

Donor Screening

DONOR SCREENING AND TESTING

To promote successful transplantation and safeguard the health of each recipient, the risk of disease transmission through organ transplantation must be minimized. The potential donor's medical and social history is carefully assessed to determine medical suitability by thoroughly reviewing their hospital medical records, diagnostics, PharmaNet and past medical records. We interview the medical professionals involved in the potential donor's care and their next-of-kin (NOK) or friends and family who have a close relationship with the potential donor, as per Health Canada.

ASSESSMENT NEEDED FOR A POTENTIAL DONOR

- Complete head-to-toe physical examination for observation of: tattoos, piercings, and evidence of needle tracks, discoloration or sores on mucous membranes, swollen lymph nodes, masses and/or moles.
- Arterial blood pressure (ABP), central venous pressure (CVP), heart rate, temperature, urine output.
- Height, weight, abdominal girth.
- Ventilator settings.
- Documentation of sedation received.
- BP support (e.g. inotropes, vasopressors, and antihypertensives).
- Intravenous (IV) fluids (type and rate).
- Other IV medications (type, dose and rate).
- Known allergies.

BASIC DONOR TESTING

- ABO - Blood Group (Cross and Type)
- Arterial Blood Gases (ABGs)
- CBC
- CK, Troponin (I or T) q6-8h
- Urinalysis q24h
- Toxicology screen (blood or urine) unless overdose ruled out by MD
- C & S – sputum, urine and blood (include gram stain) q24h
- 12 lead EKG
- CXR – with interpretation/report
- Levels of serum electrolytes, creatinine
- Liver profile – Bilirubin (total and direct), AST, ALT, ALP, LDH, Total Protein, Albumin, GGT, PT/INR, PTT q4-6h
- Renal profile -Urea, Glucose, Ca, PO₄, Mg, Lactate q4-6h
- Pancreas profile – Blood sugar, amylase or lipase

ADDITIONAL TESTING NEEDED FOR HEART AND LUNG ASSESSMENT

- Bronchoscopy is considered for all potential lung donors. A second bronchoscopy will be performed in the Operating Room (OR) if the lungs are accepted for recovery.
- Echo – include assessment of left ventricular (LV) function/ejection fraction (EF), valve function, description of wall motion and function, evaluation of heart function.
- Coronary angiography may be requested by the transplant surgeon depending on age, risk factors and ECHO results of the potential donor.
- ECG – electrocardiogram for heart.

TO DETERMINE TISSUE MATCHING BETWEEN DONOR AND RECIPIENT

ABO and histocompatibility also referred to as HLA testing (Human Leukocyte Antigen) or tissue typing, is completed. This testing detects antigens (genetic markers) on white blood cells and is used to assess tissue compatibility between the donor and potential recipients. HLA is a critical factor in determining which patient is selected to receive a donated organ and reduce the potential for rejections after transplantation. All the blood tubes needed for tissue typing is in the Red Box.

TO TEST FOR INFECTIOUS DISEASES

To minimize the risk of disease transmission through organ donation, the donor's blood is carefully screened for the presence of transmissible diseases. The information is used to help determine the medical suitability of organs. All the blood tubes for infectious diseases are in the Red Box.

According to the Health Canada Guidance Regulations, minimum serological testing for infectious diseases includes the following:

- HIV-1, HIV-2 (Human immunodeficiency virus antibody);
- HTLV-1, HTLV-2 (Human T-cell lymphotropic virus);
- HBsAg (Hepatitis B surface antigen);
- Total anti-HBc (Hepatitis B core antibody);
- HCV (Hepatitis C virus antibody);
- Syphilis;
- West Nile Virus (seasonal);
- Toxoplasmosis for heart donors;
- *Cytomegalovirus* (Anti CMV IgG) (total antibody to CMV);
- *Epstein-Barr virus* (Anti EBV IgG) (antibody to EBV).

To address the possible transmission of infectious agents in donors under 18 months of age or up to 12 months beyond breast-feeding, the serology of the birth mother is also tested.

The results of infectious diseases are needed prior to organ transplantation (**Toxo, CMV, EBV may be reported retrospectively).

THE HEMODILUTION PROCESS

Prior to drawing blood specimens for infectious disease testing, the hemodilution status of the donor must be established. This is done to ensure accuracy of testing for the infectious disease markers.

The following information will be needed:

- Red cell product volume
- Colloids (e.g. plasma, albumin, dextran, pentaspan, platelets, cryoprecipitate or TPN)
- Crystalloid volume given in the one hour prior to serology draw.

The BCT Coordinator will complete the hemodilution calculation.

If a sample is determined to be hemodiluted and there was a sample drawn prior to the patient receiving multiple infusions, there may be a need to obtain this sample (pending permission of the Coroner if considered a Coroner's case).

SCREENING FOR MEDICAL-SOCIAL HISTORY

The donor's medical-social history is critical in identifying the risk versus benefit for a potential transplant recipient. BCT staff will complete a medical-social questionnaire interview with the appropriate individuals.

Information gathered through the questionnaire:

- Assists in screening for the transmission of bacterial, viral and prion-associated diseases (e.g. Creutzfeldt-Jakob disease or CJD) that may be transmitted through transplantation.
- Identifies evidence of conditions or diseases that may make donation unsuitable.
- Identifies donors with activities that are considered increased-risk for infectious disease transmission.
- Identifies those who may be genetically predisposed to certain diseases that may preclude donation.
- Identifies if maternal serology may be necessary for a pediatric donor.

Final acceptance of organs and tissues for transplantation rests with the receiving transplant surgeons.