Consultation Document

Erythrocyte Sedimentation Rate (ESR) Testing Proposed Changes

Contents

1. BACKGROUND 3

2. CONDITIONS IN WHICH THE ESR MAY PROVIDE ADDITIONAL INFORMATION 4

3. PROPOSED CHANGES 4

4. CONSULTATION PROCESS 4

4.1 WHAT ARE WE CONSULTING ON 4

4.2 WHO IS BEING CONSULTED 4

4.3 CONSULTATION TIMELINE 5

4.4 HOW TO GIVE FEEDBACK 5

5. DECISION 5

1. BACKGROUND

The erythrocyte sedimentation rate (ESR) is one of the most frequently requested haematology tests. It is cheap and relatively easy to perform; however, the usefulness of this test has decreased as new methods of evaluating inflammation have been developed. The ESR is an indirect measure of inflammation; it does not measure an analyte but rather a physical phenomenon that depends on a large number of physiological, pathological and analytical (test) variables.

Many clinicians will be familiar with the physiological and pathological variables that affect the ESR; however, they are probably not aware of the technical factors and quality issues which may limit its validity in guiding clinical management.

Technical factors which may give erroneous results and affect the ESR's validity include specimen age (>4hrs), improper filling of the ESR tube, inadequate anticoagulants, and room temperature.

From a quality perspective there is considerable variation between results obtained by different methods, very poor precision, and lack of suitable material for quality assurance. Thus, results performed at different laboratories are not comparable.

CRP (C-reactive protein) is a specific protein produced by the liver that rises rapidly with onset of inflammation, and also declines rapidly with resolution. CRP rises within 4-6 hours, peaks at 40-50 hours, and returns to physiological levels in up to one week. The CRP is more analytically robust and has better concordance between laboratories.

Traditionally, the ESR has been used in two broad clinical contexts:

1. Screening for the presence of paraproteins when a diagnosis of multiple myeloma, Waldenstrom macroglobulinaemla, or monoclonal gammopathy of uncertain significance is suspected.
2. Assessing the acute phase response when inflammatory disease is suspected.

The laboratory tests of choice in the first circumstance are serum protein electrophoresis and a serum free light chain assay.

The laboratory test of choice for assessing the acute phase response is the C-reactive protein (CRP). It is acknowledged that, in a few clinical circumstances, the ESR may provide additional information, provided that the limitations of the test are borne in mind.

The literature supports the role of ESR in the diagnosis and monitoring of children with SLE, rheumatic fever, and Kawasaki syndrome, and also in the diagnosis of peri-prosthetic infections of the hip and knee joints

2. CONDITIONS IN WHICH THE ESR MAY PROVIDE ADDITIONAL INFORMATION

The ESR may be used in the initial assessment of the conditions listed below. Thereafter the CRP is recommended for ongoing monitoring except in the rare instance when only the ESR is raised.

Giant cell arteritis represents an exception to this rule and both the CRP and ESR are recommended as part of the initial work up as there may be non-concordance between the ESR and CRP. This approach increases the sensitivity to 99%.

- Paediatric inflammatory bowel disease: ulcerative colitis/Crohn's disease (initial presentation
- Systemic lupus erythematosis (SLE)
- Connective tissue disorder
- Vasculitis/arteritis
- Juvenile idiopathic arthritis
- Rheumatoid arthritis
- Polymyalgia Rheumatica
- Kawasaki Disease
- Rheumatic fever
- Hodgkin lymphoma
- Suspected prosthetic joint inflammation
- Temporal(Giant cell) arteritis

3. PROPOSED CHANGES

Labtests and Northland Pathology are proposing to restrict use of ESR in keeping with changes that have been made in other laboratories around New Zealand. The proposal is to limit ESR testing to the above mentioned conditions or any other indication provided that this is discussed and approved by one of the Labtests haematologists. Requesting clinicians will need to ensure that the indication is clearly printed under the **clinical details section of the request form** to ensure that the test is processed.

4. CONSULTATION PROCESS

4.1 WHAT ARE WE CONSULTING ON

We are consulting on restricting ESR testing in primary care.

4.2 WHO IS BEING CONSULTED

Stakeholder consultation will be with the following groups:

- Primary care referrers
- PHOs

- Public and private rheumatologists, orthopaedic surgeons, paediatric gastroenterologists, dematologists, infectious diseases physicians, and haematologists
- DHB chief medical officers for Auckland region and Northland

4.3 CONSULTATION TIMELINE

Consultation document	Friday 29th July 2016
Feedback	Until 5pm Friday 19th August 2016
Decision and announcement	Friday 2nd September 2016

4.4 HOW TO GIVE FEEDBACK

Please give feedback before 5pm on Friday 19th August 2016 to:

Dr Lesley Overend

Haematologist, Labtests and Northland Pathology Laboratory

Lesley.Overend@labtests.co.nz

5. DECISION

The decision will be made available on the Labtests and Northland Pathology websites, and those giving feedback will also be informed of the decision by email.

References

- Husain et al., C reactive protein and erythrocyte sedimentation rate in orthopaedics. The University of Pennsylvania Orthopedic Journal 2002; 15: 13-16
- Myer et al., The C-reactive protein for detection of early infections after lumbar microdiscectomy. Acta Neurochirurg 1995; 136 (3-4): 145-150
- Ng, et al., Erythrocyte sedimentation rate, plasma viscosity and C-reactive protein in clinical practise. Br J Hosp Med; 1998; 58 (10):521-523
- Hilliard et al., C-reactive protein and ESR: what can one test tell you that the other can't? Contemporary paediatrics 2002; 30: 72-74
- Unkila-Kallio et al., Serum C –reactive protein, erythrocyte sedimentation rate and white blood cell count in acute haematogenous osteomyelitis in children. Paediatrics January 1994; vol 93 (1): 59-62
- CRP vs ESR, assessing and measuring the inflammatory response. BPAC July 2005

- The diagnosis of Periprosthetic joint infections of the hip and knee. Guideline and evidence report adopted by the American Academy of orthopaedic surgeons. Board of directors Hune 2010

- Osmon et al., Diagnosis and management of prosthetic joint infection: Clinical practice guidelines by the infectious diseases society of America. Clinical Infectious diseases 2013; 56 (1):e 1-25

- How age and sex affect the erythrocyte sedimentation rate and C-reactive protein in early Rheumatoid arthritis. Orthopaedics news article www.mdlinx.com/**orthopedics**/news-article.cfm/.../rheumatoid-arthritis. Nov 7, *2014*

- *BPAC Best Tests September 2005*
  http://www.bpac.org.nz/resources/campaign/crp_esr/bpac_crp_vs_esr_besttests_wv.pdf

- *BPAC CRP vs ESR*
  http://www.bpac.org.nz/resources/campaign/crp_esr/bpac_crp_vs_esr_poem_2005_wv.pdf

- *BPAC: Should I still use both CRP and ESR when investigating temporal arteritis?*
  http://www.bpac.org.nz/BT/2011/March/docs/best_tests_mar2011_temporal_arteritis_pages12-13.pdf