines⁷

<u>Suspected pulmonary embolism:</u>		<u>Points</u>		<u>Suspected isolated lower limb DVT:</u>		<u>Points</u>	
Clinical signs and symptoms of DVT (at least leg swelling and pain)		3.0	<input type="checkbox"/>	Active cancer		1.0	<input type="checkbox"/>
Heart rate >100		1.5	<input type="checkbox"/>	Paralysis, paresis, recent plaster, immobile or surgery in previous 4 weeks		1.0	<input type="checkbox"/>
Immobilisation or surgery in previous 4 weeks		1.5	<input type="checkbox"/>	Localised tenderness along the distribution of deep venous system		1.0	<input type="checkbox"/>
Previous DVT/PE		1.5	<input type="checkbox"/>	Entire leg swollen		1.0	<input type="checkbox"/>
Haemoptysis		1.0	<input type="checkbox"/>	Asymmetrical calf swelling >3 cm (10 cm below tibial tuberosity)		1.0	<input type="checkbox"/>
Malignancy (on treatment last 6 months)		1.0	<input type="checkbox"/>	Asymmetrical pitting oedema		1.0	<input type="checkbox"/>
An alternative diagnosis more likely than PE		-3.0	<input type="checkbox"/>	Collateral superficial veins (non varicose)		1.0	<input type="checkbox"/>
				Alternative diagnosis more likely than DVT		-2.0	<input type="checkbox"/>
		Total	<input type="checkbox"/>			Total	<input type="checkbox"/>
	Score <2	Low	<input type="checkbox"/>		Score <1	Low	<input type="checkbox"/>
	Score 2-6	Moderate	<input type="checkbox"/>		Score 1-2	Moderate	<input type="checkbox"/>
	Score >6	High	<input type="checkbox"/>		Score >2	High	<input type="checkbox"/>
ELISA D-dimer (>500 µg /L)	Negative	<input type="checkbox"/>		Positive	<input type="checkbox"/>	Not available	<input type="checkbox"/>
			(value)			

VITAMIN D SUPPLEMENTS WILL HELP REDUCE BONE LOSS, FRACTURES AND DISEASE CONTINUED

- unexplained proximal limb pain in older people
- unexplained bone pain, unusual fractures or other evidence suggesting metabolic bone disease (consider specialist advice for people in this category).

If there is clinical suspicion of severe symptomatic vitamin D deficiency it is appropriate to investigate with serum calcium, phosphate, alkaline phosphatase and vitamin D levels plus other tests

as indicated. Specialist treatment is recommended for people identified as having metabolic bone disease other than simple vitamin D deficiency.

25-hydroxyvitamin D is almost always the most appropriate measure of vitamin D status.

Measurement of 1, 25-dihydroxyvitamin D is rarely required – it is very expensive and results do not provide a good reflection of vitamin D status. It is not available in New Zealand and specimens will be sent overseas

for analysis only after written justification from a relevant specialist and discussion with a pathologist.

Sources

This article includes information from the Best Practice Advocacy Centre NZ document BNP, *Haemochromatosis and Vitamin D Testing in Primary care*, which can be read online at http://www.bpac.org.nz/resources/campaign/b_h_v/bpac_bnp_haemochromatosis_vit_d_poem_2006_wv.pdf

TESTING FOR SUSPECTED VENOUS THROMBOEMBOLISM CONTINUED

“Do emergency doctors calculate a risk score before requesting D-dimer assays in patients with possible thromboembolic disease”.

Chani worked at Aotea Pathology as a phlebotomist from the end of 2007 until the start of 2009. “Interacting with patients and learning to take blood as a phlebotomist have been invaluable skills that I have taken with me into the hospital.”

Footnotes

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QUANTIFERON-TB GOLD TEST

Aotea Pathology now offers the QuantiFERON-TB gold test for all employment-related TB screening, and for testing health sector students before clinical placements.

The QuantiFERON-TB gold test requires only a blood sample. It replaces the Mantoux and Two-step Mantoux screening tests.

The Mantoux test remains the diagnostic test funded under the community laboratory services contract and this test will continue to be offered for TB diagnosis for test requests referred by medical practitioners on eligible patients.

A QuantiFERON-TB gold test can be requested as an alternative and a charge will be made for the test.

Please contact Rachel Davison for employment-related testing or price enquiries.

For further information contact:
Rachel Davison, 04 381 5968, rdavison@apath.co.nz, or
Dr Mark Jones, 027 471 5565, mjones@apath.co.nz

AOTEA PATHOLOGY

P. 04 381 5900 F. 04 381 5948
E. customerhelp@apath.co.nz www.apath.co.nz