OS Operational Update Nov 2014

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TEST RELATED

Hypothyroidism in Pregnancy

Pregnancy has a marked impact on thyroid function with the thyroid gland increasing in size by about 10% (more in iodine-deficient regions). Free thyroxine (FT4) values typically dip in the first trimester but rarely fall below the lower reference limit. Thyrotropin (TSH) values fall markedly in the first trimester due to the ability of human chorionic gonadotrophin – HCG to bind and activate TSH receptors on the thyroid gland. A typical TSH reference interval in the first trimester of pregnancy is 0.1-2.5 U/L.

Hypothyroidism in pregnancy increases the risk of pre-term birth, low birth weight, miscarriage and impaired fetal neurocognitive development. In those who are hypothyroid, the requirements for thyroxine increase markedly early in the first trimester – typically by 30%. Therefore management of these patients requires careful titration of thyroxine dose based on biochemical and clinical findings. Thyroid function tests should be monitored by a physician every 3-4 weeks in the first trimester. The intention is to achieve a TSH within the range 0.1-2.5 U/L and clinical euthyroidism. After the first trimester, if euthyroidism has been achieved and the clinical and biochemical findings are stable, further monitoring is probably not required. As this process requires regular requesting of thyroid function tests and titration of thyroxine dose, this is best carried out by the patient's general practitioner.

If the patient presents in pregnancy with a new diagnosis of hypothyroidism, it is recommended you contact an endocrinologist to discuss further investigation and management.

Evidence is less clear on how to manage subclinical hypothyroidism in pregnancy (normal FT4 with TSH >2.5). Again, practitioners are advised to seek the advice of an endocrinologist about patient management when this pattern of results is seen in pregnancy.

Obstetric cholestasis

Obstetric cholestasis (OC) is characterised by skin itching without rash and deranged liver function (for which no other cause is discernible). OC

- usually occurs in the third trimester of pregnancy
- affects approximately 1% of women (some ethnicities have higher prevalence)
- is probably due to a combination of genetic, hormonal and environmental factors affecting bile acid transport

OC results in an increased risk of obstetric complications including spontaneous preterm birth, iatrogenic preterm birth and fetal death. There may also be maternal morbidity due to the itching and consequent sleep deprivation.

OC is diagnosed when otherwise unexplained itching and abnormal liver function tests (LFTs) and/or raised bile acids occur in the pregnant woman and both resolve after delivery. On occasions, the itching precedes the development of biochemical abnormalities and so repeat testing may be required if initial testing is normal and the likelihood seems high. It is recommended that LFT are monitored weekly once the diagnosis is made. There seems to be little evidence that repeated measurement of bile acids is useful after making the diagnosis – values don't appear to reliably predict fetal or pregnancy outcome. LFTs should be checked post-partum to ensure return to normal (pre-pregnancy) values.

Plasma lipase assay

After discussions with the surgeons, gastroenterologists and ED physicians in Southern DHB (along with physicians staffing the rural hospitals) **laboratories in Southern DHB region will introduce an assay for plasma lipase from 8th December 2014**.

- This assay will replace the current plasma amylase assay.
- Lipase will be assayed in: Invercargill, Queenstown, Dunstan, Dunedin and Oamaru.
- Gore and Balclutha Hospitals have point of care devices for measuring amylase and these will continue to be used.
- At the request of some clinicians, amylase will continue to be available in Dunedin and Invercargill laboratories but will not be routinely assayed.

It is expected that this change will bring with it improvements in sensitivity and specificity for the diagnosis of pancreatitis. However, like amylase, lipase is not completely specific for pancreatitis and values may be elevated in a wide range of conditions including:

- chronic kidney disease
- cholecystitis
- diabetic ketoacidosis
- coeliac disease
- intestinal obstruction or infarction
- some medications

In one study a plasma lipase ≥3x the upper reference limit had sensitivity and specificity of 64% and 97% for the diagnosis of acute pancreatitis.[1] It has been suggested that lipase rises earlier than amylase and stays elevated for longer

As there are a large number of request forms in circulation with an 'Amylase' tick box, **where this box is ticked or amylase is written without qualification**, it will be assumed that this is a 'routine' investigation of possible pancreatic pathology and **lipase will be assayed**. If an amylase assay is specifically requested, it must be made clear on the request that this is the case. As the stock of forms diminishes, we will ensure that new print runs incorporate a 'Lipase' tick box where appropriate. It may be helpful if those who are able to do so can update practice management systems to replace 'Amylase' with 'Lipase' in the test ordering software.

The reference interval for serum / plasma lipase is 13 – 60 U/L.

1. Sutton PA et al The role of routine assays of serum amylase and lipase for the diagnosis of acute abdominal pain. Ann R Coll Surg Engl. 2009 Jul;91(5):381-4.

HBA1c in gestational diabetes mellitus (GDM)

The MOH recommendation is to screen all women at 20 weeks.

Those with HbA1c =>50 have diabetes and should go into a 'Diabetes in Pregnancy' pathway.
Those with HbA1c =<40 should receive a 50g challenge at 24-28 weeks with follow-up
Those with HbA1c 41-49 should receive a 75g GTT at 24-28 weeks
The new print of the Midwives Request Form has had HbA1C added, requests added to the old forms will be accepted

Faecal calprotectin

A recent audit of requests received by the laboratory at Dunedin Hospital revealed that most faecal calprotectin (FCP) requests (63%) were for investigation of diarrhoea or abdominal pain. Only 71% of those with positive results (and not known to have IBD) had follow up investigations.

FCP has become established as a marker of intestinal inflammation. While it is useful in identifying those with inflammatory bowel disease (IBD) who require endoscopy[1,2], it should be remembered that elevated levels are not specific for IBD. High values can be seen in any cause of intestinal inflammation, in NSAID use and in neonates and infants[3]. The lack of specificity for IBD means that FCP *SHOULD NOT* be the first line test in the investigation of abdominal symptoms. In particular, infective causes of persistent symptoms should be excluded before requesting FCP.

One of the primary indications for measuring FCP is chronic diarrhoea (for which there is no infective cause) - an important sign of possible IBD. A corollary of this is that patients who have formed stool are unlikely to have significant gastrointestinal inflammation. FCP assay is not warranted in this group. Additionally, the stool sampling procedure for the FCP test is unreliable with formed stool.

The laboratory uses a 'cut-off' for FCP of 50 ug/g stool. The specificity of the test for IBD is increased at higher concentration and some have suggested a 'grey zone' of 50 – 150 ug/g. When the pre-test probability of IBD is low, it is recommended that before referring individuals with FCP in the range 50-150 ug/g for endoscopy, a repeat test is obtained. If still within this 'grey zone', consider discussing the case with a gastroenterologist before referral.

In summary:

- Infectious causes of diarrhoea cause elevated FCP and should be excluded before requesting FCP.
- Raised FCP usually indicates intestinal inflammation but it is not specific for inflammatory bowel disease and other causes may warrant exclusion.
- Consider re-testing before endoscopy referral when faecal calprotectin is in the range 50-150 ug/g and the probability of IBD is low.
- Referral is warranted where the faecal calprotectin is higher than 150 ug/g.
- Testing calprotectin in formed stool is technically difficult and unlikely to be helpful and **will no longer be carried out.**
- FCP values in young children are higher than in adults with values of up to 550 ug/g being normal in neonates. Concentrations fall to adult levels by 4 years of age.

1. Waugh N et al. Faecal calprotectin testing for differentiating amongst inflammatory and non-inflammatory bowel diseases: systematic review and economic evaluation. Health Technol Assess 2013;17(55).
2. Tibble JA, Sigthorsson G, Foster R, Forgacs I, Bjarnason I. Use of surrogate markers of inflammation and Rome criteria to distinguish organic from non-organic intestinal disease. Gastroenterology 2002;123(450)
3. Hestvik et al. Faecal calprotectin concentrations in apparently healthy children aged 0-12 years in urban Kampala, Uganda: a community-based survey. BMC Pediatrics 2011;11(9)

Gentomycin / Tobramycin / Vancomycin Testing

These assays are unavailable from 0830 to around 1130 in Otago and Southland due to maintenance requirements on the second cobas lines. Should you have an urgent requirement related to pre-dosage levels please notify the laboratory prior to 0830 so that the take down of the analyser can be delayed.

MICROBIOLOGY MATTERS

MRSA Swabs

From 1st January 2015 the DHB is changing the policy for MRSA screening swabs. Instead of two swabs - nasal and perineum - one nasal swab will be collected. When collecting the specimen insert one swab into both nostrils, place the swab into the tube containing transport media. If the patient has any open wounds or infected lesions swab these as well with a separate swab(s). If the area is dry moisten the swab in the transport media before swabbing. Place the swab in the tube containing transport media. Label all swabs with the patient's full name, NHI, date of birth, site, date and time of collection. Please indicate on the form the swab is for MRSA screening and the site/s swabbed.

Microbiology Urine Processing

From 1 Dec 2014 u**rine dipstrips will no longer be routinely tested.**

Urine dipstrips are a point of care test to assist clinicians in determining whether to send a urine specimen to the laboratory for analysis and whether empirical treatment is appropriate.

In the laboratory all urine specimens will continue to be assessed microscopically for white blood cells, red blood cells and epithelial cells. Specimens with elevated white blood cells on microscopy will have culture performed. Currently the decision to culture is based on a combination of dipstrip and microscopy results. Specimens from patients who are pregnant, post renal transplant, neutropaenic/leucopenic, immunocompromised, children <10 years or are undergoing assessment prior orthopaedic surgery will continue to be cultured irrespective of microscopy results.

Dipstrip testing will be available on request for indications other than infection.

If you would like to discuss the proposed change please contact either Dr James Ussher(Ph. 4702924, email: james.ussher@sclabs.co.nz) or Dr Antje van der Linden (Ph. 4702920, email: antje.vanderlinden@sclabs.co.nz)

Transportation of Microbiology Specimens

When there is likely to be a delay of greater than 2 hours (or 30 minutes in the case of urine specimens) between specimen collection and receipt in the Microbiology Laboratory, please ensure that specimens are refrigerated as soon as possible after collection to ensure the best quality result. At room temperature bacteria continue to divide, resulting in rapid overgrowth of cultures. Specimens which should NOT be refrigerated are genital swabs, blood cultures, and CSF specimens

Parasite PCR

We will shortly be changing the method used for detecting faecal parasites from EIA and Trichrome stain to the more sensitive PCR. You will notice that routine parasite requests will now *report Blastocystis hominis*, *Dientamoeba fragilis*, *Entamoeba histolytica* and *Cyclospora*, in addition to *Giardia* and *Cryptosporidium* as currently reported. Requests on patients where clinical details indicate recent travel will continue to be examined microscopically for other Endoparasites.

Chlamydia Swabs – Self Collect Vaginal swabs (purple top dry swab)

The label on the BD Self Collect Vaginal swabs (purple top dry swab) does not have an area for writing the patients name. To ensure adequate labelling of the specimens to meet minimum

requirements additional labels are being provided with each order of swabs requested. Label all specimens with the patient's full name, NHI, date of birth, site, date and time of collection.

Please do not over-order Chlamydia swabs, we have recently been experiencing supply problems only to find a number of sites were holding significant numbers of expired swabs.

Group B Streptococcus screening in Pregnancy

In March this year the Microbiology laboratory started enforcing the requirement of a combined Vaginal/Rectal swab collected at >35 weeks gestation, for Group B Streptococcus screening in pregnancy. The laboratory is receiving a number of swabs where the form indicates Vaginal/Rectal swab but the swab is labelled LVS or Vaginal swab only. Swabs labelled in this manner will not be processed as they do not meet best practice requirements. Ensure the specimen collected is a Vaginal/Rectal swab and the specimen is labelled V/R or Vaginal/Rectal.

COMMUNICATION

Phoned results - please do not be offended when we ask for your name, as a matter of policy our staff are required to log the ID of the caller and the time of the phone call in relation to any results being given out by phone.

In the case of results which fall outside our critical limits we both phone and fax to the referrer or their designated out of hours contact. Please ensure that the laboratory has those details, we have had two recent instances of grossly abnormal results where we have had problems locating anyone to take responsibility for acting on them. *RCPA – It is the responsibility of the requesting GP to complete the request form with sufficient patient details and clinical information to permit effective out of hours communication between the laboratory and any out-of-hours provider*.

Phone Service - For the 3 months Aug-Oct 2014 we took 13,798 calls in Dunedin; about 150 calls per day. The average time waiting for an answer was 20 seconds and the average talk time was 67 seconds. Less than 4.4% of callers waited longer than 90 seconds and less than 2.3% of callers waited longer than 2 minutes for an answer

Patient Results – due to confidentiality issues we do not normally email results with the exception of self requests from patients which have been set-up to be secure. Any patient wanting to use this method for reporting needs to fill in the appropriate form obtainable from one of the Collection Centres, it is not sufficient for the referrer to simply put the patient's email address on the request form.

SPECIMEN MISIDENTIFICATION

Three recent incidents have highlighted the risks of pre-labelling blood tubes or vials for cervical smears (in all cases the patient hasn't turned up and the container has been used for another patient). Pre-labelling is particularly worrying in relation to Histology samples which are not normally able to be recollected and are processed with no certainty of the identification.

The other common errors are using the incorrect pre-printed labels and printing off a form for a relative of the patient. In the laboratory we no longer use pre-printed labels, labels are handwritten and details checked off on the request form.

In the hospital in particular follow-up of incidents often shows that the patient was not actually asked to confirm their details, nor has the wrist band been checked. For patient safety these basic requirements must always be met.

Cervical Smears

It was proposed that from 1 December unlabelled and mislabelled cervical smears would no longer be accepted for testing, due to ongoing discussions with NCSP this will be delayed to January 12th

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REQUEST FORMS

Please remember to write collection time on forms and specimens – especially for specimens originating from rural areas where delivery may take a number of hours. A number of analytes are time-dependent (e.g. glucose, potassium); and recording the collection time can be crucial for correct interpretation of the result.

A reminder that practice nurses should not be requesting tests under their name. Requests under the contract are accepted from Medical Practitioners, Nurse Practitioners, Midwives (limited schedule as on the Midwife Request Form), and Oral Surgeons. Referrals from Allied Health professionals are charged to the patient.

Travel History

Please note that travel history is always required in relation to requests for Lyme Disease (Rickettsia), Arbovirus and Faecal Parasites. Consultation with the Medical Microbiologist is also normally required.

FUNDING OF TESTS

Restricted Tests

A reminder that the following tests are restricted to Specialist only ordering:

IGFBP-3	Urine Iodine	Insulin (unless post bariatric)
Homocysteine	ApoE Genotyping	Dihydrotestosterone
Zinc	Selenium	Mercury
RBC Mg	DHEAS	Cortisol binding globulin
Vitamin B1/B6	HsCRP	Copper (unless post bariatric)
CoQ10		

Writing copy to the Specialist on the form is not sufficient; where we have checked with the specialist concerned most requests are not supported.

Note: These tests are available as self-request or as a charge to the patient.

Unfunded Tests

For tests which are not currently funded an application for funding can be made to the Clinical Laboratory Advisory Group.

URGENT TAXI POLICY

The Laboratory is not actually contracted to provide an urgent pickup service, and on occasions the requests we get are quite unreasonable. Please find attached a copy of our policy for the ordering of urgent taxis which will be strictly enforced.

With best wishes for a peaceful and blessed Christmas,

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