



# PATHCENTRE

## NEWS

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## ASYMPTOMATIC AND UNDIAGNOSED TYPE 2 DIABETES MELLITUS

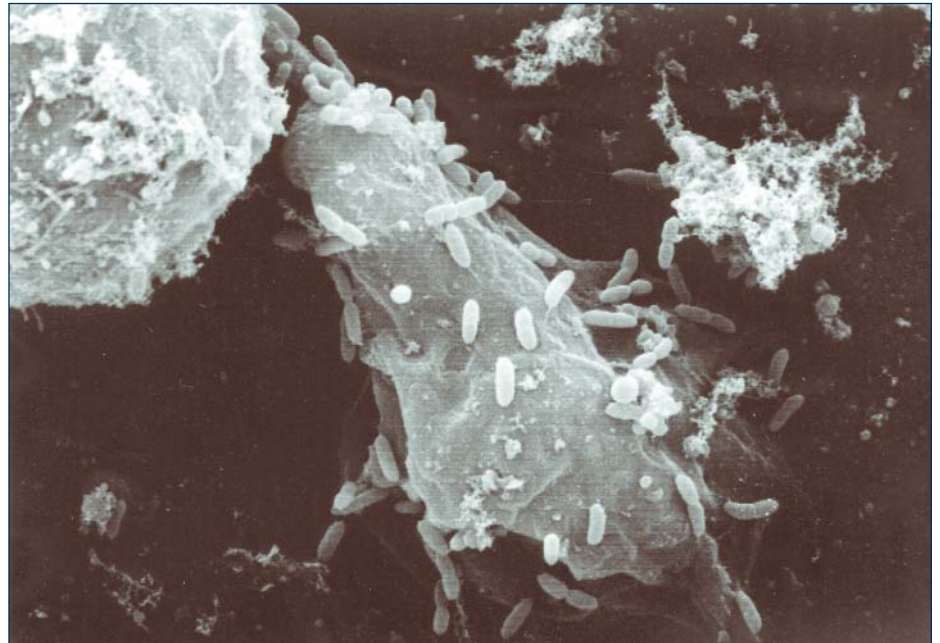
In the recent AusDiab study, the prevalence of type 2 diabetes mellitus in the Australian population was found to be 7.5% (half of which were undiagnosed).

Diabetes is a major risk factor for cardiovascular and cerebrovascular disease, and renal failure. These complications can develop during the asymptomatic phase. The diagnosis and early treatment of type 2 diabetes will reduce the morbidity from long-term complications.

Testing for undiagnosed type 2 diabetes is recommended for people who are obese (BMI  $\geq 30$ ), hypertensive, aged 45 years and over, of Aboriginal descent, from the Indian subcontinent or of Chinese origin who are 35 years or over. Those with angina, previous myocardial infarction or stroke, and women with polycystic ovary syndrome who are obese, should also be assessed.

The best screening test is the measurement of fasting plasma glucose. If this is not possible a random plasma glucose will suffice.

A fasting or random plasma glucose of  $< 5.5$  mmol/L makes diabetes unlikely, however at risk patients should be retested every 3 years. A fasting plasma glucose of 6.1–6.9 mmol/L indicates impaired fasting glycaemia (IFG). A fasting plasma glucose of 5.5–6.9 mmol/L or a random glucose of 5.5–11.0 mmol/L is equivocal and an oral glucose test should be performed.



*A waterborne pathogen, Burkholderia pseudomallei on the surface of an amoeba. Picture is courtesy of Dr Terry Robertson, Pathology, UWA.*

A 2 hour plasma glucose (i.e. post 75 g glucose load) equal to or greater than 11.1 mmol/L indicates diabetes mellitus and a value 7.8–11.0 mmol/L indicates impaired glucose tolerance (IGT). Patients with IFG or IGT are at increased risk of developing diabetes and cardiovascular complications. Such individuals should have the test repeated in a year.

A fasting plasma glucose of  $\geq 7.0$  mmol/L and random glucose of  $\geq 11.1$  mmol/L makes diabetes likely. A confirmatory test must be performed on a separate day to confirm the diagnosis of diabetes.

A useful Website is:  
[www.diabetesaustralia.com.au/docs/mellitus/Part3-Final.pdf](http://www.diabetesaustralia.com.au/docs/mellitus/Part3-Final.pdf)

**For further information contact  
Dr Chotoo Bhagat, Clinical Director,  
Clinical Biochemistry, PathCentre on  
9346 2670 or the Duty Biochemist  
on 9346 3000.**

## CHECKING YOUR WATER

Our potable water is an increasingly precious resource. Periodic microbiological testing of water supplies is one of the key safeguards against waterborne infection, and possibly one of PathCentre's most important contributions to the public health in Western Australia. In recent years, PathCentre staff have responded to a range of major water quality issues such as those precipitated by the Sydney cryptosporidium incident, the Kimberley melioidosis outbreak, the

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naegleria contamination of recreational waters and the risk of hospital water supplies for legionella.

### What can you test at PathCentre?

PathCentre's Waters Examination Laboratory performs most of the microbiological potable water testing for Western Australia. Commonly this entails detection of various coliforms. Other water quality tests that can be performed by arrangement include a total plate count and detection of specific water-borne pathogens (e.g. *Salmonella enterica*, *Cryptosporidium* spp. and *Burkholderia pseudomallei*). Further water tests are performed at the request of the Department of Health for public health surveillance or environmental health reasons. Our Aquatic Protozoology Laboratory can test for the presence of pathogenic amoebae such as *Naegleria* and *Acanthamoeba* species in recreational waters.

There is an increasing interest in testing water supplies to hospitals and other public buildings for legionella to support building maintenance engineers' measures against Legionnaires' disease. Hospital water may also be tested for contamination of that used to supply endoscope washers.

### What results to expect

Potable water should not contain any coliforms in a 100 mL sample. The presence of *E. coli* in a standard sample suggests recent faecal contamination. Other faecal indicator organisms persist for longer and may help identify an approximate timeframe for upstream contamination.

Specific enteric pathogens such as *Salmonella enterica* and *Cryptosporidium* spp. should not be present at all and are very rare in chlorinated water supplies. Their presence at low levels in source water may not constitute a health risk.

Free-living amoebae are present in most unchlorinated recreational waters. Only the more pathogenic species, especially *Naegleria fowleri*, are of particular public health concern. Detection of *N. fowleri* in swimming pool water during the summer months will usually result in environmental health measures such as temporary closure of a public swimming pool and advice on maintenance of the amenity. *Legionella* species, particularly the less pathogenic types, are commonly found in hospital water supplies. Low counts of *L. pneumophila* are not considered to be a health risk but may warrant repeat sampling to ensure that there is no increasing trend. A variety of environmental bacterial species can be found in endoscope washer waters from hospitals. Generally counts less than 200 /mL are regarded as acceptable, but higher counts should be followed up at least with a repeat sample. Persistently high counts often indicate a need for improved water quality in the washer inflow.

### How to send your specimens

All water specimens for microbiological tests should be sent in a sterile 250mL container in an Esky with an ice brick. Containers are available on request from the Waters Examination Laboratory.

*For more information contact Dr Tim Inglis, Medical Microbiologist, Division of Microbiology & Infectious Diseases, PathCentre on 9346 3461 or Mr Ray Mogyorosy, Laboratory Manager, Foods and Waters Laboratory on 9346 2167.*

## PATHCENTRE DIRECT - ELECTRONIC REPORTING

PathCentre is providing electronic delivery of results to over 880 doctors statewide. An increasing number of doctors are also using PathCentre's A4

request form to print pathology requests from their practice software.

Electronic delivery of results (PathCentre Direct) is a free service offered by PathCentre and provides rapid access to pathology reports. Results are available for downloading almost as soon as the laboratory validates them.

Report security is maintained through 128-bit encryption, a unique encryption code, and a password protected mailbox. Results are downloaded by simply clicking the PathCentre Direct icon on your desktop or automatically by activating the scheduler to download on specific days and times.

### What you need

#### Medical software

Access to practice software such as Medical Director, Medical Spectrum, Surgiware or MedTech 32 is required. Software must have an import system capable of importing results.

#### Personal Computer

PathCentre Direct will run on Windows '95, '98, NT or 2000. It will work on a stand-alone or networked PC.


#### Internet connection

An active Internet connection is required.

*For further information contact Mr Ihaan Adriansz, Information Systems, PathCentre on 9346 2111 or e-mail: Ihaan.Adriansz@health.wa.gov.au*

## PERSONALISED REQUEST FORMS

PathCentre provides its clients with personalised pathology request forms. The new A5 request forms contain the requesting doctor provider number and contacts details. The forms are also carbonised allowing both the laboratory and patient to obtain a copy. The patient notes are desensitised, preventing the

 <b>PATHCENTRE</b> <small>THE WESTERN AUSTRALIAN CENTRE FOR PATHOLOGY AND MEDICAL RESEARCH AFA</small>		Hospital Avenue, Nedlands Western Australia 6009 Phone: (08) 9346 3000 ABN 348 0254 6034		<b>RESULTS &amp; ENQUIRIES 13 PATH 7284</b>		<b>PATHOLOGY REQUEST</b>	
PATIENT Last Name _____ Given Name (including middle initial) _____ Date of Birth _____ Sex _____ Your Reference _____		Medicare Assignment <small>(Section 20A Health Insurance Act 1973) By this declaration I offer to assign my right to benefits to the approved pathology practitioner who will provide the requested pathology services.</small> Patient's signature and date: _____ Medicare Number _____		Source / Hospital _____ Ward _____		Practitioner's Use Only <small>(Reason patient cannot sign)</small> Veterans Affairs? <input type="checkbox"/>	
PATIENT Address _____ Unit no. _____ Telephone _____		Collection Point _____ Collector's Signature _____		Date of Collection _____ Time of Collection _____		Cervical Pathology	
TESTS REQUESTED _____		CLINICAL NOTES Fasting: Yes <input type="checkbox"/> No <input type="checkbox"/> Rule 3 exemption: Yes <input type="checkbox"/> No <input type="checkbox"/> Self Determine <input type="checkbox"/>		Therapeutic drugs: Drug _____ Dosage _____ Date _____ Time _____		Previous Colposcopy / Surgery <input type="checkbox"/> YES <input type="checkbox"/> NO Pregnant / Postpartum <input type="checkbox"/> YES <input type="checkbox"/> NO Postmenopausal <input type="checkbox"/> YES <input type="checkbox"/> NO Vaginal Discharge <input type="checkbox"/> YES <input type="checkbox"/> NO Abnormal Bleeding <input type="checkbox"/> YES <input type="checkbox"/> NO Abnormal Cervix <input type="checkbox"/> YES <input type="checkbox"/> NO LMP: _____ Previous Smear: _____ Contraception or Hormones: _____ Ancillary Test: ThinPrep <input type="checkbox"/> PAPANET <input type="checkbox"/>	
Doctor's signature and request date: _____		Bill to: _____		Patient status at time of service or when specimens collected:		Patient's signature: _____	
Referring doctor (name, provider number, address) <input type="checkbox"/> Dr IM Well [WE01] 000001W <input type="checkbox"/> Dr B Well [BW03] 00000BW		Copy reports to: _____		1. A private patient in a private hospital or approved day hospital facility. YES <input type="checkbox"/> NO <input type="checkbox"/> 2. A private patient in a recognised hospital. YES <input type="checkbox"/> NO <input type="checkbox"/> 3. A hospital patient in a recognised hospital. YES <input type="checkbox"/> NO <input type="checkbox"/> 4. An outpatient of a recognised hospital. YES <input type="checkbox"/> NO <input type="checkbox"/>		PathCentre laboratories are accredited under the auspices of the Royal Australian College of Pathologists.	

## TUBERCULOSIS – A CASE HISTORY

A 77-year old man was referred to the Neurosurgery unit at Sir Charles Gairdner Hospital for treatment of an acute subdural haematoma following a fall. After surgery he made a rapid neurologic recovery. However, it became apparent that he had an extensive pneumonia of the right middle and lower lobes which had not responded to standard antimicrobial treatment whilst he was recently hospitalised at a regional hospital. Sputum examination revealed 1–9 acid-fast bacilli per high power field, and *Mycobacterium tuberculosis* complex DNA was detected in the specimen by polymerase chain reaction (PCR) within 24 hours. He was commenced on antituberculous therapy, and public health procedures were instituted to manage contacts.

Although usually considered to be a disease of developing nations, about

information from appearing on the reverse side.

The new forms were designed to assist with meeting Health Insurance Commission (HIC) requirements for billing which includes recording the patient Medicare number and signature.

To order personalised request forms, complete the order form on the insert and fax to 9381 7594.

**For further information contact Terryll Osborne on 9346 2142 or e-mail: [Terryll.Osborne@health.wa.gov.au](mailto:Terryll.Osborne@health.wa.gov.au)**

## Profile

### DR FELICITY FROST

Dr Frost graduated from The University of Western Australia (UWA) Medical School in 1976, and trained in Anatomical Pathology at the Combined Anatomical Pathology Services of Sir Charles Gairdner Hospital and UWA. Her FRCPA was granted in 1984 and Fellowship of the International Academy of Cytology in 1990. Felicity has worked as a Consultant in Cytology and Histopathology since 1985 and as head of the PathCentre Cytology Unit since 1997.

Along with a wide reading interest and a determination to keep up with the younger generation's tastes in music and movies, Cytology is counted as among her favourite hobbies, and she devotes a large amount of time to the cause.



*Dr Felicity Frost, Clinical Director, Cytology*

Felicity has been a passionate advocate of the need for a viable public sector teaching department in Cytology. Under her guidance the Cytology unit has undergone numerous changes, and provides a competitive turnaround time for results, as well as providing a comprehensive teaching program for trainees in Pathology, and a continuing national profile in research and development. Felicity's most recent achievement has been the introduction

of Fine Needle Aspiration (FNA) cytology clinics to cover the Peel, Rockingham, Armadale, Bentley, Central Perth and Stirling areas.

Felicity is a committee member of the College of Pathologists National Quality Assurance program and has provided much of the material for the FNA section of the program. In addition, she has helped prepare the national guidelines on breast core biopsy and FNA for the National Breast Cancer Centre. Her research interests have included collaborative studies with the Division of Microbiology on the value of HPV DNA typing as an adjunct to Pap Smear testing.

Most recently, she published the largest study to date on the value of breast core imprint cytology, aiding in the same day counselling of women seen at the Breast Assessment Centre of Sir Charles Gairdner Hospital.

1000 cases of tuberculosis are diagnosed annually in Australia. Laboratory confirmation has traditionally been accomplished by the performance of a battery of phenotypic tests, which are time consuming, prone to variability and potentially hazardous for staff. PathCentre offers a highly sensitive and specific test for *M. tuberculosis* using nucleic acid detection by PCR on clinical specimens (usually sputum) that contain acid-fast bacilli. Results are available within 24 hours, allowing for the timely and appropriate institution of treatment and contact tracing as in this case. Identification of mycobacteria to the species level following culture is now accomplished by a combination of nucleic acid detection and DNA sequencing methodologies. Results are usually available within 48 to 72 hours of culture becoming positive, which represents a significant reduction in turnaround time when compared to traditional methodology. To enable speciation to be performed, the full test for tuberculosis assessment at PathCentre needs to be requested.

***For more information contact***

***Dr Tim Inglis, Medical Microbiologist,  
Division of Microbiology & Infectious  
Diseases, PathCentre on 9346 3461.***

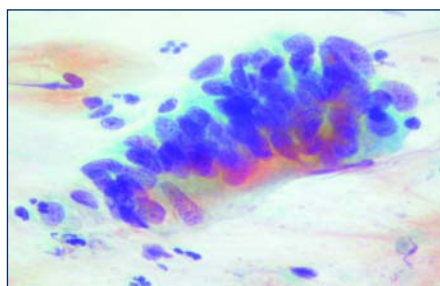
## ADENOCARCINOMA OF THE CERVIX AND PRECURSORS: CAN WE IMPROVE OUR DETECTION AND DIAGNOSIS?

Adenocarcinoma of the cervix is uncommon, but is increasing in frequency and now constitutes 20 to 25 percent of cervical cancers in Australia. This is partly a relative increase, due to the effectiveness of the cervical screening program in preventing squamous carcinoma. However, in some

countries (e.g. USA) there has been an absolute increase in incidence, largely in younger women.

The criteria for the diagnosis of precursor lesions (adenocarcinoma in situ, AIS) were elucidated by Australian pathologists and cytotechnologists in the 1970s and 1980s, but have only been widely applied in laboratories in the last decade or so. Epidemiological studies have yet to show a benefit from screening for glandular lesions of the cervix, however more intense study can be expected.

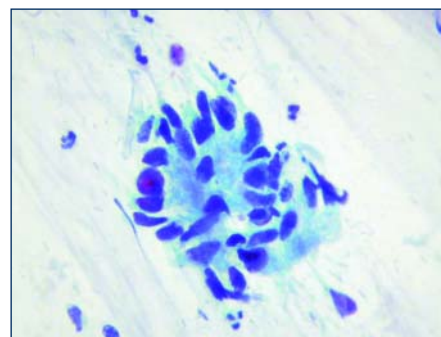
Recently, the Cancer Foundation of Western Australia and PathCentre co-hosted a multi-disciplinary seminar on adenocarcinoma of the cervix. The keynote speaker was Dr Heather Mitchell, Director of the Victorian Cervical Cytology Registry, one of the principal architects of the National Cervical Screening Program. Other invited speakers included Dr Tony McCartney and Dr Ian Hammond of the WA Gynaecological Cancer Services, Dr Jane Thompson of the Department of Pathology, all at King Edward Memorial Hospital, and Dr Stephen Allpress and



*Figure 1: Palisaded strip of abnormal endocervical glandular cells showing nuclear crowding, stratification and hyperchromasia.*

Ms Meike Schoolland of the Department of Cytopathology at Western Diagnostic Pathology. PathCentre speakers included Dr Amanda Segal, Dr Felicity Frost, and Dr Greg Sterrett.

Lectures ranged across the scale of the problem, the pathology, the clinical approach to diagnosis, the accuracy of



*Figure 2: Abnormal rosette or acinar structure with nuclear pleomorphism and hyperchromasia.*

the Pap smear, and the role of new technologies such as liquid based preparations and HPV DNA testing.

There has not yet been a complete description of the pitfalls and problems in diagnosis by cytology, and several studies are underway in Western Australia to address this issue. There are indications from other recent studies that our detection rates in Pap smears may be at sufficient levels to produce a beneficial effect. Improved endocervical sampling would, no doubt, help.

The seminar included a workshop where difficult cases were discussed using the new video projection facilities within PathCentre's Division of Tissue Pathology. The seminar was attended by over 120 registrants, including cytology scientists, gynaecologists, cytotechnologists, and pathologists. PathCentre Cytology has an ongoing interest in this area of diagnosis. We hope to provide further news in the future.

***For further information contact***

***Dr Greg Sterrett, Dr Amanda Segal or  
Dr Felicity Frost, Division of Tissue  
Pathology, PathCentre on 9346 2138.***

*Any comments or suggestions on the content of the PathCentre News should be addressed to:*

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