

QML PATHOLOGY

newsletter August 09

>>Vitamin D

Dr Julia Chang, Consultant Chemical Pathologist

Recent studies have shown that the prevalence of vitamin D (VD) deficiency in Australia is much higher than previously thought. People at high risk of VD deficiency include the elderly, people who avoid sunlight for various reasons e.g. skin conditions, patients with malabsorption and dark skinned people.

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QML Pathology data on VD deficiency

During the three month period from 1/11/2008 – 28/01/2009, approximately 15,000 VD studies were performed. Of these, 35% had an adequate VD level (VD level > 75 nmol/L), 41% had VD insufficiency (VD level between 50-75 nmol/L), and the remaining 24% had VD deficiency (VD level < 50 nmol/L).

Table 1 summarises VD deficiency rates among different age groups. Although our study population does not represent the true population, an important conclusion can be drawn that VD deficiency does exist in sunny Queensland.

Table 1: 14,674 VD studies performed from 1/11/2008 – 28/01/2009

Age Groups (% of samples obtained from patients in the age group)	% with VD deficiency	% with VD insufficiency	% with adequate VD level
<30 yo (7%)	23%	34%	43%
30-39 yo (9%)	20%	41%	39%
40-49 yo (13%)	25%	43%	32%
50-59 yo (20%)	21%	41%	38%
60-69 yo (19%)	21%	43%	36%
>69 yo (32%)	31%	40%	29%

Vitamin D metabolism

The term vitamin D, or calciferol, generally refers to two molecules:

- Cholecalciferol (vitamin D3) which is synthesised in the skin through the action of ultraviolet light or derived from diet (animal sources), and
- Ergocalciferol (vitamin D2) which is derived from diet only (plant sources).

VD either synthesised or ingested is then transported to the liver and metabolised to 25-hydroxy vitamin D (25-OHD). Further hydroxylation of 25-OHD occurs in the kidneys to form the biologically active 1,25-dihydroxy vitamin D (1,25-(OH)₂D). This active compound is involved in the calcium absorption and skeletal health. In addition to its traditional role in calcium homeostasis, recent research has shown that adequate VD intake can decrease the risk of common cancers, autoimmune diseases, infectious diseases and cardiovascular disease.

How do we define VD deficiency?

There is currently on-going controversy concerning optimal VD levels as the levels vary with the assay methods used and different ethnic groups. However, most experts define VD deficiency as a 25-OHD level of less than 50 nmol/L. Some experts suggest a minimum level of 75 nmol/L is necessary as it is the level at which the PTH production is maximally suppressed. Therefore, VD insufficiency is often defined as a 25-OHD level between 50-75 nmol/L.

Causes of VD deficiency

There are many causes of VD deficiency. These include reduced skin synthesis, reduced VD absorption and acquired and inheritable disorders of VD metabolism and responsiveness.

What to test?

- Vitamin D nutritional status is determined best by the measurement of 25-OHD rather than the vitamin D or the biologically active 1,25-(OH)₂D.
- Perhaps ionised calcium and PTH.
- Renal and liver function has probably already been tested.

Special cases:

- 1,25-(OH)₂D if severe renal impairment
- Other fat-soluble vitamins (A, E) if fat malabsorption is suspected
- Perhaps other vitamins and essential elements if suspected of severe nutritional disturbance.

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Analytical problem with Ostelin replacement therapy – probably a thing of the past

Ostelin is the only pure VD preparation available in Australia. In the past, Ostelin contained ergocalciferol (vitamin D2) which was known to present a challenge when monitoring patients on replacement as some commercial assays do not detect ergocalciferol. This analytical problem is probably a thing of the past in Australia, because Ostelin now contains cholecalciferol (vitamin D3) which is identical to the VD synthesised in the skin.

Recommendations by Australian Working Group for management of established VD deficiency states are summarised below:

Minimum sun exposure to prevent deficiency:

- For most people, exposure of hands, face and arms to 1/3 minimal erythral dose (MED) most days
- Older people require more frequent exposure.

Dietary vitamin D required to prevent deficiency:

- At least 200 IU (5 ug) (age <50 years) or 600 IU (15 ug) (age > 70 years) per day
- Those with substantial sun avoidance may require higher daily intake.

Vitamin D required to treat moderate to severe deficiency:

- 3000-5000 IU (75-125 ug) per day for at least 6-12 weeks; this will usually return serum 25OHD levels to the reference range, and allow ongoing treatment with a lower dose (e.g. 1000 IU per day).

References

MJA 2005; 182(6):281-5

NEJM 2007; 357:266-81



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Consultant Chemical Pathologist

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Dr Chang graduated in 1997 with a Bachelor of Medical Science (honours) before completing her MBBS (Honours) in 2000 at the University of Sydney. In 2001 Dr Chang began an internship with the Concord Repatriation General Hospital

before working as a Junior House Officer at the Royal Brisbane Hospital in 2002. Dr Chang trained in chemical pathology at the Princess Alexandra Hospital, at the QHPS Central Laboratory at the Royal Brisbane Hospital, and in 2007 in the Biochemistry Department of QML Pathology. In 2008 Dr Chang completed her fellowship and joined QML Pathology as a Consultant Chemical Pathologist

Associations

Australian Association of Clinical Biochemists

Special Interests

Iron and copper disorders
Clinical chemistry of pregnancy
Drug testing

>> Allergy Testing

Withdrawal of Skin Prick Allergy Testing Service

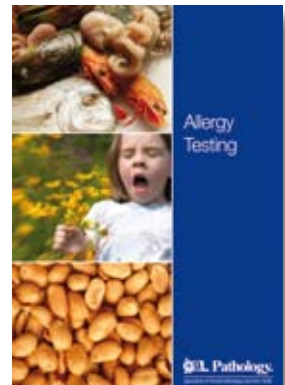
QML Pathology has provided skin prick allergy testing for the detection of specific IgE sensitisation in allergic disorders for many years. Due to regulatory requirements of the Therapeutic Goods Administration (TGA), access to skin prick test reagents is becoming increasingly difficult for our organisation. Certain skin prick test reagents have become unavailable due to cessation of manufacture, and replacement reagents have not received TGA approval for the Schedule of Therapeutic Goods and Devices. For this reason QML Pathology is discontinuing routine skin prick testing for allergy diagnosis.

QML Pathology is committed to allergy testing and continues to maintain RAST/In vitro specific IgE testing with an ever increasing allergen menu. Medicare funding permits the testing of four allergens or allergen mixes per episode, and four testing episodes per year. If patients are able to pay a gap fee we are able to provide more extensive panels of allergen testing which are useful in certain clinical scenarios.

In addition, we continue to investigate alternative methods to allow the simultaneous detection of multiple allergen specificities, however, at present there is no reliable technology to replace skin prick testing in vitro, apart from the current testing methodology - RAST ImmunoCAP.

If you have any concerns about allergy testing for your patients please contact your local QML Pathology laboratory or phone Dr David Heyworth-Smith, Consultant Clinical Immunologist on (07) 3121 4325 to discuss.

For a copy of the new Allergy Testing brochure please contact your Medical Liaison Officer.



>> STI Pack

Introducing our latest pack

The prevalence of sexually transmitted infections (STIs) continues to increase world wide, emphasising the need to continuously educate the general public. This pack features information for both the clinician and the patient on some of the more common STIs. The patient brochures give an overview of each STI in an easy to understand manner.

This pack includes the following information:

- Chlamydia – Patient Information Brochure
- Genital Herpes – Clinical Article
- Genital Herpes – Patient Information Brochure
- Genitourinary Chlamydia Infection – Clinical Article
- Gonorrhoea – Patient Information Brochure
- Neisseria gonorrhoeae – Clinical Article
- Syphilis – Patient Information Brochure
- Whose Game was Empires (Syphilis) – Clinical Article
- Microbiological Review of Trichomonas Vaginalis – Clinical Article

If you would like a copy of this pack, please contact your local Medical Liaison Officer or email us at info@qml.com.au with the name of the pack and your contact details.



>> PYtest®

The urea breath test kit for detecting *Helicobacter pylori*

PYtest® (urea breath test) is a qualitative and non-invasive method for the diagnosis of *Helicobacter pylori* infection in the human stomach.

This new testing method is fast, safe, simple and highly accurate

- **Ease of use:**

Quick. Taking only 10 - 15 minutes to complete the sample collection

After fasting for six hours, the patient swallows a capsule of urea [^{14}C] with a small cup of water. Three minutes later, the patient drinks a second small cup of water. Then after waiting an additional seven minutes they blow into a special breath collection balloon which is sent to the laboratory for analysis

- **Safe to use:**

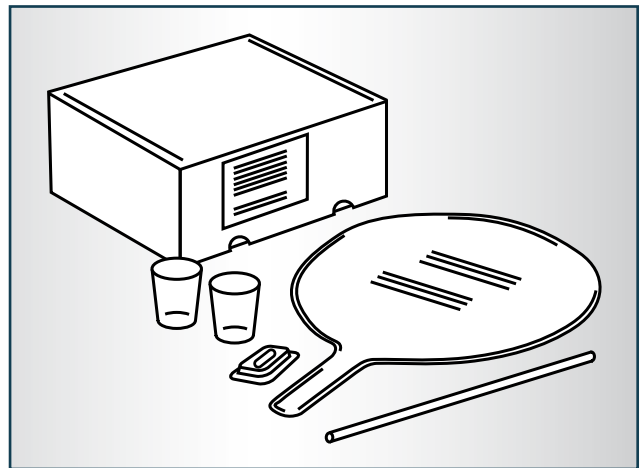
Approved by the Therapeutic Goods Administration (TGA), an Australian Government regulatory agency ensuring the product meets acceptable standards of safety, quality and performance.

- **Non-invasive:**

A blood sample is not required.

- **Highly accurate:**

Regarded as the 'Gold Standard' for the testing of the ulcer causing bacterium *Helicobacter pylori*.



Patient Information

- Patients should fast (nil by mouth, including water) for a minimum of six hours before the test.
- The test can be performed at any time of the day, and will take approximately 10 - 15 minutes.
- Patients will be required to swallow a capsule containing 37kBq ^{14}C on commencement of the test.
- Medication restrictions include:
 - No antibiotics for four weeks prior to test
 - No Losec, Zoton, or Somac for one week prior to test
 - No Cytoprotectives (sucralfate) for two weeks prior to test.
 - For a full list of medication restrictions, please see our collection staff.
- No restrictions to physical activity before or during the test.
- No smoking or eating during the test.
- The test can be performed on children, however, please note weight on the request form.
- Can not be performed on pregnant or lactating women.
- Please note: This test attracts an out of pocket expense.

Where is the test performed?

Due to the specialised nature of the test, it is only performed at selected collection centres by appointment. Please contact your Medical Liaison Officer for a list of these collection centres.

Infectious Diseases Report - Geographic Distribution - June 2009

ORGANISM	Regions (as per key below)															Total			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Jun	May	Apr	Mar
Adenovirus (not typed)		5	2	1			5		6		32	2	3	2		58	27	10	7
Adenovirus (typing pending)		3	1				2		3		5	2			1	17	9	12	60
Barmah Forest virus	2	5		1					2	2	2	5			3	22	9	30	32
Bordetella pertussis	17	21	10	6	1		14		33	4	33	19	4	6	3	171	213	172	119
Brucella species																0	3	6	0
Campylobacter jejuni																0	0	0	0
Chlamydia pneumoniae																0	0	0	1
Chlamydia trachomatis, not typed	52	97	24	22	3	1	101		52	17	157	44	17	27	10	624	625	622	570
Coxiella burnetii		1	1							3			1			6	8	5	7
Cryptococcus species																0	3	1	1
Cytomegalovirus (CMV)	3	4	4	4	1		3		7	1	10	4	1	3	1	46	55	65	56
Entamoeba histolytica																0	0	2	0
Enterovirus - not typed												1				1	2	3	1
Epstein-Barr virus (EBV)	5	19	5	5			18		13	1	29	12	7	6	4	124	123	127	100
Flavivirus unspecified	7	2		1							2	1		2		15	7	28	56
Hepatitis A virus									1		2					3	4	3	1
Hepatitis B virus	9	8	5		1		13		5	1	52	2	3	1	2	102	77	73	79
Hepatitis C virus	14	48	15	7			31	1	23	5	62	26	11	6	11	260	233	268	228
Hepatitis D virus																0	0	0	0
Hepatitis E virus																0	0	0	1
Herpes simplex Type 1	22	38	13	3			38		30	8	58	25	5	8	3	251	216	242	228
Herpes simplex Type 2	12	28	8	3	2		33		18	10	49	15	4	7	6	195	171	177	162
Herpes simplex virus - not typed																0	0	14	54
HIV-1	1	1	1				2									5	7	9	5
HTLV-1																0	0	2	0
Influenza A virus	16	21	11	3	1	1	19		38	2	63	19	2	19	4	219	98	11	5
Influenza B virus	1	6	2	1		1	3		2	2	5	3	1			27	19	9	2
Legionella pneumophila (all serogroups)										1						1	1	5	4
Legionella species	1											1				2	2	4	3
Leptospira species	1		1													2	3	2	6
Measles virus																0	0	0	6
Mumps virus											1					1	3	3	1
Mycoplasma pneumoniae	5	5	8	4			9		13	1	17	4	1			67	73	66	48
Neisseria gonorrhoeae	7	7					2		1		3	2	2	3	1	28	28	33	29
Parainfluenza virus Type 1			1								1					2	1	0	0
Parainfluenza virus Type 2		1					5		7		1					14	13	6	6
Parainfluenza virus Type 3	1	1					2				3			2		9	11	6	1
Parvovirus		4					4		4		3		3			18	11	12	8
Pneumocystis carinii		1										2				3	1	1	1
Respiratory Syncytial virus	8	31	27	1			29		38	11	65	18	9	1	4	242	132	89	53
Rickettsia - Spotted Fever Group	1	2					1								1	5	12	15	11
Ross River virus	4	18	4		1		13	1	8	3	10	25	3	2	4	96	133	104	124
Rubella virus												1				1	1	2	0
Salmonella paratyphi A																0	0	0	0
Salmonella paratyphi B																0	0	0	0
Salmonella typhi																0	1	0	1
Shigella dysenteriae																0	0	0	0
Shigella flexneri																0	0	0	0
Streptococcus Group A	9	16	2		1		10		11	4	14	5	4	4	4	84	55	60	73
Toxoplasma gondii																0	2	0	0
Treponema pallidum	23	3	6		3	1	16		8	1	25	2	1	11	2	102	116	112	111
Trichomonas vaginalis	4	2							1					4		11	17	16	11
Varicella Zoster virus	13	26	6				44		21	6	50	18	4	5		193	146	178	172
Yersinia enterocolitica																	0	0	0
TOTAL	238	424	157	62	14	4	417	2	345	83	754	258	86	119	64	3027	2671	2605	2444

REGIONS

1 Cairns
2 Gold Coast/Northern Rivers
3 Ipswich

4 Mackay
5 Mount Isa
6 New England
7 North Brisbane Suburbs

8 Northern Territory
9 Redcliffe
10 Rockhampton
11 South Brisbane Suburbs

12 Sunshine Coast
13 Toowoomba
14 Townsville
15 Wide Bay/Burnett

February 2009 and further historical clinical data can be obtained by contacting your local Medical Liaison Officer



QML Pathology updates Aug 09

>> Doctor's Noticeboard

Dr John Tan FRACS, Cardiothoracic Surgeon

Specialising in:

- Cardiac Surgery:
Coronary artery bypass, heart valve surgery
- Thoracic Surgery:
Lung cancer, pneumothorax, pleural effusions,
minimally invasive (VATS), mediastinoscopy,
thoracoscopy and bronchoscopy
- Defibrillators and Pacemakers.

Hospitals:

Allamanda: www.allamandaprivate.com.au

Pindara: www.pindaraprivate.com.au

Spendelove: www.spendelovehouse.com.au

The Doctor's Noticeboard is a free service for practitioners to advise changes to their practice. If you would like to place a notice, please email details to info@qml.com.au.

New Consulting Rooms:

Spendelove Private Hospital, 24 Spendelove St, Southport

Pacific Private Clinic, 123 Nerang Street, Southport

Contact Details:

Office: 1300 661 754

After hours: 1300 767 103

www.heartsurgery.com.au

Atherton Family Medical Centre

GP Position Vacant:

Part time or full time VR Doctor required.

Situated on the Atherton Tablelands, we have a purpose-built medical centre. We are fully computerised, with experienced staff including a Practice Nurse.

Contact: Dr Michael Ruscoe

phone: (07) 4091 1444

email: afmcdm@tpg.com.au.

New Collection Centre

Kawana

Cnr Nicklin Way & Kensington Dve
Minyama

Phone: (07) 5444 7872

Opening Hours:

8.00am - 12.00pm

12.30pm - 4.00pm (Mon-Fri)

New Laboratory

Townsville

Oxford Street Specialist Medical Centre,
16-18 Oxford Street, Hyde Park

Phone: (07) 4779 0158

Please note Pimlico collection
centre, Townsville details:

Pimlico

51 Fulham Rd

Phone: (07) 4775 3065

Opening Hours:

7.30am - 6.00pm (Mon-Fri)

7.30am - 12.00pm (Sat)