The Analyser

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Southern Community Laboratories

MEDLAB South

Welcome

To paraphrase Jane Austin, it is a truth universally acknowledged, that the demand for healthcare will always exceed the supply. In other words, we cannot currently, and perhaps never will, be able to afford all the healthcare we want.

Most healthcare in developed nations is paid for by an insurance model in one way or another: either via private insurance companies where certain patients, conditions or tests can be excluded from cover, or a publically funded system where exclusions from cover are trickier. These rely on a large proportion of people paying in, who are not taking out, as some people will 'take out' significant healthcare resource that is enormously expensive. Without this base of healthy people, the system collapses. Another substantial problem with the 'insurance' model is the lack of price transparency and adage of Nobel Prize winning economist Milton Friedman: "that no one spends someone else's money with that same care as they do their own". Thus, third party payer models are vulnerable to wasteful spending.

As a New Zealander with skin in this particular game, I would like to see our healthcare spend to be maximised – so that we get best value for money. Healthscope NZ is a private company, contracted by the DHBs to provide specific laboratory testing services and to actively manage demand to minimise low-value testing and waste. In order to achieve this, we are putting together a 'diagnostic stewardship' working party to look at low-value testing, and to introduce strategies to work with DHBs and referrers to address areas of low-value testing. This will involve investigating barriers to appropriate, mindful testing as well as what we can do in the laboratory to improve efficiency. In accordance with 'Choosing Wisely' we aim "to promote a culture where low value and inappropriate clinical interventions are avoided, and patients and health professionals have well-informed conversations around their treatment options, leading to better decisions and outcomes".

In this newsletter, we will be providing information around some of the tests we think are subject to low-value requesting. I hope you find it interesting and please be in touch if you would like to discuss further, offer corrections, have ideas, give feedback, etc.

Dr Arlo Upton
Clinical Microbiologist and Lead Clinical Pathologist
Arlo.upton@sclabs.co.nz

Low value tests

When we are acting as consumers in our day-to-day lives, we are consciously or subconsciously aware of what economists call 'opportunity cost', i.e. that resource spent once cannot be spent twice; you can buy the laptop or the desktop, but you do not have the resource to do both. With our limited healthcare budget, we should not be using it on low-value tests or low-value test situations.

Examples of low-level tests:

In the past few years we have been working on reducing or stopping low-value testing. An example is legionella serology. This is low-value for two reasons: firstly, for patients with moderately to severe community acquired pneumonia (requiring hospitalisation) legionella PCR is a superior test and has largely replaced serology for diagnostics; secondly, patients with legionnaires disease are sick, and so patients in the community with cough following gardening do not have legionnaires and requesting serology doesn't change clinical management (and requires two blood tests, three weeks apart).

Another low-value test is the routine vaginal swab sent from asymptomatic patients having a smear test. There is almost no clinical indication for a routine vaginal swab (that is used to diagnose vaginal candidiasis and bacterial vaginosis) on an asymptomatic woman.

Urinalysis is a common low-value test. In the past testing has been performed routinely, regardless of symptoms, on patients with smelly urine, those due to have a joint replacement, those with falls or confusion, etc. However, studies show that not only is this practice wasteful, the subsequent treatment of the asymptomatic bacteriuria detected can be directly harmful to the patient. Interestingly, we have had feedback that the orthopaedic nurses are now happy that they do not have to organise, sign-off, and follow up the urine tests previously done routinely on pre-operative patients. An example of how stopping unnecessary testing in the laboratory has also reduced subsequent unnecessary work for the clinical team.

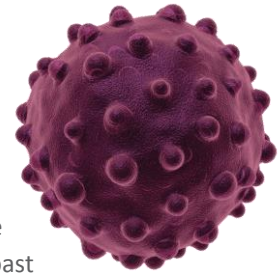
Low-value testing situations are those where the test may be appropriate but the testing situation is not. For example, patients having repeat request cards that include monthly tests (such as liver tests) and six monthly tests (such as expensive molecular tests). Unfortunately, systems are not advanced enough to stop the six monthly expensive test being done monthly with the liver tests.

An example of hospital-based low-value testing situation is that of ward patients having daily bleeds. I was guilty of this as a house surgeon. Obviously some patients require frequent monitoring (those in ICU, post-transplant, etc.); however, I suspect there are some patients on the medical and surgical wards enduring daily bleeds when they really do not need to. Again, if it were our skin and veins being stabbed daily we might take a more conservative approach.

Dr Arlo Upton

Hepatitis A virus

– Poor misunderstood virus, blamed for everything



Hepatitis A infection is rare in New Zealand. In 2018, there were 68 cases reported in NZ. For the past six years, there were an average of 62 cases each year. Despite the relatively few cases diagnosed and notified to public health each year (approximately one per hundred thousand population – i.e. 1.2/100,000 people) there are many more tests done (approximately 700/100,000 people). These numbers, and looking the requests, indicates to us that requesting for hepatitis A serology is often indiscriminate and not clinically indicated.

Hepatitis A testing is not part of the recommended routine work up for abnormal liver tests. It should be requested in someone with a clinically compatible illness (please see below), or in someone with new, unexplained, and significantly abnormal ALT with known epidemiological risk factors, or as part of a public health outbreak investigation.

Clinical illness:

In adults and older children hepatitis A infection presents with abrupt onset of prodromal symptoms including fatigue, malaise, nausea, vomiting, anorexia, fever, and right upper quadrant pain. Within a few days to a week, patients note dark urine, light-coloured stools, jaundice, and pruritus. The severity can vary from flu-like illness to more severe symptoms as described above. In younger children, infection is mild or asymptomatic. Relapse can occur in a small percentage of cases presenting with recurrent symptoms, often milder, within three weeks of partial or complete resolution of initial symptoms. ALT is raised, often in the hundreds (ALT < 100 is very unlikely to be due to hepatitis A infection unless in a young child).

Risk factors for acute hepatitis A infection are:

- Recent travel to a country with endemic hepatitis A (Pacific, Asia, South & Central America, and Africa)
- Sexual or household contact of person with acute hepatitis A infection
- Food exposures such as raw shellfish
- Men who have sex with men
- Intravenous drug use

There is no specific treatment for hepatitis A and the infection resolves without establishing chronicity.

Dr Arlo Upton

Therapeutic venesection: modern leech therapy

While bloodletting has been a therapeutic modality for centuries for all sorts of ailments, currently there are only three indications: haemochromatosis, polycythaemia, and porphyria cutanea tarda.

Venesection is a treatment for iron overload, to prevent the clinical manifestations of iron deposition in tissues such as the liver, heart, pancreas, pituitary gland, and joints. Hereditary haemochromatosis is the leading indication for therapeutic venesection in our region.

Most patients tolerate venesection well and it can be performed in the outpatient setting. However, patients with serious underlying medical conditions require hospital-based venesection. Generally, the risk of iron overload causing organ damage in a patient over the age of 75 years is unlikely.

The decision to provide therapeutic venesection is made by a haematologist, after the patient has been referred by their GP or other practitioner, and is based on the following information:

- For haemochromatosis, Full iron studies, PCR analysis for HFE mutation and clinical, biochemical or radiological evidence of iron overload
- For polycythaemia vera, blood count results and PCR analysis for JAK2 V617F

Frequency of ongoing venesections is based on laboratory results; initially patients need more frequent venesections before going onto a maintenance schedule.

Audit of venesection patients in some of the SDHB region in 2016 indicated that some patients did not have appropriate clinical indications for venesection initially, or that they no longer required regular venesections. Obviously, it is important that we monitor indications for this therapy as we would with any other clinical intervention. We will be working with the DHB and NZ Blood Service haematologists to ensure that all venesection in the SDHB is clinically appropriate. We will also be working on availability of venesection, recognising that accessing this service is difficult for patients living in rural areas.

Drs Anna Wan and Ian Morison

Serum Protein Electrophoresis

The indications for serum protein electrophoresis (SPEP) are broad but the large majority are centred around the investigation / exclusion of possible monoclonal gammopathy (e.g. myeloma). Electrophoresis should not be used as a screening test. The Dunedin Hospital laboratory performs 250-300 electrophoresis tests each week.

The frequency of repeat testing of SPEP and lack of appropriate clinical details have become a concern in the laboratory. We have noted that on some occasions testing is requested more frequently than required, e.g. three monthly or more frequently for patients with previous normal SPEPs. We also receive a significant number of requests for young children for whom no (or irrelevant) clinical indications are provided.

Interpretation of electrophoresis depends not only on the pattern itself but also the clinical history (including indication for testing) and other concurrent pathology. Below is the list of clinical indications adapted from BPAC (1).

Indications based on clinical findings:

- Suspected myeloma, Waldenström macroglobulinemia, primary amyloidosis or related disorders
- Unexplained bone pain or fracture
- Recurrent infection in adults

Unexplained peripheral neuropathy (not attributable to other causes e.g. type 2 diabetes, chemotherapy)

Indications based on laboratory findings:

- High (or low) total serum globulin or immunoglobulin
- Unexplained anaemia (myeloma is a recognised cause of non-iron deficiency anaemia) or other persisting cytopenias for which there is no other explanation
- Unexplained high ESR (>50) with normal CRP
- Unexplained hypercalcaemia or renal impairment
- Red cell rouleaux formation on blood film

Unexplained high urine protein with relatively low or normal urine albumin

Indications based on radiological findings:

- Lytic lesions in bone
- Unexplained osteopenia (not all patients with multiple myeloma will have osteolytic lesions)

SPEP is most frequently used in the investigation of possible or follow up of diagnosed paraproteinaemia. However, the most common finding from protein electrophoresis is a normal pattern or a polyclonal increase in immunoglobulins – typically marking some sort of inflammatory process. Neither of these findings warrants any further follow up with SPEP unless new findings (outlined in the tables above) are reported.

Monoclonal Gammopathy of Undetermined Significance – MGUS:

In previously untested individuals, the presence of a paraprotein (also known as a monoclonal protein) may be seen in approximately 5% of people > 70 years of age. Most paraproteins are small and not associated with any other clinical or pathological features of haematological malignancy. These are described as 'Monoclonal Gammopathy of Undetermined Significance (MGUS). Most MGUS proteins remain small and mark a clinically benign process. However, approximately 1% of MGUS proteins progress to myeloma each year. Therefore, low-risk MGUS proteins should be monitored (usually 6 monthly with renal function, CBC, and calcium in the first year and then annually after that if stable). Risk factors for progression of an MGUS paraprotein to myeloma include the age of the patient, the size of the protein, and the length of time that it has been present. Patients with high risk MGUS proteins (and findings that suggest a high likelihood of myeloma or some other lymphoproliferative malignancy) should be referred to a clinical haematologist.

See your local Health Pathway for guidance on managing MGUS in the community.

Myeloma:

In those with a paraprotein, a number of patient features indicate a high risk for the presence of myeloma. These are (2):

- Hypercalcaemia
- Renal impairment
- Anaemia
- Lytic lesions or compression fractures
- Others – e.g. recurrent infections, amyloidosis.

The detection of a paraprotein band together with these features (or high risk MGUS) warrants immediate referral to a clinical haematologist.

Children with suspected immunodeficiency:

Quantification of immunoglobulins (IgA, IgG, and IgM) is a far more efficient way of investigating immunoglobulin deficiencies. SPEP is insensitive and is not recommended.

Electrophoresis as part of a 'Wellness Check":

SPEP should not be used as a health screening tool. It has an extremely low rate of detection of clinically significant disease – especially under the age of 40 years. Most abnormalities found are not related to the presence of a paraprotein. The small number of unexpected paraproteins found are MGUS and the vast majority of these are very small. Their detection in a screening process means that the patient is given a medical 'diagnosis' for a condition which is not likely to cause them harm, will not be treated but, once found, must be monitored life-long.

SPEP is not required for the investigation of the following conditions:

- Hair loss
- Immunisation
- Diarrhoea
- Joint pain/arthritis
- Oedema
- Dietician referral
- Lethargy/tiredness (very common and all other relevant causes should be excluded first)
- Iron deficiency anaemia (very common and in its own right does not warrant EPP)

References

(1) Making Sense of Serum protein bands. http://www.bpac.org.nz/BT/2011/July/serum-protein.aspx (accessed July 2019)

(2) Clinical Practice Guideline – Multiple Myeloma. http://myeloma.org.au/wp-content/uploads/2017/10/MSAG-Clinical-Practice-Guideline-Myeloma-V4-March-2017.pdf (accessed July 2019)

Drs Geoff Smith and Ian Morison