

Complement: C3, C4

Background: Complement tests, most commonly C3 and C4, are used to determine whether deficiencies or abnormalities in the complement system are causing, or contributing to, a patient's disease or condition. Complement testing may be ordered to help diagnose the cause of recurrent microbial infections, angioedema or inflammation. It may be used to help diagnose and monitor the activity of acute or chronic autoimmune diseases such as systemic lupus erythematosus (SLE). It may be tested and monitored with immune complex-related diseases and conditions such as glomerulonephritis (a kidney disorder), serum sickness, rheumatoid arthritis, and vasculitis. When immune complexes form, complement helps to clear them from the blood, temporarily decreasing complement levels.

C3 and C4 levels are the most frequently ordered, but others, such as C1 inhibitor, may be ordered when other deficiencies are suspected. C3 and C4 are often ordered together as the relative levels are often important. When an acute or chronic condition has been diagnosed, complement testing may be used to help give a rough idea of the severity of the condition with the assumption that the severity is linked to the decrease in complement levels. Complement testing may also be ordered occasionally when a doctor wants to monitor the current activity of a condition.

Complement levels may be decreased due to a hereditary deficiency (relatively rare) or due to increased consumption. Hereditary deficiency in one of the complement proteins will usually lead to a high frequency of recurrent microbial infections. Decreased complement levels also are associated with an increased risk of developing an autoimmune disease. Both C3 and C4 levels are typically depressed in SLE while C3 alone is low in septicemia and infections caused by fungi or parasites.

If the deficiency is due to an underlying acute or chronic condition, complement levels will usually return to normal if the underlying condition can be resolved.

Decreased complement levels may be seen with: Recurrent microbial infections (usually bacterial), Autoimmune diseases, including SLE and vasculitis, Hereditary angioedema, Acquired angioedema, Various types of kidney disease, including glomerulonephritis, lupus nephritis, membranous nephritis, IgA nephropathy. Also in Malnutrition, Septicemia and Serum sickness (immune complex disease).

Increased and decreased complement levels will not tell the doctor what is wrong with a person, but they can give an indication that the immune system is involved with a condition.

Reference
range:

C3: 88 - 201 mg/dl

C4: 16 – 47 mg/dl

Sample:

1 ml of Serum or 2 ml of whole blood in a plain tube.

Duration:

2 hours after receiving the sample.