# CD34 (Stem cell) count and viability

Also see below for CD3 rare event/CAR-T cell panel

## General information

Autologous peripheral blood stem cell transplants are used in the treatment of haematological malignancies. The patient's haematopoietic system is stimulated to produce stem cells that are released from the bone marrow into the peripheral blood circulation. The objective of the predictive CD34 stem cell count is to provide an indication of the best timing for apheresis. After collection the CD34 count and viability are used to monitor the quality of harvested cells and to provide an indication as to the likelihood of the collection being sufficient for engraftment. This procedure may be repeated until a clinically significant yield is achieved for transplantation to take place.

In allogenic donation, stem cells from a Matched Unrelated Donor (MUD) are used. The number of stem cells to be infused must be above a certain level to ensure marrow engraftment.

**Specimen transport:** At room temperature or frozen

**Repeat frequency:** Each day or stem cell harvest

**Special precautions:** Immunology should be notified that a CD34 stem cell count is urgent and when to expect the sample.

## Laboratory information

**Normal reference range:** No normal reference ranges are provided.

**Volume and sample type:** Peripheral blood stem cell harvest, cord blood or bone marrow in heparin and tissue culture medium.

**Method:** Flow cytometry

**Participation in EQA scheme:** UK NEQAS CD34+ Stem Cell Enumeration Programme

**Turnaround time (calendar days from sample receipt to authorised result):** Median - 1

## Clinical information

**Indications for the test:** Stem Cell Transplantation

**Factors affecting the test:** A delay in processing the sample can affect viability

**ICE reference:** CD34 Profile

# CD3 rare event/CAR-T cell panel

## General information

There are several reasons a CD3 absolute count and viability may be requested by a clinician. The CD3 absolute count is measured in stem cell transplant products when it is important that the number of CD3 T cells present is as low as possible (rare event testing), to prevent Graft versus Host disease.

CAR-T therapy is a new type of cancer treatment that uses the immune system to kill cancer cells in patients with B cell lymphoma and B cell acute lymphoblastic leukaemia. CAR-T therapy works by modifying a patient's own T cells and infusing them back into the patient.

Donor Lymphocyte Infusion (DLI) is a form of immunotherapy used for patients that have received Matched Unrelated Donor (MUD) transplants and can eliminate the need for a second transplant in some patients who have relapsed. DLIs are used to induce remission of the patient's disease by a process called 'graft versus tumour' effect. The donor T cells will attack and control the growth of the residual malignant cells and lead the patient into remission. The viability of these lymphocytes is measured to determine whether the cells are still living so they can be used for treatment.

**Specimen transport:** At room temperature or frozen

**Repeat frequency:** Pre- and post-transplant

**Special precautions:** Immunology should be notified that a sample is urgent and when to expect the sample.

## Laboratory information

**Normal reference range:** No normal reference ranges are provided.

**Volume and sample type:** Peripheral blood stem cell harvest, DLI, cord blood or bone marrow in heparin and tissue culture medium.

**Method:** Flow cytometry

**Participation in EQA scheme:** UK NEQAS for Immune Monitoring

**Turnaround time (calendar days from sample receipt to authorised result):** Median - 1

## Clinical information

**Indications for the test:** Stem Cell Transplantation, CAR-T cell therapy and DLI

**Factors affecting the test:** A delay in processing the sample can affect viability

**ICE reference:** CAR-T profile

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