BC TRANSPLANT
An agency of the Provincial Health Services Authority

Donation after Death by Circulatory Criteria – DCC
General Information

Prior to recovering organs, BC Transplant will have confirmed the following:

- suitability of the potential organ donor
- consent for donation
- two signed physician's notes for Plan to Move to Comfort Care or Withdrawal of Life Sustaining Treatment (WLST)
- separate declarations of death will be completed by two physicians/nurse practitioners, prior to the start of the organ recovery surgery

Multi-organ recovery surgery will take approximately 3-4 hours to complete.

Operating Room Checklist - DCC

The Operating Room staff will be informed of the organs intended to be recovered. Please add the following additional items to your basic laparotomy set-up.

A. *Back tables* (total of 2-3)	1 for your hospital scrub nurse 1 for the BCT instruments and perfusion lines 1 on standby in case lungs are recovered
B. *Single Basins* (total of 5)	2 in ring stands *(one for slush, one for sternal saw)* 2 on the BCT back table *(one for slush, one for liver)* 1 extra basin if lungs are recovered (on the lung back table)
C. *Mayo Stands*	1 for your hospital scrub nurse 1 for Cardiothoracic Surgeons (if lungs are recovered) *Undraped mayo stand goes over donor's head prior to draping. Drapes go over top of mayo stand.*
D. Cautery Machines	0 *(however, please always keep one available in the room)*
E. Suctions	3 suction units
F. IV Poles	1 for Below diaphragm *(liver, kidneys, pancreas)* 1 for Above diaphragm *(lungs)*
G. Extras	Medium Clip Appliers and Bars Lap Sponges Large Orthopedic Mallet Sterile Gowns for up to 6 personnel Bone Wax Silk Ties: number 2 or 4, and 2-0, 3-0, and 4-0 Umbilical ties 2 x 1000cc bags of NS

H. *Defibrillator* Not required

I. *Bronchoscope* <u>If lungs are being recovered:</u> Flexible Bronchoscope with sputum trap needs to be available at start of case

J. Buckets of Ice Non-sterile ice for the end of the case (2-3 buckets)

K. Metal Bucket For the bleed-out line

L. Slush Machine <u>If a slush machine is available,</u> please make 4-6L of sterile slush

<u>Note:</u> The OR table needs to be removed from the OR since the recovery surgery will be done on the stretcher that the donor will arrive on from ICU

Equipment Supplied by BCT

- Preservation solutions and perfusion equipment
- Vascular and cardiothoracic instruments
- Stryker sternal saw & blade
- Chest and abdominal retractors
- Sutures
- Sterile slush for intra-abdominal cooling
- Storage containers and packing for recovered organs

Donor Hospital Personnel Required

- Scrub nurse
- Circulating nurse
- Anesthesiologist - will only be required if lungs are being recovered

Personnel Supplied by BCT

Below Diaphragm Recovery

- Two renal/hepatic surgeons
- One Organ Donation Specialist (ODS) and One Surgical Recovery Specialist (SRS) - there will always be two coordinators from BC Transplant on site during a DCC case, one in ICU (ODS) and one in the OR (SRS)
- One Organ Recovery Assistant (ORA)

Multi-Organ Recovery

- Same as above, plus an additional two cardiothoracic surgeons

The names of all visiting personnel will be given to the operating room. Occasionally, an out-of-province recovery team will accompany the BCT organ recovery team.

Liver/Kidney Biopsy

On occasion, when the liver or kidneys are being retrieved for transplant, a biopsy of one or both of these organs will be obtained by the recovery surgeon at the beginning of the organ recovery procedure. The Organ Recovery Team (BCT) may request that a local pathologist examine the frozen section biopsy for histological interpretation.

Please provide copies of any pre-transplant biopsy reports (frozen and permanent sections) to the recovery team, so that findings can be correlated with the recipient's immediate post-transplant clinical treatment.

Operative Report

A BCT *Record of Organ Procurement* form will be filled out by the BCT Surgeon in Charge at the time of the recovery. This form lists the personnel in attendance, the organs recovered and any noted abnormalities. A copy will be left with the patient's chart and the original retained by the recovery team.

Coroner's Cases

Two declarations of death have been completed prior to the patient's surgery; therefore an **organ recovery does not constitute an operating room death and does not automatically become a Coroner's case**. BCT does not require a BC Vital Statistics Certificate of Death. In Coroner's cases, permission from the coroner is obtained prior to the organ recovery surgery. Occasionally, the coroner will request, and subsequently make arrangements for, a pathologist to witness the surgery.

Care of Body Following Surgery

The BCT recovery surgeons will restore the external appearance of the body at the end of the procedure. Care of the body following the recovery surgery is according to your hospital's policy and procedure.

Sequence of Events

It is not BC Transplant's intent to disrupt your operating room schedule. However, with DCC donors, it is critical that the time set for the OR not be delayed.

For DCC cases, the OR needs to be completely set up prior to withdrawal of life sustaining treatment (WLST) because we cannot predict how quickly a patient will pass, and as soon as they do they will need to be moved into the OR for the recovery surgery. Timing for WLST requires coordination between the Family, the ICU, and the OR. Once this time is set, it is very important, especially for the family's emotional preparation, to not alter this time.

Also, with a donor who is hemodynamically unstable, or in multi-organ failure, the timing of the surgery is very important. Once an organ donor is confirmed, recipients awaiting a life-saving transplant are admitted to hospital for their transplant. In addition, once removed from the donor, lungs can only be stored on ice for 4-6 hours. This limited viability time means donor surgery must be done while the potential lung recipients are being prepared in the operating room at the transplant hospital.

Pre-operative Phase

Once the OR time is set, and therefore the expected time of WLST, the BCT Coordinator will contact the OR to discuss the arrival time of themself and the ORA, usually about one hour prior to the WLST.

An ICU/OR team briefing is often scheduled during the one hour prior to WLST. If available, we suggest the OR charge nurse and/or circulating nurse be available to attend. While the briefing is taking place, BCT's ORA and your hospital's scrub nurse will need to continue setting up the OR. The OR must be completely ready prior to WLST taking place in the ICU.

Prior to WLST, the BCT Coordinator will hold a briefing in the OR, with all of the OR staff and surgical team. At this time, the Coordinator will review with the team the organs to be recovered, the consent form, and the two doctor's notes showing the decision to move to WLST. BCT's surgeon(s) will check the back table to ensure that all the equipment needed is ready, and the sternal saw is loaded correctly and functional. It will also be discussed amongst the team, who will tuck the donor's arms, who will prep, and who will check the donor's ID band. All of these steps have to happen quickly when the donor is brought into the OR, so it is important that each team member knows their role.

When **the donor's family is ready,** the OR is completely ready, and the ICU staff is ready, life sustaining treatment will be withdrawn. During this time there will be constant communication between the OR and the ICU via two BCT Coordinators. Once the donor's heart has stopped, there will be an additional five minute waiting and observation period. It will be during this five minutes that the surgeons will scrub in.

At the conclusion of the observation period, two physicians (not associated with BCT) will reassess the donor and then complete the declarations of death. Immediately follow this, the donor will be wheeled to the OR and surgery will begin.

Instrument Set-up

- **Green** handled instruments are for below diaphragm and **Blue** handle instruments are for above diaphragm

The scrub nurse will work mostly with the below diaphragm surgeons, using the **green** instruments.

Blue instruments will be placed on a mayo tray. A mayo stand will be placed over the donor's face, prior to draping. Once the drapes have gone on over the mayo stand, the tray with the **Blue** instruments will be placed on the stand for the cardiothoracic surgeons to work from.

There is often not enough room at the head of the sterile field for a scrub nurse to directly assist the cardiothoracic surgeons. For this reason the surgeons help themselves from the mayo tray. However, if additional instruments are required, the scrub nurse will need to pass them up from the back table.

- BCT instrument pans are counted separately from hospital instruments. They are counted by the instrument prior to the recovery and then as a total set after (a total number of instruments for the **green** pan, and a total number of instruments for the **blue** pan) to ensure that we have all of our instruments

Bronchoscopy

- If the lungs are being recovered, as soon as the donor is brought into the OR, they will need to be intubated by the anesthesiologist, and a bronchoscopy maybe done by the cardiothoracic surgeon. (Intubation is only to re-inflate the lungs, NOT to resuscitate). Left and right bronchial washings may be taken for C&S gram stain, and sent stat. Please have the necessary supplies in the OR for the bronchoscopy and bronchial washings. These procedures will occur while the below diaphragm team is prepping and draping.

Positioning & Draping

Once the donor arrives at the OR doors, and two physicians have completed the declarations of death, the stretcher will be quickly moved into position in the OR. During a pre-withdrawal OR timeout, it will have been decided which person will perform each of the following roles:

- The arms must be securely tucked at the donor's sides (prior to WLST the donor will have been placed on a stretcher with a long sheet for tucking the arms)
- Skin is prepped from chin to mid thigh, bed line to bed line

- Once the cardiothoracic surgeon has completed the bronchoscopy, the mayo stand is placed over the donor's face, under the drapes

- Draping needs to expose the donor's entire chest and abdomen. It will consist of:

- Universal drapes

OR

- 2 Large split drapes

<u>Intra-operative</u>: (Until perfusion has begun, the following steps will occur very rapidly)

- Skin incision is made using a scalpel blade from sternal notch to pubic symphysis
- Balfour retractor is used for abdominal retraction
- Dissection using metz and debakeys is done down to the abdominal aorta for rapid cannulation and perfusion.
- The cannula is secured into the aorta using #4 Silk ties (60" cut in half). Have some loaded on westphals, and some free
- A bleedout cannula may be used based on surgeon preference. If used, it will be placed in the Vena Cava and also secured using #4 Silk ties. If not used, the organs will be bled out and suctioned from the abdominal and/or thoracic cavity
- Chest is opened using the Stryker saw with blade facing up
- A Cooley or O'Connor retractor will be used for thoracic retraction (based on surgeon preference)
- <u>If retrieving lungs</u>, an aortic root cannula will be placed in the pulmonary artery and secured with 4-0 Prolene suture, for perfusion of the thoracic organs
- Once the cannula(s) have been secured, perfusion will be started using cold solutions supplied and monitored by the BCT coordinator. **At the same time, the abdominal and thoracic cavities will be quickly packed with sterile slush.**

Now that the organs have been cooled, they will be dissected and retrieved

***<u>Important note if retrieving lungs:</u>** Anesthesia will be asked to inflate the lungs just prior to trachea being stapled. Once the inflated lungs are removed from the chest by the cardiothoracic surgeon, they, and all the instruments up on the top mayo stand, are to be considered contaminated because they have come in contact with the trachea which was open to the oral cavity.
For this reason, the surgeon, who is now also considered contaminated, will take the lungs to the separate lung back table. A retrograde flush of the lungs may be performed, then the lungs will be packaged by the surgeon and passed off to the BCT Coordinator.

- Once the packaged lungs have been passed off, and the cardiothoracic surgeon has unscrubbed, the circulating nurse may disassemble the contaminated lung back table

The organs are usually recovered in the following order:

- Heart (Removed to gain access to the lungs. It needs to be replaced in the chest cavity, prior to closure)
- Lungs
- Pancreas for Islets
- Liver

- Kidneys
- Adjunct Vessels
- Portion(s) of the spleen will be taken for tissue typing

The organs, with the exception of the lungs, will be packaged by the ORA and then passed off to the BCT coordinator

Postoperative

- Lungs will be sent by ambulance to the transplant hospital as soon as they have been recovered (Lower Mainland hospitals only).
- If organs must be sent to other programs (i.e. outside of BC), they may be sent ahead of the team via ambulance to an awaiting jet at the airport
- The BCT Coordinator will take all other organs at the end of the case and deliver them to their respective transplant hospitals. It is for this reason that the BCT team will depart very quickly following the end of the surgery.
- The recovery Surgeon in Charge will sign the Record of Organ Procurement and a copy will be left on the donor's hospital chart
- Postoperative care of the donor should be done according to your hospital policy
- BC Transplant is available for post-op debriefing, in-services and ongoing educational needs. Please contact us anytime at 604-877-2240.