

## Developing Health Care in South Sudan

- Immediate post-partum haemorrhage
- Hepatitis B in West Africa
- Tuberculous meningitis
- South Sudan - UK Hospital Links



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**Cover photo:**

Teaching newborn resuscitation to health workers in Yei, South Sudan (credit Tom Price)

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**EDITOR-IN-CHIEF**

**Dr Edward Eremugo Luka**

South Sudan Doctors' Association

Ministerial Complex

Juba, South Sudan

[opikiza@yahoo.com](mailto:opikiza@yahoo.com) Twitter: [@eremugo](https://twitter.com/eremugo)

**ASSOCIATE EDITORS**

**Dr Wani Mena**

Department of Ophthalmology

Juba Teaching Hospital,

PO Box 88, Juba

South Sudan

[wanimena@gmail.com](mailto:wanimena@gmail.com)

**Dr Eluzai Abe Hakim**

Department of Adult Medicine & Rehabilitation

St Mary's Hospital, Newport,

Isle of Wight PO30 5TG, UK

[Eluzai\\_hakim@yahoo.co.uk](mailto:Eluzai_hakim@yahoo.co.uk)

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[jhakim@mweb.co.zw](mailto:jhakim@mweb.co.zw)

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[ayatci@yahoo.com](mailto:ayatci@yahoo.com)

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Prof. John Adwok

[jadwok52@gmail.com](mailto:jadwok52@gmail.com)

**EDITORIAL ADVISOR**

Ann Burgess

[annpatriciaburgess@yahoo.co.uk](mailto:annpatriciaburgess@yahoo.co.uk)

**DESIGN AND LAYOUT**

Dr Edward Eremugo Luka

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## South Sudan should address non-communicable diseases

**Dr. Edward Eremugo Luka**

SSMJ Editor-in Chief

opikiza@yahoo.com

“The greatest impact in fighting NCDs can be achieved by creating healthy public policies”

The World Health Organization (WHO) identifies Non-Communicable Diseases (NCD) as “diseases that are not passed from person to person” and “are of long duration and generally slow progression”. Sometimes referred to as ‘chronic diseases’, NCDs include a range of conditions such as cardiovascular diseases, cancers, chronic respiratory diseases and diabetes.

NCDs are estimated to claim the lives of up to 38 million people globally each year, with three quarter of these deaths in low and middle income countries, and cardiovascular disease accounting for the bulk of the cases, according to WHO. Certain risk factors such as physical inactivity, unhealthy diets, abdominal obesity, and use and abuse of alcohol and tobacco increase the likelihood of dying from an NCD.

The prevalence of NCDs is unknown in South Sudan. As the country builds its health system, the issue of the emerging NCD burden should not be ignored. Anecdotal evidence showed an increase in cases of cardiovascular accidents as a result of hypertensive disorders and diabetes, as well as cases of cancers in the country. It is increasingly common to hear of people who had a stroke, died of breast or cervical cancer, or were amputated because of the effects of uncontrolled diabetes. With no systematic data collection or reporting on the NCDs, these conditions may be severely underrated.

With the risk factors widely known, preventative measures should be put in place to ensure that NCDs are controlled. The establishment of the unit for NCDs at the National Ministry of Health is step in the right direction. More needs to be done to curb the danger. It needs inter –ministerial and inter-departmental collaborations with other institutions such as the Ministries of Education, Finance, and Youth and Sports, among others, in a multi-faceted approach in order to lessen the risk factors.

The Ministry of Health should: ensure that robust data on the current occurrences of NCDs are captured and analyzed through the Health Management Information System (HMIS); establish cancer registries and screening programmes to track the diseases; and increase awareness of early detection and treatment at all levels of health care. The government should encourage participation in sports to lessen inactivity among the youth, enact legislation to regulate the use of alcohol and tobacco, take steps to improve diets, apportion the necessary resources and political will and include health in all public policies.

And finally, WHO has emphasized that “the greatest impact can be achieved by creating healthy public policies that promote NCD prevention and control and reorienting health systems to address the needs of people with such diseases”.

# Immediate post-partum haemorrhage: Epidemiological aspects and maternal prognosis at South N'djamena District Hospital (Chad)

Gabkika Bray Madoue<sup>a</sup>, Djongali Salathiel<sup>a</sup>, Oumarou Garba Souleyman<sup>a</sup>, Atade Sedjro Raoul<sup>b</sup>, Adoum Tchari<sup>a</sup>

<sup>a</sup> South Ndjamen District Hospital (Chad);

<sup>b</sup> University Abomey Calavi of Cotonou (Benin).

Correspondence: Gabkika Bray Madoue [kickbray@yahoo.fr](mailto:kickbray@yahoo.fr)

**Background:** Post-partum haemorrhage defined as blood loss after delivery over 500mls, affects all countries and is the commonest cause of maternal mortality. It is a frequent obstetric emergency in developing countries.

**Objective:** To identify the causes of post-partum haemorrhage and identify adequate management of immediate post-partum haemorrhage and thus reduce maternal mortality.

**Patients and methods:** This was a prospective and descriptive study of one year from 1st January 2014 to 31st December 2014 conducted at South N'Djamena district hospital. Before including a patient in our survey her consent was obtained after explaining to her the need for the survey. All consenting patients with post-partum haemorrhage were included. Data were analyzed using SPSS 17.0.

**Results:** We recorded 100 cases of post-partum haemorrhage among 6815 deliveries giving an incidence of 1.47%. The average age of the women was 25.0 years. The majority of deliveries (90%) were vaginal. The main cause of immediate post-partum haemorrhage was a third stage of labour bleeding (66%) followed by genital lesions (32%). The management was medical (uterotonic drug, fluid replacement and blood transfusion), obstetric (manual removal of placenta or clot), and surgical (suture of lesions, vascular ligation and hysterectomy). There were two maternal deaths (2%).

**Conclusion:** Post-partum haemorrhage is often fatal in our region. Preventive measures and efficient management can help to improve maternal prognosis.

## Introduction

More than 90% of maternal deaths worldwide occur in sub-Saharan Africa (SSA) and south Asia. These high maternal and associated neonatal mortality rates persist despite considerable efforts from the World Health Organization, governments, development partners, and others [1,2,3]. The majority of these deaths are related to pregnancy complications that are inadequately managed because of a lack of access to emergency health care.

The maternal mortality ratios (MMRs) of Sweden, the United Kingdom, and the United States are 4, 12, and 21 per 100,000 live births, respectively, whereas those of Chad, Nigeria, and Congo are 1099, 630, and 540 respectively. In SSA, the major direct causes of maternal mortality are haemorrhage, pre-eclampsia/eclampsia, obstructed labour, and sepsis [4, 5]. According to previous studies, the main cause of haemorrhage in Chad is immediate post-partum haemorrhage [6]. Post-partum haemorrhage is defined as blood loss after delivery over 500 mls [7]. The management of this problem is hampered by the lack of blood products and often leads to maternal death. This situation is the same in South N'Djamena district hospital.

Our objective was to identify the main causes of post-

partum haemorrhage in order to identify adequate management of immediate post-partum haemorrhage and thus reduce maternal mortality.

## Materials and methods

This was a prospective and descriptive survey of the epidemiological aspects and prognosis of immediate post-partum haemorrhage. It was carried out for one year from 1st. January 2014 to 31st. December 2014 at South N'Djamena district hospital.

The survey population included patients who had given birth at South N'Djamena district hospital or had been referred from another hospital because of post-partum haemorrhage. Before including a patient in our survey her consent was obtained after explaining to her the need for the survey.

Studied variables were: age, parity, causes and risk factors, treatment and prognosis. Data were analyzed using SPSS 17.0.

## Results

### Incidence

We had 100 cases of immediate post-partum haemorrhage among 6815 delivery giving an incidence 1.47%.

**Table 1. Age and parity**

| Characteristic     | Number | Percentage |
|--------------------|--------|------------|
| <b>Age (years)</b> |        |            |
| 15 -19             | 18     | 18         |
| 20 - 24            | 33     | 33         |
| 25 - 29            | 23     | 23         |
| 30 - 34            | 12     | 12         |
| ≥ 35               | 14     | 14         |
| <b>All ages</b>    | 100    | 100        |
| <b>Parity</b>      |        |            |
| Primiparous        | 26     | 26         |
| One previous baby  | 14     | 14         |
| Multiparity        | 60     | 60         |
| <b>Total</b>       | 100    | 100        |

**Table 2. Risk factors**

| Risk Factor           | Number | Percentage |
|-----------------------|--------|------------|
| Multiparity           | 60     | 60         |
| Eclampsia             | 2      | 2          |
| Placenta abruption    | 5      | 5          |
| Precipitate delivery  | 3      | 3          |
| Intra uterine death   | 6      | 6          |
| Macrosomia            | 5      | 5          |
| Uterine myoma         | 3      | 3          |
| <b>No risk factor</b> | 40     | 40         |

### Age and parity

Table 1 shows that 33 (33%) of the mothers were aged 20 to 24 years, and 68 (68%) were aged 20 years to 34 years. The average age was 25.0 years. Multiparity was more represented at 60%, and the average parity was 2.5.

### Risk factors of immediate post-partum haemorrhage

Table 2 shows that 40% of patients had no risk factors, and that the most common risk factor was multiparity (60%). Six cases of intra-uterine death were recorded which can cause clotting problems.

### Timing and causes of immediate post-partum haemorrhage

The majority of cases (66 patients) bled during the third stage of labour. There were 40 cases of uterine atony and 26 cases of placental retention – see Table 3.

### Treatment of immediate post-partum haemorrhage

We carried out manual removal of a clot from the uterus to check the emptiness of the uterus. The second reason for this maneuver is to eliminate a uterus tear. Thus manual removal of clot from the uterus associated with uterine massage was carried out for all cases. Manual removal of the placenta was associated in three cases.

To ensure uterine contraction, uterotonic drugs were used. In district hospitals of N'Djamena, oxytocin or methylergometrin (if blood pressure is normal) were used. Patients who had received between 60-80 IU could not have more because after this dose, undesirable effects can occur. For these patients we added misoprostol. Removal of a clot from the uterus can allow infection, so we gave antibiotics routinely.

Surgical treatment was carried out in 40 cases, mostly suturing of genital tract lesions (32 patients). We achieved bilateral ligation of the uterine artery in 6 cases, one B-Lynch suture (1%) and one hysterectomy (1%). Twenty five patients (25%) received a blood transfusion. – see Table 4.

### Maternal prognosis

We recorded two cases of maternal death giving a mortality of 2%. These deaths were due to massive haemorrhage exacerbated by the lack of blood available to transfuse.

### Discussion

#### Incidence

According to the World Health Organization post-partum haemorrhage is annually responsible for a quarter of maternal deaths (estimated at 585,000) [8, 9]. In France the incidence is estimated as 2% [5]. In Africa, according to previous studies, the incidence varied from 1.7% to 10.4 % [10, 11].

We report an incidence of 1.47%. Dlinga [12] noted previously an incidence of 1.26% in N'Djamena city. Factors like exemption for medical fees in South N'Djamena district hospital can explain this proportion. The South N'Djamena district hospital receives mostly rural and poor people. The population surrounding N'djamena city is poor and cannot afford treatment in a private hospital. The exemption for medical fees is an opportunity for them to receive free treatment.

#### Age and parity

A third of the patients (33%) were aged 20 to 24 years, and two thirds (64%) were aged less than 30 years. Our results confirm a national statistic that reported a high proportion of marriage among young girls [13]. Cultural practices favour early pregnancy and often lead to obstetric complications.

**Table 3. Causes of post-partum haemorrhage**

| Cause                      | Number     | Percentage |
|----------------------------|------------|------------|
| Uterine atony              | 40         | 40         |
| Partial placenta retention | 23         | 23         |
| Retained placenta          | 3          | 3          |
| Cervical tear              | 18         | 18         |
| Vaginal tear               | 3          | 3          |
| Perineal tear              | 11         | 11         |
| Coagulation disorder       | 2          | 2          |
| <b>Total</b>               | <b>100</b> | <b>100</b> |

**Table 4. Treatment**

| Treatment                          | Number | Percentage |
|------------------------------------|--------|------------|
| <b>Medical</b>                     |        |            |
| Blood transfusion                  | 25     | 25         |
| Colloid                            | 38     | 38         |
| Uterotonic                         | 100    | 100        |
| Antibiotic                         | 100    | 100        |
| Crystalloid                        | 100    | 100        |
| <b>Obstetric</b>                   |        |            |
| Manual removal of clot from uterus | 100    | 100        |
| Manual removal of placenta         | 3      | 3          |
| <b>Surgical</b>                    |        |            |
| Suture of lesion                   | 32     | 32         |
| Vascular ligature                  | 6      | 6          |
| B-lynch                            | 1      | 1          |
| Hysterectomy                       | 1      | 1          |

Multiparity was common (60%). This proportion is similar to other data that underlined a predominance of post-partum haemorrhage in this group [14, 15]. The risk of post-partum haemorrhage increases with parity and may be explained by uterine muscle weakening which cannot ensure uterine retraction allowing good haemostasis. Multiparity and some factors like uterine distention (macrosomia, hydramnios, multiple pregnancies) or uterine myoma are recognized as risk factor of post-partum haemorrhage [6, 12].

#### Mode and place of delivery

Ninety percent of patients had a vaginal delivery and 10% delivered by Caesarean section. Twenty six patients (26%) delivered at home. Difficulties with home deliveries were linked to problems with access for women in labour to the health centre during the rainy season and at night.

#### Causes of post-partum haemorrhage

Bleeding occurred in the third stage of labour for the majority of patients with post-partum haemorrhage (66%). This proportion is consistent with those reported by previous surveys that showed the third stage bleeding as the main time of post-partum haemorrhage [15, 16].

The most important and major finding in our study was that the commonest cause of post-partum haemorrhage was uterine atony, which is loss of tone in the uterine musculature. Normally, contraction of the uterine muscle compresses the vessels and reduces flow. This increases the likelihood of coagulation and prevents bleeds. Thus, lack of uterine muscle contraction can cause an acute haemorrhage. These findings were also evident in studies conducted in America and Pakistan [17, 18,19].

Cervical and vaginal tears also emerged as one of the causes of post-partum haemorrhage and were seen in 32 % of cases. Many authors have noted a lower proportion than ours. Thus, Ducloy [10], Dreyfus [20], and Chaouki [21], reported respectively proportions of 4%, 9% and 16.3%. A qualified health care provider is required for the management of delivery aiming to prevent complications [14].

#### Therapeutic aspects and prognoses

All patients received an uterotonic drug by intravenous route (oxytocin), intra muscular (oxytocin or methylegometrin), or rectal route (misoprostol) and antibiotics. Manual removal of clot from uterus was systematically done beforehand. These treatments aimed to ensure uterine retraction and prevent infection. Like Armide and al [22], these treatments were instituted as the two first steps of the treatment.

Surgical treatment concerned 40 patients (40%). In the majority of cases this treatment was the suture of genital lesions (32%). Chaouki [21] in his series reported a higher proportion (83.3%).

For complicated cases we did six vascular ligatures, and insertion of B-Lynch (1 case) all as recommended by the Obstetricians and Gynaecologists of Canada [23] and B Lynch [24].

One hysterectomy (1%) was permitted in order to save a patient who had a massive haemorrhage. This proportion is less than that noted by Chaouki [21] in his series (5.4%). Recourse to hysterectomy was the final solution to stop bleeding. Our attitude was conservative that is why we carried out more vascular ligatures aiming to reduce or stop blood loss.

#### Maternal prognosis

Post-partum haemorrhage is the main cause of maternal death in the world. We registered two cases of maternal death (2%). This mortality rate is lower than that reported

by Dlinga [12]. The maternal deaths noted in this survey were due to massive blood loss that led to hypovolemic shock. We didn't get time to carry out any surgical treatment for these patients that died.

### Conclusion

Post-partum haemorrhage is the most common cause of maternal mortality. Oxytocics given to contract the uterus is the most common prevention and treatment. Preventive measures and efficient curative treatments are useful to improve maternal prognosis.

### Authors approval

All authors approve the submission of this work.

### Conflict of interest

All authors have declared that there is no conflict of interest.

### Funding

No financial assistance or grants were solicited or obtained during the course of preparing this article.

### Consent

For this survey we got the consent of patients and the agreement of the director of South N'Djamena district hospital.

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## TRAINING TO MANAGE POST-PARTUM HAEMORRHAGE

Most readers know that immediate post-partum haemorrhage is a problem in South Sudan as well as Chad (see above article). In Chad the most common risk factor was multiple births and the most common cause was uterine atony. Is this the same in South Sudan? Please send us your experience. Training of medics, mid-wives and nurses is needed to prevent and manage immediate post-partum haemorrhage. Figure 1 shows suturing and Figure 2 shows a less-available method – how to use an uterine balloon device.



Figure 1. Student midwives at Yei Medical College practice suturing to minimise blood loss from genital lesions (credit Nancy MacKeith)



Figure 2. Frontline health workers in Ikotos, South Sudan, receive training in the use of a low-cost uterine balloon device developed by Massachusetts General Hospital's Maternal, Newborn and Child Survival program. © 2012 Samuel Boland, Courtesy of Photoshare

Thanks to Nancy MacKeith for helping to prepare this note and the article on page 28.

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## NON-COMMUNICABLE DISEASES

### Alcohol and liver cancer

Liver cancer is the second most common cause of death from cancer worldwide, accounting for 746,000 deaths around the world in 2012. The World Cancer Research Fund International finds strong evidence that consuming approximately three or more alcoholic drinks a day causes liver cancer. The finding provides the clearest indication to date of how many drinks actually cause liver cancer. The systematic review analysed 34 studies from around the world - comprising over eight million men and women and 24,600 cases of liver cancer – and also found strong evidence that:

- Being overweight or obese is a cause of liver cancer. This finding takes the number of cancers linked to being overweight or obese to 10 for the first time.
- Foods contaminated by aflatoxins (produced by a fungus that contaminates inappropriately stored food) cause liver cancer.
- Drinking coffee decreases the risk of liver cancer. Further research is needed on coffee to establish how much and what kind of coffee should be consumed before any advice is offered on this finding.

The report's findings support our current Cancer Prevention Recommendations:

- Maintain a healthy weight.
- It's best to avoid alcohol - but if you do drink, limit consumption to a maximum of 2 drinks a day for men and one drink a day for women. Read the full details on all the report's findings and conclusions (see <http://www.wcrf.org/>)

### Tackling soaring global obesity rates

This Lancet series on obesity (at <http://www.thelancet.com/series/obesity-2015>) exposes the slow progress in tackling soaring global obesity rates over last decade. It shows how today's food environments exploits people's biological, psychological, social, and economic vulnerabilities, making it easier for them to eat unhealthy foods. This reinforces preferences and demands for foods of poor nutritional quality, furthering the unhealthy food environments. Regulatory actions from governments and increased efforts from industry and civil society will be necessary to break these vicious cycles.

# Hepatitis B: The view from West Africa

Mario Lepore<sup>a</sup>, Harr F. Njai<sup>b</sup>, Deborah A. Garside<sup>a</sup>, Yusuke Shimakawa<sup>b</sup>, Mary M.E. Crossey<sup>a,b</sup>, Ramou Njie<sup>b</sup> and Maud Lemoine<sup>a,b</sup>

<sup>a</sup> Department of Medicine, Imperial College London, St Mary's Campus, South Wharf Road, London W2 1NY, United Kingdom

<sup>b</sup> Medical Research Council, The Gambia Unit, Atlantic Boulevard, PO Box 273, Fajara, Gambia

Correspondence to: Mario Lepore [mario.lepore10@imperial.ac.uk](mailto:mario.lepore10@imperial.ac.uk)

## ABSTRACT

The Prevention of Liver Fibrosis and Cancer in Africa (PROLIFICA) study began in 2011 in The Gambia, Sénégal and Nigeria. The study aims to reduce the risk of hepatocellular carcinoma (HCC) in West Africa through the suppression of the Hepatitis B virus (HBV). The biological samples collected allow for the detection of novel liver cancer biomarkers in the hope of improving the diagnostic ability of early disease states. The PROLIFICA platform hopes to improve cancer diagnostics whilst simultaneously providing the training, skills and infrastructure necessary to develop the quality of liver cancer care in West Africa.

## Introduction

The hepatitis B virus (HBV) is a parenterally transmitted DNA virus causing chronic infection in more than 350 million people worldwide [1]. Over 600,000 people die annually from the acute or chronic consequences of HBV, with 15-25% of those infected during childhood dying as a result of advanced cirrhosis or hepatocellular carcinoma (HCC) [2].

## HBV Virology and Epidemiology

HBV is an immunopathic virus of the *Hepadnaviridae* family. Virions consist of an icosahedral nucleocapsid core surrounded by an outer lipoprotein envelope, containing surface antigen glycoproteins (HBsAg) – see Figure. 1. Circular partially double-stranded viral DNA (dsDNA) is covalently linked to a HBV polymerase molecule and situated within the core [3].

There is significant global heterogeneity regarding the prevalence of HBV, with the highest rates observed in Sub-Saharan Africa (SSA) and East Asia [4]. Globally, HBV is responsible for over half the adult cases of HCC as well as nearly all childhood cases [5].

## Natural History

HBV transmission can occur parenterally as well as from vertical transmission at the time of birth. Acute HBV infection can prove self-limiting, with the elimination of virus and the development of persistent immunity preventing reinfection. The persistence of HBsAg for more than 6 months is defined as chronic infection [6].

A major determinant of the risk of chronic infection is the age at which exposure to the virus occurs. Unless vaccinated, infection within the first 6 months of life is associated with an 80-90% chance of chronic viral

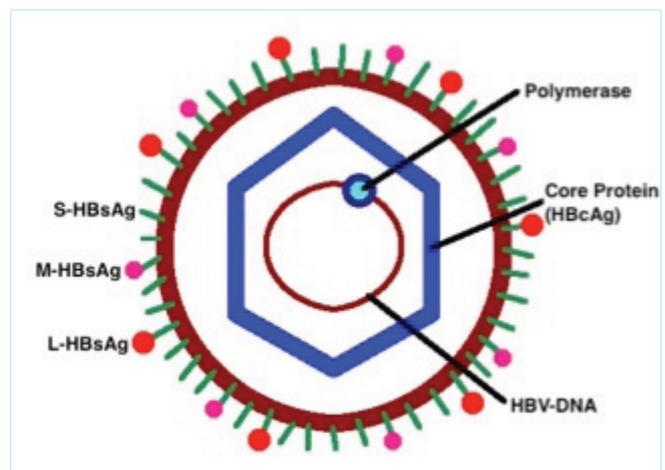


Figure 1. The Hepatitis B Virus

carriage. The risk of chronic carriage decreases to 30% if infection is acquired before 6 years of age. The incidence of chronicity in adulthood is less than 5% [7].

Few studies have investigated the natural history of chronic HBV within an African setting, with the majority of published literature deriving from American, European and Asian groups.

## HBV in The Gambia

The Gambia is the smallest country of mainland Africa, located on the West coast, with a population of 1.8 million – see Figure 2. It is a narrow country and other than an 80km stretch of Atlantic coastline, is completely surrounded by Senegal.

The rate of chronic HBV carriage in the adult Gambian population is 8.2% [8]. HCC is the most common cancer type amongst males in The Gambia, with at least 60% of cases being directly attributable to HBV [9].

Genotype E is the predominant genotype found within



Figure 2. Map of The Gambia - Reproduced by kind permission of Globe Media, www.worldtravels.com

West Africa and in particular, The Gambia, where it is present in over 90% of chronic carriers [10]. The clinical impact of this is yet to be elucidated.

**The PROLIFICA Platform**

The Prevention of Liver Fibrosis and Cancer in Africa (PROLIFICA) study began in 2011 and consists of two main research platforms: the West African Treatment Cohort for Hepatitis B (WATCH) study and the Hepatocellular Carcinoma Case-Control (HC4) study. This international, multi-centre study is coordinated by Mark Thursz, Professor of Hepatology at Imperial College, and brings together experts from The Gambia, Senegal, Nigeria, France, Italy and the UK.

The WATCH study aims to establish the effect of anti-viral therapy on HCC incidence. Individuals found positive for HBsAg from population-based screening programmes using a point-of-care test (Alere, Determine, USA) are invited to the MRC, The Gambia Unit Liver Clinic in Fajara for further assessment including clinical examination, abdominal ultrasound, transient elastography and blood tests. Those eligible for treatment, in accordance with the European Association for the Study of the Liver (EASL) 2012 guidelines [11], are offered anti-viral therapy with Tenofovir.

The HC4 case-control platform aims to evaluate the importance of currently recognised risk factors in this SSA population and generate serum, urine and DNA samples for analysis by proteomics, metabonomics and genome wide association studies.

**HBV-DNA Quantification**

The quantification of HBV-DNA is important for patient monitoring and helps determine the necessity of treatment, with elevated viraemia being a surrogate marker for poor disease outcomes such as cirrhosis and HCC [12].

There remain no established local guidelines on the management of HBV in SSA. The EASL guidelines state that pharmacological intervention should be considered in patients with HBV-DNA levels of 2,000 IU/ml or greater, with elevated serum alanine aminotransferase (ALT) levels and the severity of liver fibrosis also guiding management [11]. Anti-viral therapy is required in order to reduce long-term morbidity and mortality risk through viral suppression. For those not fulfilling treatment guidelines, bi-annual follow up is recommended due to the unpredictable nature of viral replication.

**The Challenge**

Within the PROLIFICA platform, the current method of HBV-DNA quantification involves venous blood sampling during participant assessment at the MRC Fajara liver clinic (Figure 3). Plasma, serum and buffy coat samples are stored at -80°C with the quantification of viral load performed using real-time PCR (qPCR) from cryopreserved samples. On occasion, venepuncture sampling is performed at field locations followed by the transport of samples to central laboratories. This process is expensive, as samples require cold-chain shipping. Samples in transit are a biohazard and need processing within 8 hours to ensure optimal sample quality.

**Dried Blood Spots (DBS)**

Filter paper analysis of blood is used today for the detection of metabolic and genetic conditions in neonates [13]. Capillary blood from a finger or heel prick, dried onto filter paper, not only minimises the volume of blood required for analysis but also reduces patient distress (Figure 4). Dried samples stored with desiccant can be safely transported as non-hazardous material to central laboratories for elution without time restraints. There are no laboratory or energy requirements at the point of collection, making the method ideal for remote locations

with minimal resources. The method requires fewer physical supplies, whilst eliminating the risk of needle stick injuries.

The quantification of HBV-DNA is important for patient monitoring and helps determine the necessity of treatment. Work is currently underway in order to develop a DBS sampling system for the quantification of HBV-DNA in order to make the process of sample acquisition simpler and more cost efficient.



Figure 3. A venepuncture sample being obtained from a clinic attendee



Figure 4. A filled Dried Blood Spot card

### Conclusion

Working in resource-poor settings highlights the need for efficient and financially viable research methods and techniques. The development of an optimised DBS sampling system for the quantification of HBV-DNA could prove beneficial in countries such as The Gambia, helping to reduce costs while improving healthcare access to a greater proportion of the population. The continued work on identifying novel liver cancer biomarkers to assist with the earlier diagnosis of liver cancer in resource-poor settings remains a hopeful target, whilst the continued investment in local skills and infrastructure is helping to improve the quality of liver cancer healthcare in West Africa.

### Acknowledgements

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We are grateful to Professor Mark Thursz and Professor Simon Taylor-Robinson from Imperial College London and Professor Roger Williams, Institute of Hepatology, London, UK, for useful discussions.

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# Do not forget tuberculous meningitis

David Tibbutt

Correspondence: [david@tibbutt.co.uk](mailto:david@tibbutt.co.uk)

Tuberculous meningitis (TBM) is relatively uncommon compared with other types of meningitis and so it is easy to forget to consider it as an explanation for a patient's presenting problem. If untreated TBM is fatal in most cases.

## Who is at risk?

- Children under aged 5 years,
- The elderly,
- HIV infected patients (in these patients TBM may be caused by an "atypical" mycobacterium especially *Mycobacterium avium-intracellulare*),
- Alcoholics,
- Diabetes mellitus,
- Patients with head trauma and
- Those on steroid therapy

## The diagnosis

This is difficult – but it is made even more difficult by inadequate attention to a detailed history and physical examination. Always ask about previous tuberculosis (TB) and TB contacts.

Characteristically the onset begins and progresses slowly with malaise over 2 – 8 weeks and

- Low grade fever,
- Anorexia, nausea and vomiting,
- Abdominal pains,
- Headache,
- Irritability,
- Insomnia,
- Mental and behavioural disturbances.

The underlying pathology is often an exudative collection and inflammation at the base of the brain. In this area there are vital neurological and vascular structures and their involvement leads to the "second" stage of the disease:

- Cranial nerve abnormalities (especially affecting the oculomotor nerves III, IV and VI and also II, VII and VIII).
- Neck stiffness (meningismus),

- Papilloedema (40%) and sometimes
- Choroidal tubercles seen on retinal examination: these are virtually diagnostic.
- Optic atrophy.

The exudative inflammatory process may cause hydrocephalus the onset of which is indicated by

- Ocular palsies,
- Pyramidal signs in the legs,
- Urinary incontinence.

In infants there may be

- Opisthotonos,
- Tense fontanelle.

The endarteritis that may develop in association with the inflammatory process causes vascular occlusion and cerebral infarction and hence

- Hemiparesis / hemiplegia,
- Hemianaesthesia,
- Dysphasia,
- Hemianopia.

In children epileptic fits are more common than in adults and may indicate the formation of a tuberculoma.

During the physical examination of the patient especial attention should be paid to respiratory signs, lymphadenopathy and hepato-splenomegaly. Occasionally a lymph node biopsy or even a fine needle aspiration will give a positive answer on Ziehl-Neelsen staining.

If facilities permit a chest X-ray could be helpful: this will show features of TB (occasionally in a miliary pattern) in about a third of patients. A skull X-ray may show a calcified tuberculoma.

## Differential diagnosis

Alternative diagnoses to TBM must be considered especially in the HIV infected patient. In all cases the HIV status should be checked (after appropriate counselling) if not already known. The main differential diagnoses are:

- Fungal meningitis (especially cryptococcal meningitis),
- Partially treated pyogenic meningitis,

- Carcinomatous or reticulosis involvement of the meninges.

### The cerebrospinal fluid (CSF)

Papilloedema contraindicates a lumbar puncture. The CSF may be normal on first examination if the patient presents at an early phase of the disease. Therefore another lumbar puncture should be considered if TBM is still a possibility. However the most frequent findings are:

- Raised CSF pressure,
- Slightly cloudy (occasionally clear) CSF with
- Raised protein up to 5G/L.
- If there is a spinal blockage (obstruction of the spinal subarachnoid space) and the CSF protein is very high then the CSF may appear xanthochromic (Froin's syndrome).
- On standing a "spider's web" clot may appear and reflects the markedly raised protein.
- The CSF glucose is reduced sometimes to zero.
- CSF: blood glucose ratio is reduced (so always take blood at the time of the lumbar puncture for a blood glucose measurement).
- Pleocytosis with a total white cell count of 500 / mm<sup>3</sup> – especially a lymphocytosis. However at an early stage polymorphs may predominate.
- Ziehl-Neelsen stains are positive (acid fast bacilli (AFB)) in less than 20% but are worth doing!!
- Examination of CSF for cryptococci (Indian ink or Gram stain) must be done.

If the patient is producing any sputum then at least three consecutive specimens should be examined for TB bacilli.

### Management

Success in the treatment of TBM depends on an early diagnosis and start of anti TB treatment. This should continue for 12 – 18 months. Even if the diagnosis is not proven and TBM remains a possibility then a trial of treatment should be given. Monitoring of the CSF glucose weekly may indicate a gradual increase and hence an objective method of showing effectiveness of treatment. Except in the early stages steroid therapy may be beneficial although there remains some controversy [1]. The following schedule may be used:

- **Dexamethasone** intramuscularly 16mg/day in divided doses for adults and 0.5mg/kg/day in divided doses for children or

- **Prednisolone** orally 60mg/day for adults and 2mg/kg/day for children.

These doses should be gradually reduced over 3–6 weeks.

### Prognosis and long term complications in survivors

Even in those centres with all facilities available mortality is up to 30%: in sub-Saharan Africa the mortality is probably about 50%. The mortality is highest in

- The very young and the very old,
- Pregnant women,
- The presence of malnutrition and
- Other co-morbid diseases (e.g. AIDS, diabetes mellitus).

Patients with TBM are at serious risk of fluid and electrolyte disturbances. This results from vomiting and lack of attention to fluid intake. In addition they are at risk of the syndrome of inappropriate antidiuretic hormone (SIADH) secretion [2] which causes impaired water excretion and thence hyponatraemia and hypoosmolality. Therefore it is essential to keep careful fluid balance observations and act upon them.

A third of survivors from TBM may have long-term complications and these include:

- Mental impairment with learning difficulties,
- Blindness,
- Deafness,
- Squints,
- Recurrent fits,
- Residual weakness from e.g. hemipareses.

A common complication of TBM is hydrocephalus and occurs in up to 85% of children [3]: "The clinical features that suggest the presence of hydrocephalus are nonspecific. In any patient with TBM with altered sensorium, hydrocephalus should be suspected irrespective of the presence or absence of papilloedema. Hydrocephalus is also likely to be present in patients who are alert and who complain of increasing headache with or without vomiting and blurring of vision"

Grading of a clinical status can aid the indication of prognosis: the Medical Research Council staging for TBM is as follows:

- Stage 1: Fully conscious and no paresis

*Continued on page 47.*

# Developing healthcare in South Sudan

Rich Bregazzi

Dean of Postgraduate Medical Education, and the College of Physicians and Surgeons, South Sudan.  
Honorary Professor of Medical Education Planning, Juba University, South Sudan.  
Visiting Research Fellow in Healthcare Education, St John's College, Durham University.  
Associate Lecturer, Newcastle University School of Medical Education Development

Correspondence to Rich Bregazzi [richbregazzi@gmail.com](mailto:richbregazzi@gmail.com)

## The Need

The provision of healthcare in South Sudan is offered by a 'mixed economy' of public hospitals and clinics, private hospitals and clinics, international aid organisations, and traditional community practice. Yet for most of the 11.7 million population [1], the provision of both primary and secondary healthcare is wholly insufficient. 90% of women give birth without medically trained assistance [2]. There are 2054 maternal deaths per 100,000 live births [3]. 68 out of every 1000 infants die within 12 months of their birth; 99 within five years [4]. Overall life expectancy is 55 years [5]. Put simply, the country does not have sufficient medical capacity to meet the need.

Currently, newly graduated doctors learn their clinical practice through work experience in hospital, supported by clinical supervision. This offers opportunities for bedside teaching and case review, but there is no formal educational structure or assessment. After twelve months work experience, young doctors may be placed in single-doctor primary care units, in isolated rural areas; an experience referred to by some as "hard time". Following this, they may seek further education and training abroad, or gravitate into private practice, but there is no coherent, national programme of Postgraduate Medical Education (PGME) and training, to further develop their medical skills and knowledge.

More than 80% of medical services in South Sudan are provided by international organisations [6]. Understandably, the delivery of primary care is a priority: there is an acute need for primary care, and effective primary care is the foundation of any national healthcare system. But primary care, without access to secondary care, is only a partial resolution. There is a clear need to develop medical skills and resources that will increase capacity across all the medical specialties, and so contribute to the delivery of accessible primary and secondary care. To this end, the Ministry of Health has committed to developing a comprehensive programme of PGME for South Sudan.

## Postgraduate medical education

South Sudan requires increased medical capacity. In terms of human resources, and in addition to nurses, midwives, technicians and managers, there is a pressing need for more and better trained doctors. Developing postgraduate medical education to meet this need requires a formal structure for its governance. The task then entails developing curricula for medical training in primary and secondary care; developing the teaching practice of a faculty of clinical supervisors and trainers; managing the learning experiences and training of graduate doctors; and providing assessment and accreditation.

The outcomes of this strategy will include:

1. Formal, structured training of postgraduate doctors.
2. More doctors capable of independent, safe practice in primary and secondary care in South Sudan.
3. More doctors ready to develop their skills in the advanced techniques available internationally.
4. More doctors available as teachers, and able to support both undergraduate and postgraduate medical education in South Sudan.

PGME will provide a training pathway for graduate doctors, where currently there is none. The initial postgraduate training experience will increase from one year to a two year period of 'Basic Medical Training' (BMT). The curriculum for BMT includes a rotation of hospital specialties, with clinical supervision, on and off-the-job teaching, formal assessment, and regulation of progress. Doctors will complete BMT with higher-level clinical skills and knowledge than is currently the case, and be better able to practice safely and effectively in the County Hospitals and rural areas.

Following BMT and a period of supported work as Medical Officers, doctors will be eligible to apply for Specialist Medical Training. Specialist training will allow a number of options. Doctors may train in one of the secondary care specialties, or



Figure 1. Faculty development at Juba Teaching Hospital (credit Rich Bregazzi)

they may train as primary care specialists. Primary care specialists will be able to offer a higher level of primary care, combined with further surgical or medical skills. This will enable them to deliver higher levels of medical care to patients, before requiring specialist referral.

### Progress to date

In March 2015, Cabinet approval was given for the establishment of the South Sudan College of Physicians and Surgeons (CPS), to provide educational governance of PGME. The Ministry of Health has appointed the author (RB) as Dean of PGME and of the College. Initially, our focus will be to develop and implement PGME, including curriculum development, faculty development, educational quality assurance, and the regulation of trainees' progress.

The new Postgraduate Medical Education Centre in the grounds of Juba Teaching Hospital is to be brought into use as the headquarters of the College, and as the main teaching resource for PGME in Juba. To this end, a medical library and high speed internet connectivity, to enable e-learning, are being developed.

Senior doctors at Juba Teaching Hospital, as members of the PGME teaching faculty, have been trained in teaching skills, mentoring, and leadership – see Figure 1. Over the course of 2015 there will be opportunities for faculty members to visit the UK for further development in medical education.

Basic Medical Training was launched in 2013, but was interrupted by the crisis of December 2013. BMT has now re-started in Juba Teaching Hospital. The BMT curriculum and training programme provide a foundation, from which specialist curricula in primary and secondary care will be developed.

### Support

There is significant support for these developments from individuals and organisations in the UK. The St Mary's Hospital/Juba Link group has developed a wide network in support of medical education in South Sudan, and the Gordon Memorial Trust continues to support educational activity. More recently, St John's College, Durham University, has set up a Centre for Healthcare Resourcing, with an objective to support the development of medical capacity in South Sudan. The UK medical Royal Colleges have also been generous in their support of clinical training in South Sudan, focusing initially on visiting

clinical trainers, and more recently on the development of e-learning resources.

### Objectives for 2015

However, success is dependent upon the leadership and commitment of the PGME faculty in South Sudan. It is through their efforts that we will establish PGME. Our early objectives are to:

- form the College of Physicians and Surgeons;
- open the PGME Centre in Juba Teaching Hospital;
- sustain BMT, supported by a training programme and e-learning resources; and
- develop curricula for specialist training in primary and secondary care.

We must also attend to the need to spread PGME, with the long term aim of a truly national programme.

The challenges for the provision of healthcare in South Sudan are well known. They include severe problems of resources, infrastructure, geography and politics. The scale of these problems, and the acute crises that emerge, distract from strategic developments, such as postgraduate medical education. Despite these challenges, the Ministry of Health, and doctors of Juba Teaching Hospital, are committed to establishing PGME in South Sudan. We must match that commitment with action.

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### Professor Rich Bregazzi, PhD, MSc, BSc (Hons)

Rich Bregazzi has been appointed to the post of Dean of the South Sudan College of Physicians and Surgeons and will be visiting for four months in the year. Rich has worked for some time with the team from the Isle of Wight and is a Visiting Research Fellow in Healthcare Education at St John's College Durham University. See his article on page 38 and his blog at <https://www.dur.ac.uk/st-johns.college/healthcareresourcing/postgraduatemedical>.



## My Road to St. James University Hospital, Leeds, United Kingdom

Dr. Charles Ochero Cornelio Langoya

The writer is a Core Medical Trainee (CMT) in the department of Hepatology and Liver Transplant Medicine in St. James' University Hospital, Leeds, West Yorkshire, UK.

He can be reached on [charles.langoya@nhs.net](mailto:charles.langoya@nhs.net)

*"S/he who wants honey should be prepared for a bee-sting"* is a common saying in Africa literally cautioning people of hurdles to be encountered along a journey towards a valuable set target. The higher that target is, the more hurdles one has to overcome. Now let's talk about MTI and my experience (hurdles completed)...

### Where did I get to know about the MTI?

MTI stands for Medical Training Initiative, a scheme set up by Britain to enable foreign doctors from selected countries to come and train in the UK. The existence of this scheme was brought to my attention by Dr. Eluzai Abe Hakim in 2010. It was something I doubted about at first like many of us would have done. The reason for the doubt was simple: "Getting a UK medical license is an unachievable dream".

### What did I do then?

The decision of going for an MTI scheme is one of the best decisions I have ever made. Though it has challenges, I believe it is worth taking a path because all the hurdles won't count in the end with clear benefits outweighing risks. This was what I did (in this order):

- Got my part one Membership of the Royal College of Physicians (MRCP).
- Passed the MTI interview (in Khartoum) organized by the Royal College of Physicians of London which assessed clinical knowledge and language skills. This is an easy assessment to pass!
- Sat for Academic module of the International English Language and Testing System (IELTS) and obtained at least 7 score in each band and an overall score of 7.5. Remember that this is a minimum language requirement set by the British General Medical Council (the Medical Licensing Body) (GMC) for foreign doctors to get registered.
- Got all the recommendations needed from the clinical mentors in Juba and the UK to accompany the application. I am indebted to all of them.

### Obstacles along the way

- I sat for a wrong IELTS version and had to redo the exams to take the academic version. So, take the right IELTS academic version!
- Obtaining a written recommendation from some of our South Sudanese senior colleagues was a night-

mare. I thank them for making me learn patience!

- The GMC registration could be a long one process (as in my case) but completing it means one is 97% certain of starting a rotation in a National Health Service hospital.

### Advice to South Sudanese doctors wanting to come to the UK under the MTI scheme

- Make a decision and take part one MRCP.
- You will be shortlisted for the MTI interview which usually takes place in Khartoum (40 minutes).
- Sit for your academic ILETS before or after the MTI interview (to save time) and obtain the marks mentioned above.
- Never allow negative thinkers to influence your decision. If I can, then you too can.
- Always have a self-esteem and believe in yourself.
- Surround yourself with some positive senior mentors on who you can lean during this process. In my case these were Dr. Francis Oromo, Dr. Kenneth Lodu and, of course, Dr. Eluzai Abe Hakim among many others.

### My first impressions of UK medical training

- Seniors and juniors value each other and daily teaching is just a friendly encounter.
- Everyone takes the responsibility he/she is assigned without a need of being followed by the boss.
- Medical practice is completely evidence-based. No gambling!
- Daily Multi-Disciplinary Team (MDT) meetings discussing management of selected interesting and challenging cases. Here consultants challenge each other (knowledge wise) while the juniors sit listening to these scientific arguments. This is what I love most in Leeds but, unfortunately, our experience back at home is completely different in this aspect.

### Final Word

Start the process NOW and ask for help should you need any!

*(For more information on the MTI programme in the UK, see the advert on the back cover - page 48)*

## SOUTH SUDAN-UK HOSPITALS LINK NEWS UPDATE

### THE WINCHESTER-YEI LINK

#### Kordo Saeed and Poppy Spens

The Link between Winchester and Eastleigh Healthcare NHS Trust and Yei Civil Hospital and Martha Clinic, and Yei National Health Training Institute has been established since November 2010. Since then our teams of nurses, midwives, doctors, physiotherapists, engineers and other colleagues have carried out multiple trips to Yei. The link has been successful in obtaining a number of grants from organisations such as the Tropical Health Education Trust. We were also successful in obtaining medical text books from British Medical Association for the hospital in Yei.



Figure 1. Martha Clinic outpatient clinic. (credit Poppy/John Spens)

Our trips involve various activities including, but not limited to, teaching, training, equipment maintenance: service and staff development as well as quality improvement projects – see Figures 1, 2 and 3.

Our main aims are to improve and learn from each other, to train local health staff to provide sustainable quality health care in the area, concentrating on what Yei needs. Our staff equally benefit from the link and the visits on personal, clinical, managerial and leadership levels.

Recently the link has managed to raise funds for opening a sustainable blood bank and a transfusion service in Yei Civil Hospital to serve the local population. This will be one of the key focuses in our next trip on 1st May 2015.



Figure 2. Dr Simon Struthers helping on the paediatric ward. (credit Tom Price)



Figure 3. Mending hospital equipment. (credit Tom Price)

Ideas and support are welcome, Donations are welcome to Brickworks, a charity we work with and that raises money for funding the visits and equipment such as the blood bank fridge.

We would like to thank all those who supported us and our future supporters, without them our goals would be harder to achieve.

See [www.thebrickworks.org.uk](http://www.thebrickworks.org.uk) for further details.

#### Thanks to:

Nancy MacKeith, Jane Collier, John Acre, Peter Newman and Naa Akleh Noi Odonkor and everyone else for helping us prepare this issue of the South Sudan Medical Journal.

## ST MARY'S HOSPITAL, ISLE OF WIGHT - JUBA TEACHING HOSPITAL LINK

### Jane Newson-Smith/Salih, Link Chair

The Link between St Mary's Hospital (the main base of the Isle of Wight NHS Trust) and Juba Teaching Hospital was established in 2007 and gained charitable status in 2008. The population of South Sudan is 11.7 million and of the Isle of Wight is 140,500.

### Aims of the link

To promote understanding of the health needs of South Sudan, and to support the Government of the Republic of South Sudan to improve clinical services through the development of education and training.

### Recent activities

The last clinical teaching visits were in late 2013 just before the outbreak of civil unrest. The teaching was the first on the newly developed Basic Medical Training Programme for doctors in the first two years after graduation. Fifty doctors enrolled and were divided into two groups: Trauma and Mental Health which were each taught for a week and repeated the following week for the other group.

### Acute Trauma

The trainers in Trauma were Mr Dominic McCreadie, Emergency Medicine Consultant and Mr Tim Walsh, retired Consultant Surgeon. The teaching modalities included lectures, demonstrations, role play, practicals and tutorials (see Figure 1). The module concluded with formal assessments. Feedback was very complimentary. There was a wish for more modules and longer training sessions. There was a high achievement level based on attendance, a practical and a Multiple Choice Question (MCQ) test. The pass rate was 90% and two passed with distinction.

### Mental Health

Dr Shobha Singh, Consultant Psychologist, Dr Ashok Singh, Consultant Psychiatrist and Dr Jane Newson-Smith/Salih, retired Consultant Psychiatrist taught an interactive course based on the World Health Organization (WHO) Mental Health Gap Action Programme course. This aims to provide non-mental health professionals competence in diagnosing and treating most mental health conditions. It is manual based and 25 copies of the manual were used. There is much role play and many videos. The course was well received with excellent participation by the doctors. Many had experienced interrupted training, and undergraduate exposure to psychiatry varied from minimal to significant.

Pre and post course MCQ tests demonstrated very good levels of knowledge improvement.

Areas for improvement are the full 2-week course, including other health professionals, better audio-visual equipment and reliable electricity supply. Also the doctors asked for clinical teaching with patients and to meet the local psychiatric team, which had not been possible to organise. A positive outcome was learning general listening and interview skills, and being able to discuss the role of the doctor in difficult situations.

Our impression was that these are promising young doctors and this postgraduate training was extremely important for them. Furthermore we felt this WHO course can offer a lot to healthcare workers in South Sudan and we hope it can be developed there.

### Midwifery

Mrs France Reed, Midwife, joined, as a facilitator, a team based in Belfast, as the Link representative for an Essential Lifesaving Skills Course in Obstetrics in Juba, November 2013. The Course aimed to teach lifesaving skills for mothers and neonates in obstetrics to senior obstetric /midwifery staff. The Course lasted 3 days with fifteen participants. Feedback was very positive and there was a demonstrable gain of skills and knowledge.

### Achievements and challenges

The key objectives of the St Mary – Juba link, when it was established in 2008, were to set up and run a Postgraduate Medical Training Programme for doctors and to support the Schools of Nursing/Midwifery, working in conjunction with the Real Medicine Foundation and the World Children's Fund.



Figure 1. Don McCreadie teaching resuscitation skills (credit Zorina Walsh)

## Achievements

A 5-year plan was commissioned and written for the South Sudan Ministry of Health. In 2012 a 3-day Training the Trainers Course took place in Juba. Mr Tim Walsh led the team with Dr Rich Bregazzi, Medical Educationalist and Dr David Attwood, a Medical Registrar. Eighteen consultants in various specialities participated. A follow up course was run a year later led by Dr Richard Bregazzi with Dr Alison Allan and Dr David Attwood.

The Link raised funds for a bungalow for visiting trainers, which has been built directly opposite the hospital.

Ten training visits have taken place, involving doctors, nurses, midwives, and education specialists.

## Challenges

Communication with Juba partners has not been easy. New developments should improve this.

- Dr Rich Bregazzi, Educationalist, has now been appointed Director of Post Graduate Medical Education and will visit Juba frequently.
- The Minister of Health has proposed establishing the South Sudan College of Physicians and Surgeons in the new Postgraduate Medical Centre in the grounds of Juba Teaching Hospital and Dr Rich Bregazzi has been appointed Dean of the new College.
- High speed internet connectivity is being installed in the new Postgraduate Medical Centre in Juba.

Travel to South Sudan is not considered safe by the Foreign and Commonwealth Office which makes arranging training visits including insurance etc. difficult.

We understand the Ministry has allowed others to use of the Juba Link bungalow which may make accommodation an issue for future visits.

Many of the original UK Link trainers are now retired and the challenge is to recruit more trainers. It is also recognised that Juba Teaching Hospital is the major health training resource in the country and the Isle of Wight has limited resources and professionals to support the training needs. There are now several other UK – South Sudan hospital Links, mainly in Wessex and consideration needs to be given to a consortium approach, i.e. more of a hub and spoke model.

Because of these developments we have already provided support for three South Sudanese doctors and a radiographer to gain UK postgraduate experience. We are currently hopeful that a doctor can come to work at St Mary's Hospital in a training capacity for 2 years in medicine under the Medical Training Initiative (MTI) which will pay the standard NHS salary. The Link can provide general support and limited financial help - e.g.



Figure 2. Learning mental health interview skills (credit Jane Newson-Smith)

accommodation and subsistence during the unpaid introductory two-weeks, and ongoing mentorship. We hope that with the difficulties in arranging visits that the MTI can provide a wider opportunity to enhance training in several specialities and locations until regular visits.

## Key People

### In Juba

- Dr Dario Kuron Lado. Consultant Surgeon, Chairman of Postgraduate Medical Training Committee. [kuron.lado@yahoo.com](mailto:kuron.lado@yahoo.com)
- Dr Oromo Francis. Consultant Pathologist, Postgraduate Tutor. [otimoi72@yahoo.co.uk](mailto:otimoi72@yahoo.co.uk)
- Dr Rich Bregazzi Dean of Postgraduate Medical Education, South Sudan [richbregazzi@gmail.com](mailto:richbregazzi@gmail.com)

### In UK

- Dr Eluzai Hakim. Consultant Physician. Founder Link member, Medical advisor to Link and Vice Chair. [eluzaihakim@doctors.org.uk](mailto:eluzaihakim@doctors.org.uk)
- Mr Tim Walsh. Founder Link member, Retired Consultant Surgeon, Surgery advisor. [timwalsh379@gmail.co.uk](mailto:timwalsh379@gmail.co.uk)
- Dr Jane Newson-Smith/Salih, Retired Consultant Psychiatrist. Link Chair. [janegbns@doctors.org.uk](mailto:janegbns@doctors.org.uk)
- Mrs Sandie Paice Nursing advisor. [sandiepaice@yahoo.co.uk](mailto:sandiepaice@yahoo.co.uk)
- Mrs France Reed, Midwifery advisor. [France.reed@iow.nhs.uk](mailto:France.reed@iow.nhs.uk)

Our newsletter is published on the Link website [www.jubalink.org.uk](http://www.jubalink.org.uk).

**Acknowledgement** Thanks to Tim and Zorina Walsh for support in writing this article.

## POOLE - WAU TEACHING HOSPITAL LINK

### Hilary Fenton-Harris, Poole Africa Link Co-ordinator

The link between Poole Hospital NHS Foundation Trust and Wau Teaching Hospital began in 2009, and since that time we have aimed to send teams of 4-6 health care professionals twice a year to teach doctors, nurses and midwives working in the hospital. In addition to this, we have organised a parallel teaching programme with student nurses and midwives in the local nurses' training school – see Figure 1.



Figure 1. Sally our midwife teaching in nursing school in Wau (credit Hilary Fenton-Harris).

During our visit in February this year we were pleased to notice many improvements in the hospital. The building of a superb new maternity theatre and mothers' waiting home has greatly enhanced the maternity facilities – see Figure 2.

The hospital is generally much tidier and more observations and documentation is being completed. A new blood bank has been built although it is not properly functioning yet. However many essential facilities are still lacking. Power is still limited and from the generator which remains expensive to run. Funding of this is still a very big problem which needs addressing urgently. There is no running water except in the theatres, and many of the drains remain blocked. The hospital continues to lack essential drugs and other supplies.

The number of medical officers has increased which is very encouraging. We were very pleased to see that the hospital was fairly clean and that notes and files were being used on many of the wards, including maternity.

We go to teach rather than do, but have been able to participate in emergency situations as a result of which lives have been saved. In line with this, we have had funding from the Pharo Foundation to set up a High Dependency Unit (HDU) at the hospital. Work on this project commenced in 2013, and although we couldn't send a full team in 2014 due to security issues in South



Figure 2. New maternity theatre complex at Wau Teaching Hospital (credit Hilary Fenton-Harris)

Sudan, two consultants went for a brief visit in Nov 2014 and we sent a team of 4 for two weeks in February 2015. We started work on setting up another HDU area in the maternity theatres – see Figure 3. As part of our teaching programme we have welcomed several doctors from South Sudan to Poole Hospital for short clinical placements.

We regularly supply kit to the hospital purchased through fundraising or donated. All kit is gratefully received. Last year we had money donated for two lifesaving oxygen machines at a cost of £800 each, now in regular use. We continue to organise fundraising events to provide more desperately needed equipment for Wau locally and support future team visits.

We are committed to Wau, to the hospital and both nursing schools where we are privileged to teach during each visit. At the same time we are also looking at the possibility of teaching clinical staff at Lira University in Uganda.

For more information visit <http://www.pooleafricalink.org.uk>, follow us on Facebook <https://www.facebook.com/pages/Poole-Africa-Link/107144779385628> or email Hilary Fenton-Harris [hilary.fenton-harris@poole.nhs.uk](mailto:hilary.fenton-harris@poole.nhs.uk).

Dr Alex Bakiet, the Director General of the hospital gave permission for the hospital photos.

*Give a man a fish and you feed him for a day; teach him how to fish and you feed him for life.* Chinese Proverb.



Figure 3. James Ayrton with the new anaesthetic machine in the new maternity theatres (credit Hilary Fenton-Harris)



Mairi John Blackings, PhD  
Professor of Literary Linguistics

# University of Juba

*Director for Planning,  
Innovation and Quality Assurance*

P. O. Box 82, Juba  
South Sudan  
Tel: 0955258192  
Email:  
mairijb@yahoo.co.uk

January 21st, 2015

Dear Friends of the University of Juba

**Ref: University of Juba Books Airfreight**

The University of Juba re-opened on January 5th, 2015 following two weeks Christmas break. We are busy planning an historic graduation ceremony for about 3,500 graduands scheduled for February 21st, 2015. This will, for some reasons, be the first time the University is organising a graduation ceremony since 2003! It will also not only mark the first post-independence graduation, but the first ever graduation since the return of the University of Juba, to its spiritual and ancestral home of Juba, from Khartoum.

We are also excited to learn that Dr Hugh Grant, an Oxford paediatric surgeon with a connection to the University of Juba, has collected 250 kilograms worth of desperately needed up-to-date books on a wide range of specialities for the University of Juba Library. I am therefore writing appealing to you, Friends of the University of Juba, to help with the cost of the transportation of the books to Juba.

All Ways Freight, a Heathrow based freight company, who have transported surgical sutures and books for Juba Hospital (Co-ordinated by Dr Eluzai Hakim) before will transport the books via Kenya Airways. Dr Eluzai Hakim will handle the logistics of the transportation.

The amount required is approximately GBP 1500.00. The breakdown is as follows:

|                                                 |             |
|-------------------------------------------------|-------------|
| <b>Freight Cost</b>                             | GBP 1125.00 |
| <b>Packaging and transportation from Oxford</b> | GBP 100.00  |
| <b>Contingency</b>                              | GBP 275.00  |
| <b>Total</b>                                    | GBP 1500.00 |

Please do make all cheques payable to "Juba Link", a UK registered charity which Dr Eluzai Hakim is Vice Chair of and Medical Advisor to. Please write on the back of the cheque: "University of Juba Books Air Freight" as the money will be deposited in the charity account, and the freight company will be paid from the company account for reasons of transparency and accounting.

The Postal Address is: Dr Eluzai Hakim, Oakdene House, 51 Fishbourne Lane, RYDE, Isle of Wight, PO33 4EX.

Thank you very much for all your help.

Yours Sincerely

*Prof Mairi John Blackings*  
Director, Planning, Innovation and Quality Assurance

CC: Vice Chancellor  
Librarian, University of Juba

# Resources

## MATERNAL AND CHILD HEALTH

### MUAC and admission of children at high risk of mortality in South Sudan

The study was performed to describe the operational implications of using mid-upper arm circumference (MUAC) as a single admission criterion for treatment of severe acute malnutrition. Routine programme data of children with severe acute malnutrition aged 6–59 months admitted to a therapeutic feeding programme using weight-for-height Z-score (WHZ) and/or MUAC was analysed. Patient characteristics and treatment outcomes for children admitted with MUAC < 115 mm (irrespective of WHZ) v. children admitted with WHZ < -3 and MUAC ≥ 115 mm were compared. The study concluded that MUAC < 115 mm identified more severely malnourished children with a higher risk of mortality but failed to identify a third of the children who died. Admission criteria for therapeutic feeding should be adapted to the programmatic context with consideration for both operational and public health implications.

Ref: Comparison of weight-for-height and mid-upper arm circumference (MUAC) in a therapeutic feeding programme in South Sudan: is MUAC alone a sufficient criterion for admission of children at high risk of mortality? Emmanuel Grellety et al. Public Health Nutr. 2015 Mar 25:1-7. <http://www.ncbi.nlm.nih.gov/pubmed/25805273>

### Newborn care and childbirth videos

Global Health Media Project is releasing a new set of newborn care and childbirth videos. The first—Care of the Cord—is now available, and may be accessed at <http://globalhealthmedia.org/videos/> This video shows how to tightly tie or clamp the cord, several aspects of cord care, and how to apply chlorhexidine gel. Chlorhexidine gel has been shown to be effective in reducing newborn deaths from sepsis, and is now recommended in some areas of the world where newborns are at greatest risk of infection. This video is intended for frontline health workers in the developing world. All the videos can be downloaded free-of-charge for use in low-resource settings.

### Can mass media interventions reduce child mortality?

Many people recognise that mass media is important in promoting public health but there have been few attempts to measure how important. An ongoing trial in Burkina Faso is an attempt to bring together the very different worlds of mass media and epidemiology: to measure rigorously, using a cluster-randomised design, how many lives mass media can save in a low-income country, and at what cost. Application of the Lives Saved Tool predicts that saturation-based media campaigns could reduce child mortality by 10–20%, at a cost per disability-adjusted life-year that is as low as any existing health intervention. This

article explains the scientific reasoning behind the trial, while stressing the importance of the media methodology used.

Ref: Can mass media interventions reduce child mortality? Roy Head et al Lancet February 13, 2015 [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)61649-4/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)61649-4/abstract)

### Mid-upper arm circumference (MUAC) screening by mothers

In Niger, almost one in four children suffers from severe malnutrition. With EU support, Alima and its partner BEFEN train mothers to screen their children for malnutrition themselves, in order to diagnose malnutrition cases at an earlier stage – an approach, which cuts costs as well as malnutrition rates. See the video at [https://www.youtube.com/watch?v=WRxmmRUS\\_To](https://www.youtube.com/watch?v=WRxmmRUS_To)

## INFECTION

### Indoor residual spraying with high usage of long-lasting insecticidal mosquito nets

Although many malaria control programmes in sub-Saharan Africa use indoor residual spraying with long-lasting insecticidal nets (LLINs), the two studies in the Gambia assessing the benefit of the combination of these two interventions gave conflicting results. This randomised, controlled efficacy trial aimed to assess whether the addition of indoor residual spraying to LLINs provided a significantly different level of protection against clinical malaria in children or against house entry by vector mosquitoes. We identified no significant difference in clinical malaria or vector density between study groups. In this area with high LLIN coverage, moderate seasonal transmission, and susceptible vectors, indoor residual spraying did not provide additional benefit.

Ref: Efficacy of indoor residual spraying with dichlorodiphenyltrichloroethane against malaria in Gambian communities with high usage of long-lasting insecticidal mosquito nets: a cluster-randomised controlled trial. Pinder M et al. The Lancet DOI: [http://dx.doi.org/10.1016/S0140-6736\(14\)61007-2](http://dx.doi.org/10.1016/S0140-6736(14)61007-2)

### WHO calls for the worldwide use of Smart Syringes

Use of the same syringe or needle to give injections to more than one person is driving the spread of a number of deadly infectious diseases worldwide. Millions of people could be protected from infections acquired through unsafe injections if all healthcare programmes switched to syringes that cannot be used more than once. For these reasons, WHO is launching a new policy on injection safety to help all countries tackle the pervasive issue of unsafe injections. WHO is recommending that these smart syringes are phased in by 2020. See More information at [http://www.who.int/mediacentre/news/releases/2015/injection-safety/en/?mkt\\_tok=3RkMMJWWf9wsRokv](http://www.who.int/mediacentre/news/releases/2015/injection-safety/en/?mkt_tok=3RkMMJWWf9wsRokv)

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### World Tuberculosis Day

World Tuberculosis Day was on March 24 and WHO called for “global solidarity and action” to support a new 20-year strategy, which aims to end the global tuberculosis epidemic. Despite tremendous progress, with over 37 million lives saved in recent years, much more needs to be done. In 2013, 9 million people fell ill with TB, almost half a million of whom have a multi-drug resistant disease, which is hard to treat. An estimated 1.5 million people still die of tuberculosis each year.

WHO’s “End TB Strategy” ([http://www.who.int/tb/post2015\\_strategy/en/](http://www.who.int/tb/post2015_strategy/en/)) was adopted by governments

at the World Health Assembly last year. It is designed to drive action in three key areas:

- integrated patient-centred TB care and prevention for all in need, including children
- bold policies and supportive systems
- intensified research and innovation.

WHO Publications include: TB Strategy <http://www.who.int/tb/strategy/en/>;

TB Fact Sheet: <http://www.who.int/mediacentre/factsheets/fs104/en/> and TB Country Profiles see profile for South Sudan at [https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO\\_HQ\\_Reports%2FG2%2FPROD%2FEFT%2FTBCountryProfile&ISO2=SS&LAN=EN&outtype=html](https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEFT%2FTBCountryProfile&ISO2=SS&LAN=EN&outtype=html)

### Do Not Forget TBM

*Continued from page 37*

- Stage 2: Decreased level of consciousness, localising pain.
- Stage 3: Deeply comatose with / without gross paresis.

A modification of this system for TBM associated with hydrocephalus was devised [4] called the Vellore grading:

Grade 1: Headache, vomiting, fever with or without neck stiffness. No neurological deficit. Sensorium normal

Grade 2: Normal sensorium but neurological deficit present.

Grade 3: Altered sensorium but easily rousable. Dense neurological deficit may or may not be present.

Grade 4: Deeply comatose. Decerebrate or decorticate posturing.

The Glasgow Coma Scaling has stood the test of time and is well known. This too can be a useful clinical guide of progress [5].

Ideally a CT scan with the use of a contrast medium should be carried out. This provides valuable information about ventricular size, subependymal seepage, basal exudates, infarcts and tuberculomas. Unfortunately a CT scan is not reliable if the level of obstruction to CSF flow is needed. In these circumstances specialist neurosurgical advice is needed with a view to the insertion of a ventricular shunt.

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## The Royal College of Physicians Medical Training Initiative

**The Royal College of Physicians (RCP) Medical Training Initiative enables medical graduates from all over the world to train in the UK for up to 24 months.**

The St Mary's Hospital, Isle of Wight, UK is currently seeking a well qualified South Sudanese for the post of Core Medical Trainee (CMT)/ Senior House Officer (SHO). Interviews will take place in Juba, date and place to be confirmed.

### How the Initiative works

- The RCP assesses applicants at face-to-face panel interviews and matches successful applicants to suitable NHS training posts
- The RCP facilitates GMC registration and the supporting Tier 5 Medical Training Initiative visa
- The RCP provides a comprehensive support package for those on the scheme

### Eligibility criteria

- Hold a postgraduate medical qualification (e.g. MD Part 1 or MRCP(UK) Part 1)
- Have been in clinical practice three out of the last five years including the most recent 12 months
- Have achieved the required Academic IELTS score - minimum of 7.5 overall and 7.0 in each category

To apply, please email [international@rcplondon.ac.uk](mailto:international@rcplondon.ac.uk) to request an MTI application form.