

### First Blood & Marrow Transplant (BMT) Program in Nepal: a high cost procedure in a low economy country made available in a public hospital

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**Program Background:** Nepal is a low income country with over 27 million people and a GDP per capita of \$424 in 2014. Only 5–15% of patients diagnosed with severe hematologic disorders in need of BMT can travel abroad where over 85% of patients have no resources and eventually die for their condition. Civil Service Hospital is a public hospital in Kathmandu, where on average 200 patients with hematologic malignancies and 160 with severe aplastic anemia are seen yearly.

**Program Design:** In 2012 this hospital initiated a collaboration with the Binaytara Foundation (USA) and affiliated at no cost with the University of Illinois at Chicago to develop the first BMT program in Nepal. The plan had 3 phases. The first included: identification of a Nepalese physician interested in hematology and BMT (project leader), space allocation by hospital administration and agreement on a business plan. The second phase, in 2013 and 2014, consisted of: training of a BMT physician, a pathologist and a clinical nurse in Chicago, teleconferences and meetings with staff and hospital administration to review their plans for Hepa filters, flow cytometry lab, cell cryopreservation equipment and quality management for BMT.

**Outcome and Evaluation:** Civil Service Hospital approved a 2 bed BMT unit and anticipated that the cost of BMT (approx \$5000 compared to approx \$100,000–200,000 in the US) will be largely subsidized for indigent patients. In the summer of 2015 the BMT unit was installed and validated and the first autologous stem cell transplant scheduled in the winter. In order to succeed in this project we identified three indispensable elements: 1) a local project leader dedicated to BMT and commitment from the hospital to allocate resources, 2) an affiliated experienced BMT center volunteering in providing training and education on standard of care/quality management; 3) financial support to cover the expenses for staff training.

**Going Forward:** Since a high cost procedure such as BMT is highly necessary in Nepal to care for a large patient population with severe blood disorders and limited financial resources, UIC will remain advisor to Civil Service Hospital for monitoring of patient outcome and establishment of data reporting to the International BMT registry and assisting with further improvements.

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### An innovative approach to rural antenatal care: A report of a mobile clinic network in northern Tanzania

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**Introduction/Program Purpose:** Antenatal care reduces maternal mortality by screening for and educating patients about high risk obstetric conditions. In Sub-Saharan Africa, where maternal mortality is 14 times greater than in developed countries, the ability to reach antenatal clinics is limited as most of the population lives in rural areas. In the Ngorongoro District of Tanzania, a unique network of mobile outreach clinics addresses this barrier by bringing antenatal care to the local communities, thus eliminating the distance needed to attain proper care.

**Structure/Results:** The mobile outreach clinic system in the Ngorongoro District was created by Catholic missionaries during the 1980s and continues to provide care through a public-private partnership. A purpose of the clinic system is to provide maternal healthcare to areas where transportation is a significant barrier to healthcare access. The clinic includes 28 village locations, visited monthly. Antenatal services are provided, including: gathering of obstetric history, HIV screening, workup for anemia and hypertension, assessment of fetal wellbeing, providing iron and folic acid supplementation as well as malaria prophylaxis and deworming medication. If necessary, a woman is transported to the district hospital for further care.

From 2008 to 2012, records from 14 clinic sites and 6,099 antenatal visits were analyzed. The average age of patients was 25.4 years (range of 12–45). On average, parity of patients was 3.2 (range 1–12) and average interval between pregnancies was 2.8 years. Of all visits, 22% were <20 weeks gestational age. Women averaged 1.7 visits during their pregnancy and visited the clinics 1.5 times ( $p = 0.003$ ) more frequently in the dry season (July–December) than in the rainy season (January–June).

**Conclusion/ Future Directions:** Improving maternal morbidity in low resource rural settings remains a challenge. Ngorongoro's outreach clinic network increases accessibility of antenatal care in a rural area. It is possible that other interventions such as obstetric ultrasound could be implemented within this clinic structure. Although this clinic network improves accessibility to antenatal care in Tanzania, more studies are needed to demonstrate a relationship between reductions in maternal morbidity and mortality and this antenatal care intervention.

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### Bridging the gender gap in science and technology in Africa: The African Research Academies for Women (ARA-W)

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**Program/Project Purpose:** While significant strides to increase the number of women in STEM fields have been made in the USA and other nations, many African nations still trail behind. In