The following outlines the standard operating procedures of the NCSU Veterinary Health Complex’s Bone Marrow Transplant Service (BMT).

**Scheduling:**

1. The BMT Clinical Technician (CT) in conjunction with the senior clinician will schedule cases to come in at three week intervals. The patient will be scheduled in UVIS under the Oncology Service.

2. The preference will be to admit these cases on Thursday’s.

3. Once the BMT client has signed the informed consent and left a deposit for the low end of the estimate, the patient will be admitted into the General Hospital Ward and placed in a kennel or cage.

**Hospitalization:**

1. Once the patient has been admitted, it will be housed in the General Hospital ward Sunday through Thursday. A bone marrow aspirate, CBC, and serum chemistries will be collected. Both bone marrow and blood will be submitted for flow cytometry and PARR analysis. An echocardiogram will be performed. In addition, any other staging tests deemed necessary by the senior clinician will be performed during this time (Echocardigram, ultrasound, chest radiographs, etc.).

2. Leukopheresis will occur on Monday’s, with TBI/BMT occurring on Fridays. The patient will be moved into the Intermediate Care ward (IMC) on Friday after TBI/BMT. A CBC will be performed q 24 hours to monitor post-TBI cytopenias and hematologic recovery for the remaining days of hospitalization. Serum chemistries will also be performed as directed by the senior BMT.

3. The patient will stay in IMC post TBI/BMT, until neutrophils are less than 1,000/ml, at which point the patient will be moved to A-ward semi-isolation. This will usually occur the Saturday or Sunday after TBI.

4. The patient will remain in IMC reverse isolation, until the neutrophils return to approximately 1,000/ml, at which point the patient may return to IMC. This rebound usually takes 4-5 days.
5. When the platelets drop to 10,000 or less, the patient **may** be transferred to ICU per the senior BMT clinicians decision. At the point at which blood products are indicated, due to the signs of progressive bleeding (worsening petechiation, ecchymosis, nose bleeds, hematuria) a senior ICU clinician will be asked to approve a whole blood transfusion after speaking to the senior BMT clinician. (Please see Blood Bank SOP #3). Transfusions may only be given to BMT patients in ICU or IMC.

6. At the point at which the patient is considered stable and has adequate neutrophils and platelets, it may be readmitted to IMC for the remainder of its hospitalization.

**Procedures:**

1. As noted above, a bone marrow aspirate and blood will be obtained within 24 hours after the patient’s arrival. A blood sample will also be collected by the Blood Bank which will be cross matched to two donors in case a whole blood transfusion becomes necessary. Whole blood will not be given until it has been radiated (20Gy). Therefore, the Radiation Oncology Service must be notified well in advance if a transfusion is required.

2. Leukopheresis is performed on Monday’s in room 2364 of the Terry Center. Once the patient has been induced and maintained on inhalant anesthesia, a 12 gauge double lumen jugular catheter is placed by the BMT CT. Two additional lateral saphenous vein catheters will be placed for calcium gluconate and dexmedetomidine CRI. The senior BMT faculty member or fellow will then connect the patient to the leukopheresis unit and the procedure will be initiated. Once the patient is deemed stable and the harvest is under way, anesthesia can be transitioned from inhalation gas to CRI dexmedetomidine, and the BMT CT will take over patient monitoring. The procedure will last anywhere from 3-6 hours depending on the patient’s body weight (which indicates the number of cells needed for harvest and transplantation). Once the harvest is complete, the patient will remain heavily sedated while the 12 gauge catheter is removed and a double lumen 16 gauge jugular catheter is aseptically placed. One of the two lumens will be heparinized, and the port wrapped in betadine soaked gauze. The short, lateral saphenous vein catheters can be removed at this time.

3. The day after the leukopheresis procedure (Friday) the patient will be transported to radiation therapy in the morning to be anesthetized and administered the first of four rounds of total-body irradiation. This procedure will be repeated once daily for four days, after which the patient will be transplanted with the cells harvested the previous Monday.

**Patient Care:**

1. The BMT CT will be responsible for providing some of the treatments necessary during the 1st shift hours Monday-Friday, and may be called in to assist with transfusions/treatments after hours as needed. The CT will update IMC/ICU technicians on any changes in blood work, patient orders, transfusions, etc. as they occur.
2. IMC/GH/ICU technicians will provide treatments per the COF and/or ICU flow sheet which will be reviewed and signed daily by the senior BMT clinician or BMT Fellow.

3. Specific protocols for standardized treatments are outlined in the BMT treatment section in the GH training manual.

4. If questions arise about the patient’s care, status or treatments, it is suggested that during week days the BMT CT be contacted first, followed by the student if applicable, then the resident, then the senior BMT clinician. If none of these individuals is responsive, either the IMC/GH supervisor or the CT supervisor may be paged. After hours and on the weekends the resident should be contacted first, then the senior BMT clinician.