

## Public health through science

Viewpoint

### African Burkitt's lymphoma: could collaboration with HIV-1 and malaria programmes reduce the high mortality rate?

Sam M Mbulaitwe, Ambrose O Taluun, Martin D Ogwang, F Ellis McKenzie, John L Ziegler, Donald M Parlin

Burkitt's lymphoma is an aggressive lymphoma that is common in sub-Saharan Africa but rare elsewhere. First described in African children by Denis Burkitt, the children per year—varies from \$37,500 to \$187,500 (0–02–0.08% of Uganda's health budget of \$246 million).<sup>10</sup> Nevertheless, children with Burkitt's lymphoma—even

Lancet 2008; 375: 1664–65  
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## Pathology of BL - Lacor

- The situation at Lacor was slightly, but not significantly, better than at Makerere
- There was immediate uptake of suggestions for changes

### Accuracy of Burkitt Lymphoma Diagnosis in Constrained Pathology Settings

#### Importance to Epidemiology

Health D. Ogwang, MBChB, MRCP (Path), MSc (PhD), PhD, MSc, MD, Sam M Mbulaitwe, MBChB

**Abstract:** Burkitt lymphoma (BL) is endemic in Uganda and because of the high incidence, diagnosis is often performed during clinical care and opportunistic studies. Objectives—To assess the accuracy of the clinical and the local pathology diagnosis of BL as assessed by an outside pathology review diagnosis and to understand the limitations on histopathology practice in a resource-constrained setting at Lacor Hospital, Uganda. Design—A histology prepared paraffin (13 cases) BL cases with histology and pathology reports, from 2003 to 2007, were identified at St Mary's Hospital, Lacor (Lac), Uganda. Local histopathology procedures, immunohistochemical stain sections, and formalin fixed paraffin embedded (FFPE) slides were reviewed under the microscope. Immunohistochemical stain sections were reviewed under the microscope. Immunohistochemical stain sections were reviewed under the microscope. Results—Local pathology laboratory procedures were inconsistent and suboptimal especially for tissue fixation. There were 10 clinically presumed BL cases, but these could be reviewed by outside pathology. 12 cases of BL

diagnosed on an existing tumor and showed a clinical diagnostic accuracy of 75% (7 of 9) confirmed as BL, with a sensitivity range of 60% to 80%, depending on the actual diagnosis of the 12 non-diagnosable cases. There were 10 BL cases diagnosed by local pathology, but only 6 were reviewed by outside pathology (19 cases of BL biopsies or an existing tumor case). Overall, local pathology diagnosis was correct in 60% (12 of 20) of BL cases, with a sensitivity range of 60% to 80%, depending on the actual diagnosis of the 12 non-diagnosable cases. Six BL diagnoses included other non-Hodgkin lymphomas, Hodgkin lymphoma, and benign intra-testicular lymphadenitis. Conclusions—Accuracy of clinical diagnosis of BL was reduced by the inclusion of other diseases with similar clinical presentation. Local pathology, with immunohistochemical stain, marginally improved clinical accuracy and other could not support outside pathology review due to inadequate laboratory procedures. There is an urgent need to improve pathology services in Uganda before contacts being made with clinical and epidemiologic studies. Arch Pathol Lab Med 2011;135:441–446

Ogwang et al. Arch Path 2011

## Current Tissue Processing

- 24 hours
- Processes large and small samples together
- Suited for large centers
- Suited for surgical tissues
- Small tissues – over processed

### Conflict of Interest Review

#### CRADA Investigator/Official's Certification

CRADA Investigator/Official: Sam Mbulaitwe  
 IC: National Cancer Institute  
 CRADA ID Number: 02720  
 Collaborating Organization: Bio-Quick Corporation

CRADA Title: Design, building and validation a portable device which utilizes ultrasound to facilitate the formalin fixation and paraffin embedding (FFPE) of biological tissue.

Description: (provide below or attach a summary (up to one page in length) of the proposed research plan.)

NCI will test and validate a portable device which utilizes ultrasound to facilitate the formalin fixation and paraffin embedding (FFPE) of biological tissue. NIH CIT will design and build such portable device based on the Bio-Quick Corporation's non-portable prototype.

Global Health Burkitt Lymphoma Meeting  
 Abramson Cancer Center, Philadelphia  
 July 30-31

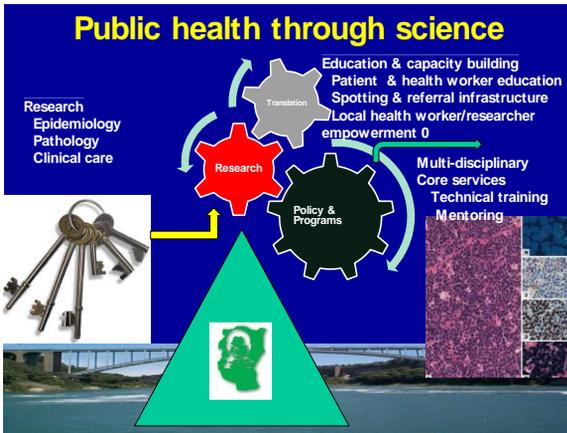
Abramson Cancer Center  
 Perio Medicine

"Ex Africa semper aliquid novi."

Out of Africa (comes) always something new:  
Pliny the Elder (AD 23 to 79)

**EMBLEM Sample Flow**

The collage includes: a laboratory instrument, a person in a white coat, a rural sample collection site, a flowchart titled 'EMBLEM Sample Flow', a person in a lab coat working at a bench, and various laboratory slides and equipment.



**EMBLEM Research Ladder**

**Translation Training & mentoring**

**Clinical Core**  
Compassionate clinical treatment

**Pathology Core**  
Reliable and consistent case diagnosis  
Molecular pathology

**Epidemiology Core**  
Comprehensive case surveillance & Registration  
Community education & awareness campaign

**Publications (8 manuscripts)**

**Translation**

- Mbulakeye et al., Lancet, 2010; 375:1661-63
- Mbulakeye et al., Infectious Agents and Cancer 2011, 6:16

**Pathology**

- Ogwang MD, et al., Arch Pathol Lab Med, 2011; 135:445-450
- Schmitz R et al. 2012, Nature, 2012 doi: 10.1038/nature11378

**Epidemiology Core**

- Ogwang M D et al., Int J Cancer 2008; 123, 2658-2663
- Emmanuel B, et al. Am J Trop Med Hyg 2011; 84: 397-401
- Bak S, et al., 2012, 7:5
- Aka, P et al., Pediatr Blood Cancer, 2012 epub

