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| **2DD — Liver function, creatinine kinase and lipid level tests – (Lipid lowering**  **therapy)** |
| **Summary of Intervention** |
| Lipid modification therapies are a group of medicines which help to lower the level of low-density lipoprotein (LDL) cholesterol in the blood. High levels of LDL cholesterol are linked to the development of cardiovascular disease (CVD) which includes ischaemic heart disease and stroke. There is strong evidence that lipid modification therapy improves the mortality for people at high risk of cardiovascular diseases as well as those with established disease. Clinically significant side effects associated with lipid modification therapy include skeletal muscle and liver and toxicity.  Skeletal muscle toxicity related to lipid modification treatment may result in myopathy, myositis and rhabdomyolysis. Whilst these conditions are potentially serious, they occur rarely. The likelihood of muscle toxicity increases with higher lipid modification therapy doses and in patients with predisposing co-morbidities. Creatine kinase is a blood marker which becomes elevated in various skeletal muscle pathologies and is used, alongside signs and symptoms, to diagnose muscle toxicity related to lipid lowering treatment.  Adverse effects on the liver related to lipid modification treatment are very rare and include transaminitis (raised transaminase liver enzymes in the blood) as well as jaundice and liver failure. Liver function testing is used alongside signs and symptoms to diagnose liver toxicity.  **This guidance applies to adults aged 19 years and over.** |
| **Number of interventions in 18/19** |
| Data are not currently available |
| **Proposal** |
| **Creatine Kinase Testing**  — Creatine kinase should not be routinely monitored in asymptomatic people who are taking lipid modification therapy  — Creatine kinase measurement is indicated:  — Prior to lipid modification therapy initiation in patients who have experienced generalised, unexplained muscle pains or weakness (whether or not associated with previous lipid-monitoring therapy)  — If a patient develops muscle pains or weakness whilst on lipid modification therapy.  **Liver Function Testing**  — Baseline liver function should be measured before starting lipid modification therapy  — Liver function should be measured within 3 months of starting treatment and at 12 months, but not again unless clinically indicated  — Routine monitoring of liver function tests in asymptomatic people is not indicated after 12 months of initiating lipid lowering therapy  — ALT can be used as a measure of liver function.  **Lipid Testing**  — Measure full lipid profile by taking at least one lipid sample before starting lipid modification therapy. This should include measurement of total cholesterol, HDL cholesterol, non‑HDL cholesterol and triglyceride concentrations. A fasting sample is not needed.  — Total cholesterol, HDL cholesterol and non‑HDL cholesterol should be measured in all people who have been started on high-intensity statin treatment (both primary and secondary prevention, including atorvastatin 20 mg for primary prevention) at 3 months of treatment and aim for a greater than 40% reduction in non‑HDL cholesterol.  — Consider an annual non‑fasting blood test for non‑HDL cholesterol to inform discussion at annual medication reviews.  Further details on creatine kinase, liver function and lipid testing during lipid lowering treatment are outlined in NICE guidance and ECS guidance for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. |
| **Rationale for Recommendation** |
| **Creatine Kinase**  In order to identify people with pre-existing skeletal muscle disorders, NICE guidance recommends that people are asked about symptoms of persistent, generalised, unexplained muscle pain prior to lipid lowering therapy initiation.  If these symptoms are present, creatine kinase levels should be measured before starting treatment.  People taking lipid lowering therapy have an increased incidence of develop muscle disorders and there is consensus that patients should be advised to seek medical advice if they develop significant muscle symptoms (such as pain, tenderness or weakness) so that creatine kinase levels can be measured.  There is no evidence to support routine monitoring of creatine kinase in asymptomatic people on lipid lowering treatment.  **Liver Function Testing**  Baseline liver function testing is performed before lipid lowering treatment initiation to identify patients with pre-existing liver dysfunction or secondary causes of dyslipidaemia.  Product literature states that lipid lowering treatment is contraindicated in people with active liver disease or persistently raised serum transaminases (>3 times the upper limit of normal, ULN). It also states that lipid modification therapy should be initiated with caution for people with known hepatic impairment.  NICE guidance suggests that liver function is measured within 3 months of starting treatment and at 12 months. This is consistent with product literature which states that moderate elevations of serum transaminases (< 3 x ULN) have been reported following therapy with simvastatin. These changes appeared soon after initiation of therapy, were often transient, were not accompanied by any symptoms and interruption of treatment was not required.  There is no evidence to support routine monitoring of liver function testing in asymptomatic people after 12 months on lipid lowering treatment.  **Lipid Testing**  There is no evidence to support routine monitoring of lipid levels in asymptomatic people after 3 months on lipid lowering treatment. Consider an annual non‑fasting blood test for non‑HDL cholesterol to inform the discussion in annual medication reviews. |
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