

Tumour Marker Requesting

Guidance for Non Specialists



The Association for
Clinical Biochemistry
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Institute of
Biomedical Science



The Royal College of Pathologists
Pathology: the science behind the cure

PSA (prostate specific antigen)

MEN ONLY

Relevant cancer:

Prostate cancer

Typical clinical presentations that might warrant measurement:

Frequency, urgency, nocturia, dysuria, acute retention, back pain, weight loss, anaemia, prostate enlargement.

Caution – other benign conditions marker may be raised in:

Benign prostatic hyperplasia, **urinary tract infection**, prostatitis and after catheterisation.

Caution – other malignancies marker may be raised in:

None known.

Notes

- Take samples prior to digital rectal examination and >6 weeks after invasive procedures (e.g. prostatectomy)
- Objective information for asymptomatic men requesting PSA measurement is available at www.cancerscreening.nhs.uk.

CA125 (cancer antigen 125)

WOMEN ONLY

Relevant cancer:

Ovarian cancer

Typical clinical presentations that might warrant measurement:

Pelvic mass; **persistent** (more than 12 times / month) and continuous or worsening unexplained abdominal or urinary symptoms, abdominal bloating, increased urinary frequency

Caution – other benign conditions marker may be raised in:

Pregnancy, menstruation, endometriosis, benign ascites, acute hepatitis, chronic renal failure, heart failure, pleural effusion and others.

Caution – other malignancies marker may be raised in:

Breast, cervical, endometrial, hepatocellular, lung, pancreatic and other cancers.

Notes

- NICE recommends CA125 be measured in women with the symptoms above. Women with CA125 >35 kU/L should be referred for pelvic ultrasound. Women with CA125 ≤35 kU/L whose symptoms persist must be reassessed at 6 weeks.

CEA (carcinoembryonic antigen)

Relevant cancer:

Colorectal cancer

Typical clinical presentations that might warrant measurement:

Follow-up and monitoring of patients with colorectal cancer. Not recommended for diagnosis

Caution – other benign conditions marker may be raised in:

Irritable bowel syndrome, jaundice, hepatitis, chronic renal failure, pleural inflammation and others.

Caution – other malignancies marker may be raised in:

Breast, gastric, lung, medullary thyroid carcinoma, mesothelioma, oesophageal, pancreatic and other cancers.

Notes

- CEA is most appropriately used for monitoring colorectal cancer patients and detecting recurrence. CEA should be measured at 2 to 3 monthly intervals following treatment.
- CEA measurement may very occasionally be helpful in frail elderly patients in whom cancer is suspected.

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AFP & hCG (α -fetoprotein, human chorionic gonadotrophin)

Relevant cancer:

Testicular / germ cell cancer

Typical clinical presentations that might warrant measurement:

Diffuse testicular swelling, hardness and pain at any age.

Caution – other conditions marker may be raised in:

Liver regeneration, hepatitis, benign liver disease (AFP), pregnancy (hCG).

Caution – other malignancies marker may be raised in:

Hepatocellular, colorectal, gastric, lung and other cancers.

Notes

- As well as contributing to diagnosis, AFP and hCG measurements are mandatory in the post-treatment monitoring of germ cell tumours following well-defined protocols that depend on stage and treatment.

Paraproteins (M-Protein)

Relevant cancer:

B-cell proliferative disorders (e.g. multiple myeloma, AL-amyloidosis, Waldenstrom's macroglobulinaemia and some low grade non-Hodgkin's lymphomas).

Typical clinical presentations that might warrant measurement:

Unexplained anaemia, bone pain, weakness or fatigue, raised ESR, viscosity or abnormal globulins, hypercalcaemia, renal failure, spontaneous fractures and/or recurrent infections.

Caution – other conditions where paraproteins may be present:

Conditions, usually autoimmune or infective, in which there is a chronic stimulation of the immunoglobulin response, monoclonal gammopathy of unknown significance (MGUS), and following peripheral blood stem cell transplant (PBSCT), with an increasing prevalence in the elderly.

Notes

- When requesting paraprotein investigations please send both a serum and a urine specimen. Some laboratories use serum free light chain measurement to help screen for paraproteins but urine investigation may still be required at a later stage.

Top tips for optimal requesting

- The need for informed consent should be considered.
- Opportunistic screening with panels of tumour markers is not helpful. CA125 should not be measured in men nor PSA in women.
- Serial results are usually most useful as the main application of serum tumour markers is in monitoring patients with a previously diagnosed malignancy.
- Provision of brief and relevant clinical information on the request form is very helpful to the laboratory.
- CA 15-3 and CA19-9 should only be requested as and when advised by the specialist secondary care team. This should be indicated on the request form.
- Laboratory staff are always pleased to provide advice on test requesting and interpretation.

Useful resources

For further information please see the following:

- **General:** 'Serum tumour markers: how to order and interpret them' <http://tinyurl.com/TumourMarkers>
- **General:** www.labtestsonline.org.uk
- **PSA:** www.cancerscreening.nhs.uk/prostate/
- **CA125:** <http://guidance.nice.org.uk/CG122>
- **Paraproteins:** <http://tinyurl.com/Paraproteins>
- **AFP & hCG:** www.sign.ac.uk/pdf/sign124.pdf

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