Heart failure is a debilitating medical condition that affects 5.7 million adults in the United States (CDC, 2019). Intra aortic balloon pumps (IABP) are the bridge treatment when pharmacologic interventions prove inadequate for heart failure patients. IABPs are traditionally inserted through the femoral line which poses risks for infection and limiting mobility in pre-transplant patients thereby making these devices an under utilized therapy for patients requiring transplant. The recent innovation of axillary insertion of IABPs (axillary IABP) has seen a rise in pre-transplant use — in the Cardiac Care Unit (CCU), axillary IABPs allow for patients to safely mobilize while still benefiting from mechanical therapy during their extended hospitalization. Nurses, Physical Therapists, and Occupational Therapists play a vital role in the early stage of mobility to maximize the patient’s functional recovery. Early mobilization in the CCU requires careful assessment and management. The Johns Hopkins activity measure post acute care (JH-AM-PAC) (Shunrock, Appel & Toonstra, 2015) was used in conjunction with JH highest level of mobility (JH-HLM) (Hoyer et al., 2016). Nevertheless, IABP has been associated with bleeding, infections, hematoma, thrombus, limb ischemia, etc. (De Jong et al., 2018). Hence, malpositioning of the IABP, injury to the axillary artery and hemorrhagic shock are some of the challenges the ccu nurses are facing. It is crucial that CCU nurses must be alert for possible complications are well trained and knowledgeable with IABP.

Objectives:
At the end of this poster presentation, the learner will be able to:
1. Discuss the importance of early ambulation of patients in the critical care with Ax IABP.
2. Discuss ways to safely ambulate patients with Ax IABP.

Introduction
The group research was based on a systematic review of existing evidence that addresses a focused clinical question. This includes evidence based literature research, peer reviewed and from the last five years.

Seach Strategy:
PubMed, EBSICO, CINAHL(Nursing, CDC and Medline/OVID) Keywords used: Axillary IABPs, Mobility, Critical Care, Safe mobility, heart failure, Intra aortic balloon pump, mechanical circulatory support, activity measure post acute care, vascular complications, mobilizations, physical therapy.

Review of Literature
Nwaejike, et al. (2017) retrospectively identified three cases of ax-IABP support for post-cardiac surgery (IABG) heart failure patients requiring prolonged mechanical circulatory support. In all three studies, ax-IABP supported patients were allowed early ambulation and aggressive physical therapy. Maximum daily-ambulated distance on these patients were from 400 to 2800 feet. Duration of IABP support was up to 43 days and these patients were subsequently discharged with no complications. Sufficient amount of literature reviews and the table outlined from literature reviews were compatible with the narrative report. The conclusion of the study is consistent that ax-IABP is practical with suitable safety profile that allows patient support for days to weeks while allowing for ambulation.

Shumock, et al. (2015) presented a retrospective level I study on a patient with heart failure with ax-IABP as a bridge to left ventricular assist device (LVAD) implantation. AxIABP was implanted and patient was able to ambulate 182.88 m with a rolling walker on day 33 subsequently received his LVAD on day 40. Though a low quality survey and requires additional replicated results, the study was able to demonstrate a safe and feasible mobility for the patient with ax-IABP.

Hoyer, et al. (2016) utilized a sizeable group of 3352 patients in a retrospective quality improvement study to promote multidisciplinary mobility measured with JH-HLM and reduce length of hospital stay. This single research study design spanned 12 months within 2 general medicine units in a large teaching hospital. Limitations, such as ability to replicate results in a generalized setting with a different population, were noted. Nevertheless, findings consistently show how mobility in the acute hospital setting is feasible and can reduce the length of hospital stay with improved JH-HLM mobility scores between admission and discharge increased from 32% to 45% with an adjusted median length of stay reduction of .40 - .57 days.

Between the years 2007-2013, Macapagal et al. (2017) and the team at Houston Methodist Hospital utilized the novel approach of ax-IABP to safely mobilize their patients on average 1-2 days post device implantation. A nursing care protocol was developed that not only included increased mobility but also lab and assessment schedules to promote sleep. Small rate of complications of limb ischemia including bleeding, pain, and numbness were reported. Patients in the retrospective study were 100% mobile pre-transplant.

A follow up article was published by the same team (Macapagal, et al., 2019) explaining further results of ax-IABP and mobility in pre-transplant patients. The clinical practice guidelines utilized in the 10 day span study is explained in detail. This article serves as a update to their previous paper (Macapagal, et al., 2017) and continues to support that ax-IABP allows for necessary early mobility which is of paramount importance to patients awaiting heart transplant.

De Jong, et al. (2017) reviewed 20 articles regarding complications resulting from IABP placement published from 1990 to March 2016, were compiled and included in the current 20 studies in this literature. The study involved 23,731 patients ages 63 and above, mostly male (76.7%) and had an average femoral IABP insertion of 8 hours and 6 days. This literature review identified limb ischemia as the most common complication post femoral IABP insertion. Furthermore, longer the IABP duration correlated with increased rates of developing vascular complications like ischemia, pseudoaneurysm, hematoma, bleeding or hemorrhage and even amputation. Patients had a higher risk for developing these complications when they have diabetes, hypertension and peripheral vascular disease.

Practice Question
Does the placement of the device matter in terms of mobility optimization before surgery?

P – The population of focus are patients in the CCU that require intra-aortic balloon pump (IABP) supportive therapy.
I – The intervention is the implementation of early mobility in patients that have intra-aortic balloon supportive therapy.
C - Patients who have axillary placed IABP are compared to patients with femoral placed IABP in terms of mobility tolerance and progression.
O - The outcome is patients who have axillary placed IABP will show greater mobility capability in comparison to patients with femoral placed IABP. Greater mobility will be evident through the patients’ activity tolerance and progression.

Level and Quality of Included Evidence
It is evident that as technology and innovation continue to advance in the field of heart failure, nurses PT and OT will continue to collaborate to promote early mobilization and self-care. As the use of axillary IABP becomes more recognized, it is clear that early mobility protocol will improve patients’ functions, strengths, endurance and promote self-care. It has psychological benefits as well—pre-transplant patients will have positive outlook for recovery.

Translation to Practice
Current practice in the CCU for promoting mobility and mental well-being for pre-transplant ax-IABP patients include the following: ambulation as early as 24 hours post insertion with RN/MD then progress to unit staff and family with a goal of BID walks, addressing any pain limiting mobility early, use of arm slings to protect the affected extremity per patient preference, relocation to larger rooms for increased in room mobility, daily morning chest x-rays for device verification performed post night shift, adjustments of nursing assessments/lab collection/imaging to promote sleep and energy for mobility, encouraging weekly family gatherings, and having the availability of support from post transplant patients.

References
[9] Synthesis