Evaluation of Lactate Dehydrogenase Isoenzymes (LDI)

**Increased Lactate Dehydrogenase (LDH)**

Exclude *in vitro* haemolysis
Perform Isoenzymes (if cause of LDH elevation is unclear)

**Elevation of LD1**
- Myocardial infarction
- Red blood cell diseases (e.g. haemolytic anaemia), B12 deficiency (↑ MCV)
- Some muscle dystrophies (e.g. Duchenne muscular dystrophy)
- Kidney disease
- Kidney transplant rejection
- Testicular/Germ cell tumours/rare neuroendocrine tumours
- Intense exercise training

**Elevation of LD2**
- Infections
- Lung diseases (LD 2 & 3)
- Congestive heart failure
- Lymphocyte turnover (e.g. lymphomas/EBV) (LD 2 & 3)

**Elevation of LD3**
- Skin (psoriasis)
- Lung disease/injury
- Lymphocyte turnover (e.g. lymphomas/EBV)
- Splenic disorders (infarct)
- Platelet destruction

**Elevation of LD4**
- Placenta disorders

**Elevation of LD5**
- Liver diseases: hepatitis, toxins (paracetamol)
- Skeletal muscle diseases/injuries
- Some intestinal problems
- Pleural fluid: neutrophils (LD 4 & 5)

**Elevation of multiple LDIs**
- Elevation of LD1, LD2, and LD5 may be caused by strenuous exercise.
- Elevation of all the LDIs may be caused by injury to multiple organs (e.g. congestive heart failure, advanced cancers, autoimmune diseases, or shock).

**Increases in Midzone Levels**
- Malignant pattern (crescendo-decrescendo pattern)

**Storage**
- Marked LD4/LD5 decrease occurs if sample stored below room temperature. If liver/skeletal muscle LD1 is suspected, a fresh specimen is recommended.

**Extra isoenzyme bands**
- Macrocomplex (usually benign)