

QML PATHOLOGY

newsletter June 08

>>Laboratory Assessment of Excessive Alcohol Intake Dr Charles Appleton, Pathologist in Charge, Biochemistry

In view of recent announcements from NHMRC, this would appear an appropriate time to discuss the laboratory assessment of excessive alcohol use.

>> Laboratory Assessment of Excessive Alcohol Intake

Dr Charles Appleton, Pathologist in Charge, Biochemistry

The test that is most frequently associated with assessment of alcohol use is the blood or serum alcohol (ethanol). However this test gives information regarding alcohol use only for the interval of 6 to 12 hours prior to sample collection. Outside of this interval, certainly in the vast majority of patients, the alcohol from the recent load will have been cleared.

For occupational screening, we perform hundreds of urinary alcohol tests each day. As with the blood, the urinary alcohol reflects only relatively recent alcohol use but the interval is a little longer than that for blood. The urinary alcohol simply reflects the average blood alcohol over that time since the subject last emptied his bladder and as such, it will generally remain positive for two to three hours longer than the blood.

For many years now, the test most frequently associated with assessment of excessive alcohol use (as opposed to recent use) is carbohydrate-deficient transferrin (CDT).

The literature tells us that CDT will be raised in males with an average alcohol daily intake of six 'standard drinks' (60 g) or more. As the CDT reflects the average alcohol intake over the two to three weeks prior to sample collection, this may be taken in the form of regular drinks on a daily basis or over several consecutive drinking sessions separated by some days.

Note - CDT changes over a two to three week interval after a change in drinking habit. It does not respond acutely to a single episode of excessive alcohol use.

In the same way that the tolerance to alcohol varies from person to person, the CDT response also varies. Some males will raise their CDT with ongoing alcohol intakes as low as

**Table 1:
What is Carbohydrate-Deficient Transferrin?**

Transferrin (the blood iron-transportation protein) is synthesized in the liver. After completion of the assembly of the protein chain in the ribosome, a number of sialic acid carbohydrate moieties (typically 4-6) are bound to it before it is secreted into the blood. Normally only a small percentage of the protein is released with less than the usual amount of sialic acid attached but this fraction is referred to as 'carbohydrate-deficient transferrin' (CDT).

When the liver is actively involved in metabolising ethanol, the carbohydrate transfer step appears to be impaired. Hence prolonged alcohol excess causes release of increased amounts of CDT.

**Table 2:
Assessment of alcohol use:**

Abstinence
1. Blood, breath or urine alcohol - oversees 12 hrs prior to test
2. Ethyl glucuronide - oversees 3-4 days prior to collection but test not available at present.
Excessive use
1. CDT - reflects average daily alcohol intake over the 2-3 weeks prior to the test - false negatives and a small number of false positives
2. GGT - limited sensitivity and poor specificity for alcohol excess
3. MCV - raised only with severe alcohol excess and poor specificity for alcohol excess

four units per day while others can consume somewhat more than six units. I have concluded that an average intake of or exceeding 10 standard drinks per day will raise the CDT in essentially all individuals but there are a few males who will consume between 6 and 10 and still maintain a numerically normal result on our assay. In these folk, the normal CDT is often labelled a 'false negative'.

In females, the intake figures appear to be 'shifted down' a little. We have a few female drinkers whose average daily intake is only two or three drinks per day but who have a raised CDT. Conversely, most females drinking six or more standard drinks per day will have a raised CDT.

When a CDT report indicates 'excessive alcohol intake', this implies that the liver's capacity to deal with alcohol has been exceeded but **it does not indicate that the subject's professional, social, or personal function has necessarily been compromised**. Over the years since we introduced this test, I have been made aware of a small number of subjects including a number of our colleagues who had the habit upon arriving home from work each evening of consuming several drinks to 'settle down'. In these cases, so long as they were not called out to work after hours, the alcohol appeared to have had no impact on their professional performance.

Note - CDT is a marker of excessive alcohol use but it cannot be used for assessing abstinence.

Finally, two common markers of alcohol abuse, gamma-glutamyl transpeptidase (GGT) and mean corpuscular volume (MCV) are independent indicators of alcohol exposure and have very different clinical aspects.

>> Laboratory Assessment of Excessive Alcohol Intake

Dr Charles Appleton, Pathologist in Charge, Biochemistry

The GGT is released from the hepatocyte in response to induction of enzymes by drug or chemical oxidation. It is not specific for alcohol - most therapeutic drugs whose metabolism involves an oxidation step may cause an increase in the GGT which is independent of alcohol use. However approximately 30% of Caucasians do not use this oxidation pathway in alcohol clearance at all and thus they will never raise the GGT in response to alcohol loading. Thus GGT has a lesser sensitivity and specificity for detection of alcohol abuse.

A further complication arises because GGT is released from the biliary epithelium along with alkaline phosphatase in response to cholestasis. If a raised GGT is found along with other liver enzyme abnormalities, its strong association with alcohol or drug intake is blurred.

The MCV is raised in response to prolonged heavy alcohol abuse. This generally requires substantially heavier intakes than those needed to raise the CDT or GGT and probably reflects bone marrow toxicity. It also becomes elevated in response to chronic illness and poor nutrition, particularly vitamin B12 or

folate deficiency. Of course, nutritional deficiency may be part of an alcohol problem.

Because a change in the MCV requires replacement of a generation of red cells, should a subject commence drinking to excess at a given time, it will require three to four months for the MCV to plateau at its new level and upon abstaining, a further three to four months to return to the baseline.

In conclusion, to assess alcohol abstinence, frequent or random blood, breath or urine alcohol testing is currently the only means readily available, whereas to assess excessive recent or ongoing alcohol use, CDT remains the most appropriate test.

Dr Charles Appleton

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>> An Australian First for QML Pathology

In January this year QML Pathology successfully installed the ThinPrep integrated remote imaging system known as MultiCyte®, in our Rockhampton laboratory. This new enhancement to our existing ThinPrep Imaging System® allows cytologists in our regional laboratories to review ThinPrep cases using the scanned slides. This is the first MultiCyte® system to be introduced in an Australian laboratory and reinforces QML Pathology's reputation as a leader in new technology and innovation.

ThinPrep Imaging was introduced at QML Pathology in our Central Brisbane Laboratory in May 2006. A previously reported in-house study demonstrated that more abnormalities and less unsatisfactory cases were reported when a ThinPrep specimen was submitted. As well as this, it was shown that for biopsy confirmed squamous lesions ThinPrep Imaging was statistically more sensitive in identifying abnormal cells.

ThinPrep slides are prepared and stained in our Brisbane laboratory and scanned using the ThinPrep Imaging Processor®. The field-of-view locations are recorded on a blank CD that is sent together with both the ThinPrep and conventional slides to the Rockhampton Cytology Department. In Rockhampton the ThinPrep slide is reviewed using the specialised Review Microscope while the conventional smear is screened separately. All abnormalities and any discrepancies between the two slides are reviewed by the Cytopathologist. A final report is issued following review of both slides.

Our cytology staff in Rockhampton were previously trained and highly experienced in ThinPrep cellular morphology, and have now received further training in the operation and review of the ThinPrep Imaging System®.

The system provides the capability for our regional laboratories to access this latest imaging technology and enables QML Pathology to utilise the technical skills of our experienced local cytologists.

Further information can be obtained by contacting the Rockhampton Cytology Department on (07) 4921 2155.



clinical data Jun 08

Infectious Diseases Report - Geographic Distribution - May 2008

ORGANISM	Regions (as per key below)															Total			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	May	Apr	Mar	Feb
Adenovirus (not typed)	2	1					2		3		6			1	2	17	24	6	9
Adenovirus (typing pending)		5	2				2		1	2	5	2				19	10	10	6
Barmah Forest virus	5	3	1	1			5		5	3	7	8	1	4	4	47	83	80	69
Bordetella pertussis	3	13	3				9		4	1	9	2	3	1		48	35	26	31
Brucella species	2	1								3		1	2	1	1	11	5	2	5
Campylobacter jejuni																0	0	0	0
Chlamydia pneumoniae		1														1	0	0	0
Chlamydia trachomatis, not typed	67	83	38	26	2	1	100	1	49	27	139	59	12	24	11	639	529	311	475
Coxiella burnetii	4	1	1			1			1		2	1	1			12	8	2	19
Cryptococcus species	1						1				1					3	2	1	3
Cytomegalovirus (CMV)	2	11	3	2			10		3	2	16	5	5	2	2	63	48	36	44
Entamoeba histolytica																	1	0	0
Enterovirus - not typed			1						1							2	2	0	7
Epstein-Barr virus (EBV)	2	14	9		2		28		13	1	29	17	1	5	6	127	113	58	79
Flavivirus unspecified	4	2					1				1					8	11	9	15
Hepatitis A virus										1	1					2	3	2	0
Hepatitis B virus	9	5	2				8		7		30	2		3		66	87	49	63
Hepatitis C virus	15	37	16	3			25		17	2	43	23	9	6	7	203	222	166	189
Hepatitis D virus																0	0	0	0
Hepatitis E virus																0	0	0	0
Herpes simplex Type 1	9	35	14	3		1	37		25	5	69	30	2	6	3	239	234	129	163
Herpes simplex Type 2	9	38	3	1	1	1	14		9	1	43	14	2	10	3	149	133	83	130
Herpes simplex virus - not typed	4	12		8			5		7	3	12	9	1		1	62	49	19	29
HIV-1	4	1					3				1					9	4	4	11
HTLV-1																0	0	0	0
Influenza A virus	1	4	1		1		3		1	1	4	1				17	14	10	10
Influenza B virus							1				1					2	2	2	0
Legionella species																0	0	0	0
Leptospira species	6		1	1						1				1		10	6	13	3
Measles											1					1	0	0	1
Mumps virus														1		1	1	0	0
Mycoplasma pneumoniae		8	3				6	1	6	2	19	6		1		52	38	21	23
Neisseria gonorrhoeae	7	5	2				5			7	1			1		28	29	29	29
Parainfluenza virus Type 1			4			1					1				1	7	5	5	4
Parainfluenza virus Type 2																0	1	2	1
Parainfluenza virus Type 3											1					1	3	1	0
Parvovirus		2	1				4		5	1	3	5				21	18	11	14
Pneumocystis carinii		2													1	3	2	0	1
Respiratory Syncytial virus		2	1				12		11	10	8	2	1	1		48	45	26	38
Ross River virus	5	7	1	4			12	1	6	7	15	6	3	1	6	74	149	195	246
Rubella virus												1				1	0	0	2
Salmonella paratyphi A																0	0	0	
Salmonella paratyphi B																0	0	0	
Salmonella typhi																0	0	1	
Shigella dysenteriae																0	0	0	
Shigella flexneri																0	0	0	
Streptococcus Group A	12	6	4	2	4		9	17	13	6	22	11	1	6	2	115	85	52	56
Toxoplasma gondii											2	1				3	1	0	0
Treponema pallidum	30	6	2		2		25	6	4	7	36	3	2	9	1	133	119	64	104
Trichomonas vaginalis	2				1						3			2		8	13	4	13
Varicella Zoster virus	6	28	7	1			19		11	2	32	8	2	5	5	126	170	89	120
Yersinia enterocolitica																0	0	0	1
TOTAL	211	333	120	52	13	5	346	26	202	88	569	218	48	91	56	2378	2304	1518	2013

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

April 2008 and further historical clinical data can be obtained by contacting your local Medical Liaison Officer

This newsletter has been prepared and published by QML Pathology for the information of referring doctors. Although every effort has been made to ensure that the newsletter is free from error or omission, readers are advised that the newsletter is not a substitute for detailed professional advice.

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QML Pathology updates Jun 08

>> Introducing our New Consultant Haematologist

Dr David De Leacy FRCPA. Bsc.



A graduate of the University of Queensland Medical School in 1974 (MBBS), Dr De Leacy completed his residency at the Royal Brisbane Hospital. Upon completion he worked in a number of roles including rural medicine, general practice and a year as a Medical Officer in Antarctica for ANARE (1987) before finishing his training in

pathology at the Royal Brisbane Hospital having earlier also trained at the Princess Alexandra Hospital.

After gaining his fellowship in 1988 Dr De Leacy worked as a Consultant Haematologist at the Royal Canberra Hospital

followed by a position as Assistant Director at the Red Cross Blood Transfusion Service (Qld).

He spent 10 years overseas working as Head of Laboratories/Director of Medical Services at Wadi al Dawasir Military Hospital, Saudi Arabia, as a Consultant Haematologist at the National Blood Service, UK and for the NZ Blood Service/Canterbury Health Service Laboratories, and also for the WHO for one year in Vietnam.

In 2003 Dr De Leacy returned to Australia to work as a Consultant Haematologist at the St John of God Pathology/Pathcare Laboratories Victoria before joining QML Pathology in 2008.

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Patient Eligibility for Medicare Rebate: Thrombophilia & Factor V Leiden Mutation **QML Pathology.**

Attention Patient:
1) Please ask your Doctor to complete this form.
2) Please return the completed form to the QML Pathology Clinic you attended.

Attach Lab no. here
office use only

Thrombophilia Testing
In order to obtain a Medicare rebate for Thrombosis Tests, the answer to at least one of the following questions must be YES. If the answers to ALL questions are NO, then the patient will not be eligible for a Medicare rebate.

1. Does the patient have or is there a personal history of Venous Thromboembolism (e.g. Deep Venous Thrombosis (DVT) or Pulmonary Embolism (PE))? ☐ YES ☐ NO

2a. Is the patient a first degree relative of a person with a proven diagnosed history of ATIII or Protein C or Protein S, or Activated Protein C resistance (Factor V Leiden)? ☐ YES ☐ NO

2b. If yes which defect? _____

3a. Is testing to confirm or clarify an abnormal or indeterminate result for ATIII, Protein C or Protein S, or Activated Protein C resistance (Factor V Leiden)? ☐ YES ☐ NO

3b. If yes which defect? _____

Name _____ Doctor Signature _____ Date _____

Factor V Leiden Mutation Testing
In order to obtain a Medicare rebate for Factor V Leiden Mutation Genetics Tests, the answer to at least one of the following questions must be YES. If the answers to BOTH questions are NO, then the patient will not be eligible for a Medicare rebate.

1. Does the patient have or is there a personal history of Venous Thromboembolism (e.g. DVT or PE)? ☐ YES ☐ NO

2. Is the patient a first degree relative of a person with a proven diagnosed history of the Factor V Leiden or Prothrombin G20210A Mutation? ☐ YES ☐ NO

Please Note: Family history does not include 'Venous Thromboembolism in a family member' - it must be a defined defect in one of the above coagulation factors. Testing of the family index case in the first instance may be required to clarify which defect is present.

Name _____ Doctor Signature _____ Date _____

Patient to Complete and Sign

I, _____ (full name) understand that if I am not eligible for a Medicare rebate, then QML Pathology will issue an account to me of up to and including \$140 (as per May 2007 scheduling) depending on testing requirements as referred by my Medical Practitioner. I accept that I will pay such monies owed to QML Pathology.

Patient Signature _____ Date of Birth _____ Date _____

Attach Lab no. here
office use only

Thrombophilia and Factor V Leiden Mutation

QML Pathology has introduced a 'Patient Eligibility for Medicare Rebate: Thrombophilia and Factor V Leiden Mutation' form.

This form is designed to make it easier for doctors and patients for determining eligibility for Medicare rebate. To obtain a copy of this form please contact our Liaison Department on (07) 3121 4943 or your local branch Medical Liaison Officer.

Olympic Dream in Sight

QML Pathology's Olympic hopeful, Otis Gowa has had a very hectic two months as the Beijing Games draw closer. In between training camps Otis has competed in the Osaka IAAF Grand Prix and in the Chinese National Championships held at the spectacular new Olympic Stadium.

Otis was also recognised recently on a state level when he was named one of the finalists for the prestigious Suncorp Young Queenslander of the Year award.

Thrombophilia and Factor V Leiden Mutation form.

>> Doctor's Noticeboard

Dermatologist, Dr Khai Choong has recently commenced private practice at the newly built Australis Professional Centre.

Suite 1, 679 Beenleigh Road, Sunnybank
Phone: (07) 3344 1688
Fax: (07) 3420 1688.

Dr Eugene Yoong, Cardiologist, has relocated his practice rooms to:

Suite 211, Level 2, Times Square
250 McCullough Street
Sunnybank QLD 4109.
Phone: (07) 3219 5888 (remains unchanged)
Fax: (07) 3344 5005.

Dr Eddie Cheng, Plastic and Reconstructive Surgeon has commenced private practice at:

Suite 50, Level 4
Wesley Medical Centre
40 Chasely Street
AUCHENFLOWER QLD 4066
Phone: (07) 3870 3960
Fax: (07) 3870 3359.

The Cardiac Centre would like to welcome **Dr John Meulet, Cardiologist and Electrophysiologist**. John will commence practice in August, consulting at John Flynn Hospital and Pacific Private Clinic, providing procedures at John Flynn Hospital and Pindara Hospital.

John's special interests include all rhythm disturbances and their management, including curative ablation of SVT's including Atrial Fibrillation, Cardiac Re-synchronization therapy (CRT) for heart failure, Pacemaker and ICD implantation and extraction.

Please call the rooms on (07) 5598 0322 to arrange all appointments for your patients.

Dr Gregory Seeley wishes to announce that on 17 July 2008 he will extend his practice in **Clinical Haematology** at the Tweed Day Surgery and Specialist Centre, 38-44 Boyd Street, Tweed Heads.

Greg's areas of special interest include: Lymphoma, Myeloma, Venous Thrombosis Management and Chronic Leukaemias. All appointments can be made by telephoning (07) 5532 7655.

New Collection Centres

Deception Bay

618 Deception Bay Road
Deception Bay QLD 4508
Phone: (07) 3204 0018

Opening Hours:
7.30am - 12.00pm, 1.00pm - 4.00pm (Mon-Fri)

Belmont

Shop 6
Belmont Road Shopping Centre
185 Belmont Road
Belmont QLD 4153
Phone: (07) 3390 2989

Opening Hours:
7.00am - 12.30pm, 1.00pm - 3.00pm (Mon-Fri)

Relocated Collection Centres

Annerley

Shop 6
Cnr Ekibin and Ipswich Rds
Annerley QLD 4103

Phone: (07) 3848 1727
Opening Hours:
7.00am - 5.00pm (Mon-Fri).