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Dodoma

REPORT ON THREE-MONTH OBSERVATIONAL TRAINING AT San GERARDO HOSPITAL, MONZA ITALY

Project Title: Improving Diagnosis and Treatment of Aplastic Anemia and Acute Leukemia at Benjamin Mkapa Hospital

PART I: OBSERVATION TRAINING REPORT

1. Introduction

From April 1st to June 30th, 2025, I undertook a clinical observational training at San Gerardo Hospital in Monza, Italy. This program was supported by a Scholarship Grant from IACH and HELP3 and aimed to build foundational capacity toward establishing treatment and transplant program for Aplastic Anemia and Acute Leukaemia at Benjamin Mkapa Hospital (BMH) in Dodoma, Tanzania.

2. Objectives of the Training

- To understand the comprehensive management of Aplastic Anemia and Acute Leukemia in both adults and Paediatric Patients
- To gain practical exposure to bone marrow transplant protocols.
- To learn advanced diagnostic modalities such as flow cytometry and molecular testing.
- To identify feasible aspects for local adaptation and Implementation at BMH.

3. Methods of Learning

- Daily morning meetings and case discussions with consultants and residents.
- Clinical ward rounds, outpatient clinics, and operating theatre observations.
- One-on-one mentorship sessions with senior consultants.
- Participation in multidisciplinary team (MDT) meetings.
- Laboratory hands-on exposure, literature reviews, and international conference attendance (EHA 2025).

4. Units Visited and Activities Undertaken

Weeks 1–6: Pediatric Transplant Unit

Weeks 7–8: Chemotherapy Ward

Week 9: Adult Hematology Transplant Unit

Week 10: EHA 2025 Congress (Milan)

Week 11: Laboratory Unit (Flow Cytometry, Molecular Genetics including HLA Lab, and Cytogenetics)

- **Week 12:** Outpatient Clinics and Continued Lab Training

5. Learning Outcomes

A. Clinical Knowledge Acquired

i. Disease Biology & Clinical Presentation

I studied the pathophysiology of Aplastic Anemia and Acute Leukemia in-depth, including common presentations, clinical complications, and disease progression. Case-based discussions enabled a better understanding of how the disease manifests across different age groups.

ii. Diagnostic Modalities

Diagnostic Modalities at San Gerardo Hospital:

- Flow cytometry for immunophenotyping and MRD assessment
- PCR and NGS for molecular profiling
- Cytogenetic studies including karyotyping and FISH

Comparison to BMH:

- Currently, diagnosis at BMH is largely morphological.
- There is no in-house flow cytometry or molecular diagnostic capability.

iii. Treatment Protocols

- **Basic:** Chemotherapy protocols for induction, consolidation, maintenance

  Immunosuppressive therapy for Aplastic Anemia
- **Advanced:** Immunotherapy (e.g., Blinatumomab), CAR-T, HSCT (Hematopoietic Stem Cell Transplant)
- **Supportive:** Anti-microbial prophylaxis, G-CSF, nutritional and psychosocial support

iv. Comparative Analysis: Feasibility at BMH

- **Feasible:**
  - Standard chemotherapy protocols
  - Flow cytometry (with strategic plan to ensure sustainability)
  - Supportive therapies (e.g., Antibiotics, Antifungals, Antivirals, Medications for chemotherapy complications such as GCSF, Antiemetics, Pain Medications)
  - Leverage existing services affiliated with the Sickle cell Disease Bone Marrow Transplantation services
- **Long-Term Goals:**

- Dedicated unit in the ongoing construction of the Oncology Building at BMH
- Improving access Molecular and cytogenetic diagnostics
- Full-fledged transplant services
- Hostel for upcountry patients and Families

B. Health Systems Learning

- Multidisciplinary coordination is critical in managing complex cases.
- Role of supportive care (psychosocial, educational, and recreational) in long-term treatment.
- Importance of post-transplant follow-up and structured outpatient care.
- Housing support (hostels) for patients traveling long distances.

PART II: ACTION PLAN FOR IMPLEMENTING APLASTIC ANEMIA AND ACUTE LEUKEMIA SERVICES AT BMH

1. Training and Human Resources

- Short term preliminary training for Flow Cytometry at KCMC followed by Observorship in Italy
- Propose additional training for:
  - Nurses (chemotherapy and transplant care) additional nurses to be exposed to oncology and haematology care may include attachment at local hospitals MNH, KCMC and Bugando where the services are more active and running
  - Laboratory technicians (local and international training depending on availability of training opportunities)
  - Improvement in Microbiology and pharmacy services

2. Diagnosis

- **Immediate Priority:** Establish in-house flow cytometry for diagnosis and MRD monitoring.
- **Short-Term Action:**
  - Pre-training at KCMC for the designated technician
  - Logistics and support for international training in Italy
  - Procurement or placement of flow cytometry machine and reagents

- **Long-Term Plan:** Introduce molecular and cytogenetic testing

3. Treatment Infrastructure

- Temporarily dedicate two rooms in the BMT unit for leukemia care.
- Use existing chemotherapy regimens adapted from European protocols.
- Long-term: Completion of the Oncology building with dedicated isolation and transplant rooms

4. Supportive Care

- Collaborate with HELP 3, Government of Tanzania to develop and run patient hostels
- Integrate school and play therapy services into the pediatric haematology and oncology unit
- Strengthen nutrition, psychosocial, and infection control support

5. Cost Coverage and Sustainability

- Flow cytometry: Supported via internal hospital budgeting and HELP 3 assistances or fundraising and donations from Philanthropists
- Chemotherapy: Work with the pharmacy department to identify essential drugs and procurement options while also engaging with local and international support such as Tumaini la Maisha and Help 3
- Social support: Leverage NGO support (e.g., HELP 3) and government collaboration

6. Stakeholder Engagement

- Ministry of Health
- National and zonal hospitals (e.g., KCMC, Bugando, MNH)
- NGOs and international partners
- Community-based organizations and patient support groups

7. Strategic and Regulatory Framework

- Develop a strategic plan outlining:
    - Scope and timeline
    - Budget and procurement needs
    - Key performance indicators (KPIs)
- Obtain ethical and regulatory approvals
- Ensure alignment with international treatment guidelines

8. Monitoring and Evaluation

- Start with a pilot group of patients
- Collect data on diagnostic accuracy, treatment outcomes, and adverse events
- Gradually scale up based on capacity and outcomes
- Set long-term benchmarks for staffing, technology, and patient survival

Conclusion This observational training at San Gerardo Hospital has been transformative in shaping not only my clinical skills and knowledge but also practical, resource-consciousness, and evidence-based pathway for improving leukaemia and aplastic anemia care at BMH. With phased implementation, multisectoral collaboration, and continuous training, we can establish a functional and sustainable treatment program tailored to the Tanzanian context.