Local guidance on: The investigation of an unexpected, isolated raised alkaline phosphatase (ALP)

- The two main sources of ALP are from liver or bone. However, other sources include intestinal and placental ALP.
- Consider:
  - Age- children and adolescents have age related reference ranges, however levels can be slightly higher during a growth spurt
  - Pregnancy- up to 2 - 4 fold higher than upper limit of normal (ULN) in third trimester
- The first line of investigation is to determine the source of ALP. Measurement of gamma-GT is suggested and raised levels indicate a hepatic rather than bone origin.
- An isolated raised ALP typically indicates a bone origin, therefore we suggest to follow-up with bone profile and PTH (particularly if the patient has a normal gamma-GT level).
- We suggest using the following algorithm (modified from BMJ and Map of Medicine recommendations):

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Isolated raised ALP on repeat

Raised gamma-GT

No

Likely bone origin

Investigations:
- Calcium
- Phosphate
- PTH
- PSA (males)
- 25-OH vitamin D

Yes

Likely liver disease

Investigations:
If ALP <1.5 times ULN repeat in 3 months
If ALP >1.5 times ULN/persistently raised complete the following:
- Liver ultrasound
- Antimitochondrial antibodies

If no obvious source measure ALP isoenzymes
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References:
- [http://www.mapofmedicine.com](http://www.mapofmedicine.com). Requires a log-on (available to all healthcare professionals). Once logged in, under Department select Medicine>Hepatology>Abnormal liver tests>Abnormal liver function tests
- Shipman KE et al. Interpreting an isolated raised serum alkaline phosphatase level in an asymptomatic patient. BMJ. 2013 Apr 3; 346: f976. [http://www.bmj.com/content/346/bmj.f976](http://www.bmj.com/content/346/bmj.f976)
- ACB Venture Publications. Primary Care and Laboratory Medicine. 2010.