

# Risk factors for postpartum haemorrhage in South Sudan

- **Hepatitis B virus in sub-saharan Africa**
- **Case study: sarcoidosis**
- **Suture associated corneal abscess**
- **Clinical quiz: neoplasm of the colon**

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Endoscopy of distal colon - See Quiz on Page 61 (credit George Sarin Zacharia and Thazhath Mavali Ramachandran)

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*Reviewers are listed on the website*

## Centre for medical, health and social care education overseas

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The University of Winchester in the UK has recently established a Centre for Medical, Health and Social Care Education overseas. The Centre is located in the Faculty of Education, Health and Social Care but has no physical presence at the University and works 'virtually' through establishing contacts with others working on overseas development projects.

The Centre sees a crucial interrelationship between education, health and social care, believing that success with just one is likely to be less productive than if all three are considered together. In particular it aims to bring together people working on projects such as this to share their educational challenges.

The Centre supports programmes and provides outside resources such as visiting faculty and learning materials, and the validation of programmes until they are sustainable locally.

Experience has shown that most overseas projects like this involve some form of educational action, and whilst many of the people involved have extensive expertise in health and social care practice, they often welcome support for the educational aspects of that work. The Centre supports programmes and provides outside resources such as visiting faculty and learning materials, and the validation of programmes until they are sustainable locally.

The Centre especially focuses on the educational needs of health and social care practitioners in low and middle income countries. People involved with the Centre have experience in many overseas projects, particularly regarding curriculum planning and faculty development, and many are engaged in projects where people are looking to the establish certificate, diploma and masters programmes in education locally for their teaching staff.

At the Centre's launch at the University on the 2nd May, several people from Hampshire and the Isle of Wight in the UK attended who are engaged in development work in South Sudan, and there was considerable interest in further collaboration.

People who are interested in hearing more about the work of the Centre are invited to make e-mail contact with convenor: [colin.coles@winchester.ac.uk](mailto:colin.coles@winchester.ac.uk).

### **Professor Colin Coles**

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# Risk factors associated with postpartum haemorrhage at Juba Teaching Hospital, South Sudan, 2011

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## Abstract

**Objective:** To study risk factors associated with post partum haemorrhage (PPH) in Juba Teaching Hospital, South Sudan.

**Method:** An unmatched case control study was conducted in which 44 cases and 88 controls were involved, from September to December 2011. Data were collected using a structured questionnaire in face to face interviews, and analyzed using Epi-info 3.5.3 statistical programme to determine if there was a correlation.

**Results:** Maternal demographic and obstetric characteristics were found to be associated with the risk of bleeding during Bivariate analysis. However, age was found to confound emergency admission, uterotonic use (Oxytocin and Misoprostol) use and delivery type; the latter being modified, in the development of post partum haemorrhage.

**Conclusion:** These results indicate that active management of the third stage of labour (AMTSL) and prompt intervention reduced the risk of developing PPH. Understanding the factors that cause PPH will allow us to better strengthen and effect pre-delivery and emergency obstetric care which may help us reduce maternal mortality due to post partum haemorrhage.

## Introduction

Post-partum haemorrhage (PPH) is a leading cause of maternal mortality worldwide and is responsible for 34% of maternal deaths in Africa [1]. It is defined as blood loss of more than 500 ml following vaginal delivery or more than 1000 ml following caesarian delivery [2]. Blood loss can occur during the first 24 hours (primary PPH) or from 24 hours up to 6 weeks after delivery (secondary PPH). Primary PPH classified by site is either placental or extra-placental bleeding [3]. Secondary PPH is abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks postnatally [4].

Evidence shows that PPH is the leading cause of maternal mortality and is responsible for around 25% of maternal deaths worldwide [5] with a prevalence rate of approximately 6%. Africa has the highest rate of PPH at about 10.5% [6]. PPH can also cause long-term severe morbidity, and approximately 12% of women who survive PPH will have severe anemia [7].

Additionally, women having severe PPH and surviving (“near misses”) are significantly more likely to die in the year following the PPH [8]. In Africa and Asia,

PPH accounts for more than 30% of all maternal deaths whose proportions vary between developed and developing countries, suggesting that deaths from PPH are preventable [9].

In the sub-Saharan Africa, the main direct causes of maternal death are bleeding (34%), infection (10%), pre-eclampsia /eclampsia (9%) and obstructed labour (4%) [10]. In South Sudan, about 42% of women who go into labour experience excessive bleeding. The maternal mortality ratio (MMR) was found to be 2,054 per 100,000 live births [11].

The most common cause of PPH is uterine atony, disorders of the coagulation system and platelets, trauma or a retained placenta. PPH is diagnosed clinically - immediately after delivery or later in puerperium. Without an intervention, shock, collapse, disseminated intravascular coagulation (DIC) and death occur.

The null hypothesis states that PPH is not associated with age, educational and employment status, emergency admission, multigravity, grand multiparity and use of an uterotonic during labour. The purpose of this study was to relate maternal demographics and obstetric risk factors to the development of PPH and its effect on management.

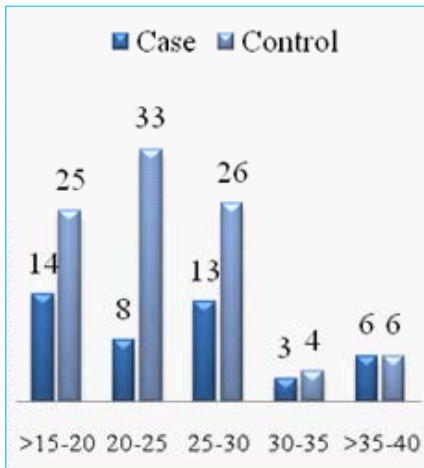


Fig 1. Age groups

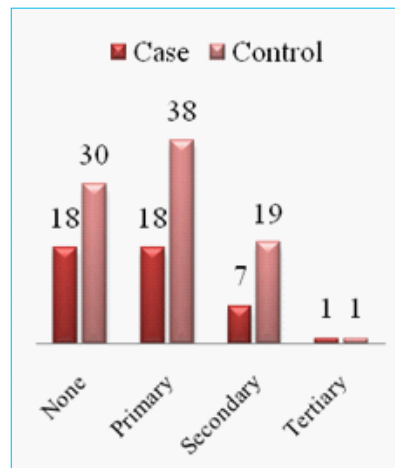


Fig 2. Education status

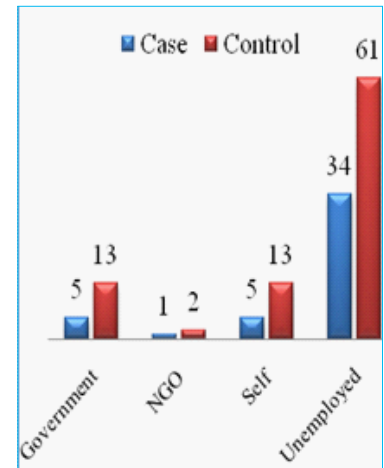


Fig 3. Employment status

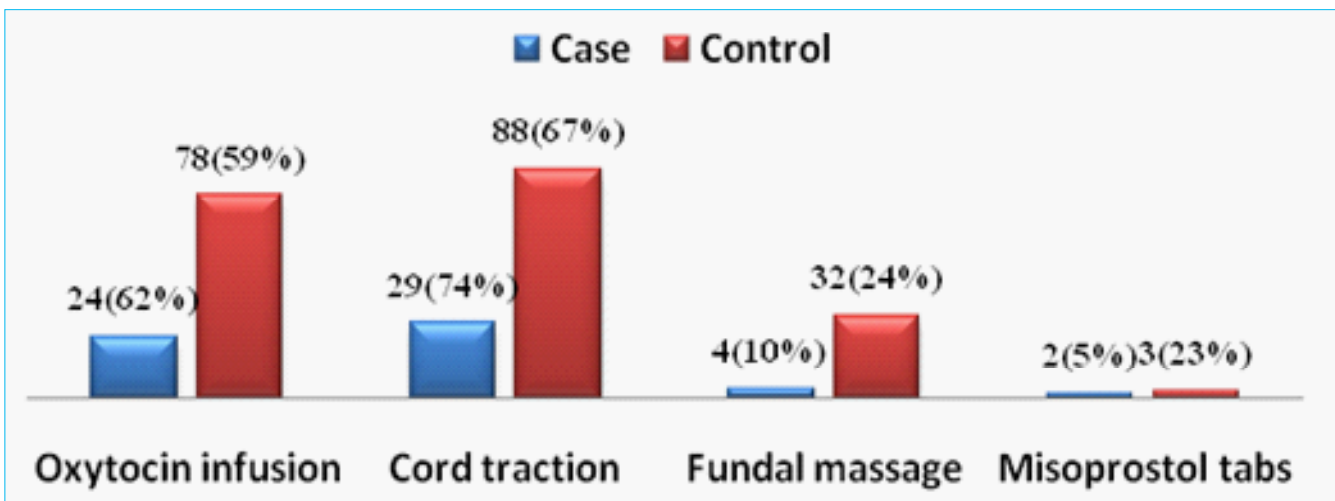


Figure 4. Management of the 3rd stage of labour.

## Materials and methods

In this unmatched case control study sample size was 131 (i.e. 44 cases and 88 controls). Data were collected using a structured questionnaire in face-to-face interviews. The significance level of study was 0.05 and method of statistical analysis was Epi\_info 3.5.3.

A case was defined as any pregnant woman aged 15-49 yrs presenting with bleeding during labour and/or the puerperium period, to the obstetrics ward (maternity) Juba Teaching Hospital (JTH) during the study period (June to December 2011). A control was any pregnant woman aged 15-49 years, without post partum bleeding and admitted in the Obstetric Ward, JTH during the study period with normal or caesarean delivery. Women with past bleeding tendencies and history of any haemorrhage type were excluded.

Sampling was done daily in an unmatched systematic random manner and for each case, two controls were selected. Informed consent was mandatory. Data were

collected and stored in a password controlled computer and analyzed by Epi-info 3.5.3. Significant risk factors were detected by determining the Odds Ratios (OR) and 95% Confidence Intervals in Bivariate and Stratified analysis.

Ethical approval was obtained from the Ministry of Health, Republic of South Sudan (MOH, RSS). Confidentiality of information and participant rights were maintained.

## Results

Maternal demographical characteristics included age, educational and employment status (Figures 1, 2 and 3). Most women had attained either a low level of education or none at all and were unemployed. They had borne siblings with an average weight of 3.0-3.5 kg.

AMTSL protocol was used to manage the third stage of labour. The use of Misoprostol tablets for prophylaxis was minimal (Figure 4) and management of PPH was through additional Oxytocin, sutures, packing or surgery (Figure 5).

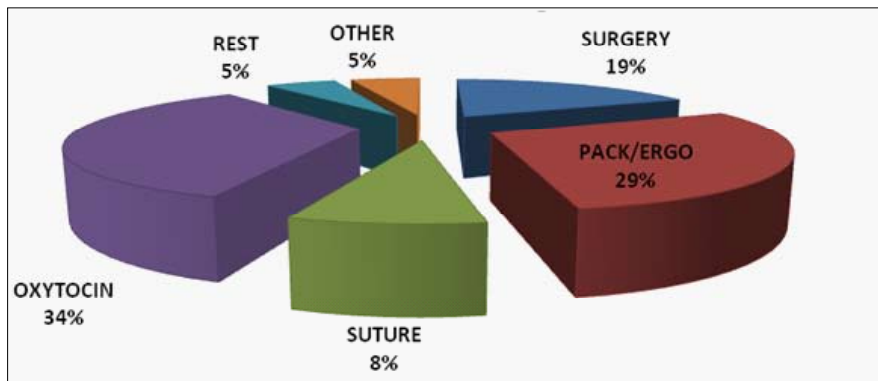


Figure 5. Types of intervention during the third stage of labour

Maternal obstetric characteristics in the form of parity (OR = 3.6, CI= 1.9,10 and  $p < 0.005$ ) and gravity (OR=4.4, CI = 1.9 - 10 and  $p < 0.005$ ) (Table 1) were found to be significant in the development of PPH using bivariate analysis.

Age was found to confound emergency admission (OR = 5.32, CI = 2.23 - 12.68) and  $p$  value  $< 0.005$  (Table 1), Oxytocin use (OR = 0.18, CI = 0.07, 0.45) and delivery type in the development of post partum haemorrhage (Table 2). Age again tended to modify the type of delivery (OR = 0.05, CI = 0.0032 - 0.68 and  $p < 0,005$ ) which were instrumental or non instrumental; in the development of PPH.

The results were not supportive of the null hypothesis and an alternative hypothesis indicated that there was an association between the risk factors of age, emergency admission, parity, and gravity in the development of PPH.

## Discussion

In this study, demographic factors, maternal characteristics associated with bleeding were investigated in addition to the association of management of the third stage of labour to PPH.

The age group of 15-20 years was significant (Figure 1) indicating that teenagers had increased susceptibility to bleeding post partum after early marriage because the reproductive system was not well developed, and sufficient knowledge of reproductive health issues had not been acquired.

Most women developing PPH were either illiterate or had primary level education (Figure 2) which meant they had little knowledge of reproductive health issues, including the need to access basic health services during pregnancy. The importance of maternal and foetal wellbeing during and after delivery, and anticipation of complications were unknown. Family planning, frequent antenatal care (ANC) attendance and safety of delivery of the first baby in the hospital was not considered essential.

The majority of women were unemployed (Figure 3) and had heavy domestic tasks during pregnancy with harmful effects on child bearing and birth. Most women lived at the outskirts of the city and had problems accessing ANC and other health services.

Grand multi parity is the condition of giving birth after the 28th weeks of gestation following 5 or more previous viable babies. Grand multiparae in relation to obstetric performance are labelled as high risk. Grand multiparity has long been considered dangerous to both the mother and the foetus because of having more obstetric complications including gestational diabetes, hypertension, anaemia, placental abruption, placenta praevia, preterm labour, malpresentation, malposition, dysfunctional labour and uterine rupture. [12]. This condition requires vigilance in monitoring contractions and presentation during delivery.

Our study showed that exposure to multiparity bore a fourfold risk of developing PPH (i.e. OR = 3.6, CI= 1.9-10 and  $p < 0.005$ ), (Table 3). This finding compared favourably with studies done in Nigeria where grandmultiparity was associated with primary PPH ( $P < 0.005$ ) among other risk factors [13].

In this study, the fourfold risk caused by multigravity (OR=4.4, CI = 1.5, 8.6 and  $p < 0.005$ ) (Table 3) could be explained by the laxity of the uterus and reduced strength of contraction during labour. Prolonged stages of labour and need of accentuation using oxytocics; thus increased the risks for PPH. This finding contrasted with a study by Tsu in Zimbabwe where grandmultiparity was not a significant risk factor compared to low parity, advanced maternal age and antenatal hospitalization which were strong risk factors [14].

Emergency admissions occurred unpredictably and at short notice during the ante partum period or in the immediate postpartum period due to complications occurring after home delivery or referral from another health facility. In the ante partum period admissions are positively related to delay in delivery. Nineteen (43.2%) cases were admitted as emergencies. In this study, emergency admission indicated a fivefold risk to developing PPH (OR = 5.32, CI (2.23-12.68) and  $p$  value  $< 0.005$  (Table 3).

It had been shown before that AMTSL reduces the incidence and severity of PPH [15]. In this study, AMTSL was practiced with Oxytocin, but Misoprostol use for prophylaxis was not much in evidence (Figure 5). However, Misoprostol uterotonic prophylaxis has been shown to be effective in South Sudan where a coverage of 93.7% was

**Table 1. Factors significantly associated with PPH in group variable analysis**

Variable	Cases n Col%	Control n Col%	OR	95% C I	P value	Comment
<b>1 Entry point</b>						
Emergency	19(43.2%)	11(12.5%)	5.32	2.23_12.68	0.000074	OR > 1
Out patient	25(56.8%)	77(87.5%)				
<b>2 Gravida status</b>						
>5 pregnancies	20(45.5%)	14(15.9%)	4.4	1.93-10.04	0.00056	OR > 1
<5 pregnancies	24(54.5%)	74(84.1%)				
<b>3 Parity</b>						
Multiparous >5 births	16(36.4%)	12(13.6%)	3.62	1.52-8.59	0.0026	OR > 1
Non-multiparous <5 births	28(63.6%)	76(86.4%)				
<b>4 Oxytocin use</b>						
Given	28(63.6%)	80(90.9%)	0.18	0.07-0.45	0.00013	OR < 1
Not given	16(36.4%)	8(9.1%)				

**Table 2. Factors associated with PPH by age groups**

Covariate	OR	95% CI	P value	Comment
<b>1. PPH and Emergency admission Stratified by Age Group</b>				
15-20	13.3	1.36-130.3	0.016*	Effect Modification & Confounding
>20-25	9.3	1.67-52.06	0.013*	
>25-30	4.7	1.03-21.65	0.048*	
>30-35	1.5	0.06-40.6	0.714*	
<b>2. PPH and Oxytocin use Stratified by Age Group</b>				
15-20	1.13	0.09-13.7	0.71*	Effect Modification
>20-25	0.06	0.009-0.47	0.0086*	
>25-30	0.16	0.03-0.72	0.017*	
<b>3. PPH and type of delivery Stratified by Age Group</b>				
>20-25	0.05	0.0032-0.68	0.004*	Effect Modification
>25-30	0.71	0.11-4.65	0.54*	

achieved [16]. Oxytocin was significantly protective with p-value < 0.005, OR (0.18) and CI (0.07-0.45) indicating that exposure and outcome (PPH) were associated. These findings confirm the benefits of AMTSL.

Age was controversial and had an indirect role in the development of PPH for parity and gravity were expected to occur at older ages. However early marriage, poor ANC attendance and illiteracy could have contributed to poor response leading to emergency admissions.

Unemployment did not significantly bear on PPH

development. Traumatic episiotomy, prolonged third stage of labour, retained placenta and bleeding tendencies which traditionally contribute to PPH were not significant in this study.

Limitations may have manifested as bias in recall, selection and information collection. The incidence of disease was difficult to estimate among the exposed and unexposed subjects of the study. This hospital study did not give the real picture of the situation as it was not representative of what was going on in the whole community.

## Recommendations

- ANC facilities should incorporate appointments, and adequately prepare pregnant women for childbirth. Early detection of risk factors (hypertension, anaemia, etc.) should be routine. Health education should emphasize maternal and child health (MCH) aspects including diet, exercise and enhanced close monitoring of the foetus by ultrasound.
- The stages of labour should be shortened by closer monitoring, prompt recognition of delaying factors and timely intervention.
- AMTSL should be performed in ALL deliveries using an uterotonic (Oxytocin or Misoprostol). Midwives should be trained in AMTSL and provided with updated guidelines and protocols.
- Emergency and obstetric care (EmOC) facilities should be established for referral, transfer or treatment with access to well-stocked and staffed emergency facilities. In cases of shocked patients newer methods of resuscitation e.g. anti-shock garment, should be employed before any envisaged blood transfusion.

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### The Wessex Global Health Network

The Wessex Global Health Network at <http://www.wessexghnetwork.org.uk/> seeks to help people interested in global health to keep in touch with each other and to remain up to date with local, national and international information. It promotes educational events to develop and share good practice. One can subscribe to join the network and receive regular e-mail updates about global health. The website lists Community and Hospital links between UK and South Sudan, and Resources which include The Health Sector Development Plan 2012 - 2016 for South Sudan. The website gives 'News from WHO'. Examples are: Mental health information at your fingertips – WHO launches the MiNDbank and Work by WHO to limit the health consequences of the South Sudan crisis.



# Hepatitis viruses overview

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Hepatitis is major cause of morbidity or mortality worldwide, particularly in the developing world. The major causes of infective hepatitis are hepatitis viruses A, B, C, D or E. In the acute phase, there are no clinical features that can reliably differentiate between these viruses. Infection may be asymptomatic or can present as jaundice, fevers, abdominal pain, fatigue or vomiting. An acute hepatitis infection can last days to months, but can also cause fulminant liver failure.

Some hepatitis virus infections become chronic, leading to cirrhosis and the development of hepatocellular carcinoma. The difficulty in finding and treating these patients is that chronic infection is often asymptomatic until these endpoints develop. Co-infection with different hepatitis viruses or with HIV tends to worsen the

prognosis. Treatment decisions and regimes are complex and are beyond the scope of this summary. National hepatitis guidelines are currently in development.

World Hepatitis Day took place on 28th July 2014 to raise awareness of the disease and so in this article a table summarising the key features of hepatitis virus infections is presented in Table 1.

### References

1. Rizzetto M. Hepatitis D: thirty years after. *J Hepatol.* 2009 May; 50(5):1043-50. <http://www.ncbi.nlm.nih.gov/pubmed/19285743>
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**Table 1. Key features of hepatitis viruses [1, 2]**

Hepatitis virus	A	B	C	D	E
<b>Prevalence/ incidence worldwide</b>	1.4 million per year Epidemics	240 million with chronic hepatitis B (5-10% prevalence in Sub-Saharan Africa)	130-150 million	15 million	20 million per year Epidemics
<b>Transmission</b>	Faecal-oral via food/water	Parenteral via body fluids	Parenteral via blood, vertical transmission	Parenteral via blood and sexual contact	Faecal-oral via water, undercooked meat of an infected animal, blood transfusion
<b>Incubation</b>	14-28 days	30-180 days	2 weeks- 6 months	3-7 weeks when infected simultaneously with hepatitis B. Shorter if superinfection of hepatitis D on chronic hepatitis B	3-8 weeks
<b>Duration of infection</b>	Acute Self-limiting	Acute or chronic Spontaneous clearance is rare in perinatal/childhood infection, but 95% when infected in adulthood	Acute or chronic Spontaneous clearance in 15-45%	Acute or chronic Self-limiting in 95% when simultaneous infection with hepatitis B Chronic in 80% when superinfection on chronic hepatitis B	Acute Self-limiting May become chronic in immunosuppressed

<b>Other disease features</b>	Higher morbidity with age 90% infected before 10 years old in developing countries	Assess for fibrosis	Assess for fibrosis	Requires co-infection with hepatitis B	Higher morbidity if pregnant or co-existing liver disease Zoonotic reservoir
<b>When to test</b>	Acute hepatitis illness Epidemic	Acute hepatitis illness Evidence of chronic liver disease High risk groups*/post exposure Pregnancy	Acute hepatitis illness Evidence of chronic liver disease High risk groups/post exposure	HBsAg positive patients Chronic hepatitis B with symptomatic/severe illness	Acute hepatitis illness Epidemic
<b>Diagnostic tests</b>	HAV IgM and IgG or RT-PCR	HBsAg in all Persistence > 6 months indicates chronic infection IgM to HBcAg in acute infection HBeAg denotes high infectivity	Anti-HCV antibodies NAT to confirm current vs. past infection Genotyping if positive	Anti-HDV antibodies RT-PCR	HEV IgM and IgG RT-PCR
<b>Prognosis</b>	Rarely fatal	15-25% mortality from cirrhosis or hepatocellular carcinoma in chronic infection obtained in childhood	15-30% develop cirrhosis within 20 years of infection Cure rates with treatment vary from 50-90%	10 times higher mortality than hepatitis B alone Cirrhosis takes 5-10 years to develop	20% mortality if pregnant
<b>Treatment</b>	Supportive treatment	Acute hepatitis B: Supportive treatment Chronic hepatitis B: IFN or antiviral nucleoside antagonists e.g. tenofovir, entecavir	IFN and RBV and/or newer antivirals Choice depends on availability and genotype	No effective treatment Some help with IFN-α Liver transplant if fulminant	Supportive treatment RBV if fulminant or chronic
<b>Prevention</b>	Water hygiene Sanitation	Screening high risk groups, barrier contraception, blood donor screening, safe disposal/sterilization of sharps	Screening high risk groups, blood donor screening, safe disposal/sterilization of sharps	As for hepatitis B	Water hygiene Sanitation Safe food preparation
<b>Vaccine availability</b>	Yes Can be effective when given up to 2 weeks post exposure	Yes Childhood vaccination programme recommended	No	No, but hepatitis B vaccine effective	Yes, but not available globally

\* High risk groups include men who have sex with men, sexual partners of known infected individuals, individuals with multiple sexual partners, intravenous drug users, unscreened blood transfusion recipients, children of known infected mothers, high prevalence areas.

*Glossary*

- HAV                      Hepatitis A virus
- HBcAg                  Hepatitis B core antigen
- HBeAg                  Hepatitis B envelope antigen

- HBsAg                  Hepatitis B surface antigen
- HBV                    Hepatitis B virus
- HCV                    Hepatitis C virus
- HDV                    Hepatitis D virus
- HEV                    Hepatitis E virus
- IFN                     Interferon
- NAT                    Nucleic acid test
- RBV                    Ribavirin
- RT-PCR                Reverse transcriptase polymerase chain reaction

# Hepatitis B in Sub-Saharan Africa

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## Abstract

Hepatitis B virus (HBV) infection causes a spectrum of acute and chronic liver disease, ranging from inactive chronic carrier status to progressive chronic hepatitis, leading to end-stage cirrhosis and primary liver cancer. In sub-Saharan Africa, over 8% of the population has chronic HBV carriage with a high risk for progressive liver disease. HBV-related hepatocellular carcinoma is the most common cancer among men and third most common among women. HBV therefore represents a critical threat to health in the African continent.

## Overview

In this article, we outline the state of HBV prevalence, screening and management in sub-Saharan Africa (SSA). We highlight the urgent need for greater international support to improve local infrastructure for effective prevention and clinical management strategies for HBV infection.

Hepatitis B virus (HBV) infection causes a spectrum of acute and chronic liver disease, ranging from inactive chronic carrier status to progressive chronic hepatitis, leading to end-stage cirrhosis and liver cancer [1EASL 2012]. Over one third of the world's population has been, or is currently infected with, HBV and 350-400 million people remain chronic HBV surface antigen (HBsAg) carriers [1]. There are over 500-750,000 reported deaths annually due to HBV-related cirrhosis and primary liver cancer worldwide. However, this figure underestimates the true HBV mortality rate due to inadequate disease and cancer surveillance in many resource-poor countries where HBV is endemic [2].

Within SSA, HBV infection is endemic and the HBV-related disease burden is high. The lifetime risk of HBV infection is over 60% and more than 8% of the population remain chronic HBV carriers who are at risk of progressive liver disease and hepatocellular carcinoma (HCC). HCC is a highly aggressive cancer with limited treatment options, particularly in resource-poor settings

[3]. SSA has one of the highest HBV-related liver cancer rates in the world [4], with HBV-related liver cancer the most common cancer among males and third most common cancer among females [5, 6]. Furthermore, the average age of HCC development in Africa is considerably younger than in other parts of the world (mean age 33 years compared with 50 years in Asia and 60 years in Western Europe [9], meaning HBV-related HCC affects patients in their working and reproductive years [10]. HBV therefore represents a critical threat to health in the African continent.

## Treatment

Early detection and treatment of HBV infection reduces HCC incidence and mortality (primary prevention) [11, 12]. Furthermore, HCC survival is improved by early detection of potentially treatable HCC by screening of at-risk patients (secondary prevention)[13]. However, access to medical care and the cost of screening, diagnosis and treatment of viral hepatitis and HCC are major limiting factors in hepatitis and liver cancer management in SSA. Routine HBV screening and surveillance programs for the general population are virtually non-existent in SSA and most nations lack the laboratory and medical infrastructure to implement such screening. A minority of countries in SSA offers free HBV screening of pregnant mothers, healthcare workers and HIV-infected individuals. However, there is a lack of infrastructure to support channeling of screened patients into long-term treatment programs [14].

Safe and effective treatments for HBV exist, but treatment access is severely limited in SSA. The recent WHO Global Policy Report on the Prevention and Control of Viral Hepatitis reported that only 16.7% of WHO-AFRO countries have publicly funded HBV treatment available, despite highly effective nucleoside analogues, such as tenofovir being available in most countries in SSA at generic price for the treatment of HIV [14]. This staggering lack of accessibility to affordable, effective HBV treatments needs addressing urgently if any gains

are to be made in controlling the costly disease burden of HBV-related liver disease and HCC.

**Control**

Vaccination is the cornerstone of HBV prevention and is most effective when given within 24 hours of birth [15, 16]. Multiple studies from SSA have demonstrated that HBV vaccination of infants is both feasible and highly effective for preventing chronic HBV carriage and HCC [17, 18, 19]. Despite WHO guidelines recommending that HBV vaccination should be given within 24 hours of birth, the vaccine schedule of 6, 10 and 14 weeks has been adopted in most African countries to allow the use of combination vaccines and to minimise costs and logistic expenses by streamlining vaccination schedules [20]. However, HBV vaccination coverage remains highly variable in SSA and there are little data on infant HBV vaccination coverage in South Sudan [21, 14].

Control of HBV prevalence is a major goal for the World Health Organization (WHO) worldwide, with a key focus on HBV prevention in African countries. In 2010, the World Health Assembly (WHA) passed a resolution calling for public health intervention to prevent and control viral hepatitis. There is also a forthcoming WHA resolution requesting the Global Health Fund to provide antiviral medications for HBV mono-infected patients. HBV treatment that is accessible and affordable to all is a pressing requirement in SSA and greater support from the international medical community is critical to engender support from the pharmaceutical industry for equitable drug availability. Greater support for medical service infrastructure and staff education is paramount to assist countries in SSA to develop and sustain essential HBV research platforms and public health intervention campaigns. African and international medical associations for liver disease and infectious diseases, community hepatitis groups and healthcare workers need to band together to forge a path for the education and promotion of viral hepatitis among all levels of the African community. The crucial importance of viral hepatitis research, treatment and prevention campaigns is more likely to be heard by pharmaceutical industry and government policy makers when delivered by a strong united voice.

**Acknowledgements**

All authors are grateful to the UK National Institute for Health Research (NIHR) Biomedical Facility at Imperial College London for infrastructure support. All authors are participant workers in the European Union Framework 7-funded “PROLIFICA” (Prevention of Liver Fibrosis and Cancer in Africa) project in West Africa, which aims

to diagnose, treat and follow-up a cohort of hepatitis B-positive patients in The Gambia, Senegal and Nigeria (EC FP7, P34114; www.prolifica.eu).

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## NEOPLASM OF THE COLON: A CLINICAL QUIZ

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A 34-year old male presented with a 3-months history of anorexia, weight loss and rectal bleeding. There was a strong family history of several members with colorectal cancer. Examination was unremarkable except for generalized muscle wasting. Investigations revealed anaemia and a positive faecal blood test. Colonoscopy showed an ulceroproliferative growth involving the proximal descending colon causing significant luminal narrowing. Biopsy was consistent with adenocarcinoma colon. At endoscopy distal colon also revealed the appearance as in Figure 1.



**Figure 1. Endoscopy of distal colon**

### Questions

- Q1. What is the endoscopy finding in Figure 1?
- Q2. What is the most probable diagnosis?
- Q3. What is the genetic abnormality involved?
- Q4. What are the variants?
- Q5. Name the associated extra-gastrointestinal neoplasms.
- Q6. What is the treatment?

# Case study: sarcoidosis

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## Introduction

Sarcoidosis is a multisystem granulomatous disease of unknown cause. It occurs worldwide but there are higher incidences in certain racial groups, being three to four times more common in African-Americans [1]. It can also aggregate in families. Most patients do not need treatment and the disease often regresses spontaneously, but a minority have potentially life-threatening progressive organ dysfunction; these patients need active management including oral corticosteroids. The poorest prognosis, in terms of chronicity and fatality, is for African Americans [2]. This case illustrates that acute sarcoidosis can be a difficult diagnosis to make.

## Clinical assessment

A 59 year old man of white Australian origin, who had been living in the UK for the last 35 years, presented to the medical admission unit of our hospital with a cough, rash and pyrexia. The cough had been present for 3 months, increasing over the preceding 2 weeks, and was productive of clear sputum. He gave a 10 day history of an erythematous rash which involved all four limbs and the upper trunk, sparing the palms and soles. The patient also complained of widespread arthralgia, with variable joint swelling, tenderness and stiffness. There was no history of night sweats, weight loss or haemoptysis. His past medical history included fusion of the left ankle joint following an injury at the age of fifteen; he was otherwise fit and well. He was not on any regular medications and had no known drug allergies. He drank alcohol occasionally and had never smoked. He worked as an engineer. His last overseas travel was to the Australian outback in Queensland four years previously. He had no pets or significant animal exposure and no recent insect bites.

On examination, his temperature was 37.3 °C and other observations were normal. There were no added heart sounds and vesicular breath sounds were heard throughout. There was bilateral pedal pitting oedema to below knee level. There were no peripheral stigmata of vasculitis or palpable lymphadenopathy present. The abdomen was soft and non-tender with no organomegaly or palpable masses. The neurological examination was unremarkable. There was bilateral conjunctival injection. Dermatological

**Table 1. Blood results on admission**

Description	Value	Range
Haemoglobin	155g/l	135-185
MCV	86 fl	78-100
Platelets	289 x109/l	140-400
Haemoglobin	155g/l	135-185
MCV	86 fl	78-100
Platelets	289 x109/l	140-400
White cell count	10.9x 109/l	4.0-11.0
Neutrophils	8.6 x109/l	2.0-7.5
Lymphocytes	1.1 x109/l	1.0-3.5
Urea	3.7 mmol/l	2.5-7.8
Sodium	132 mmol/l	133-146
Potassium	4.3 mmol/l	3.5-5.3
Chloride	93 mmol/l	95-108
Creatinine	82 µmol/l	60-110
Estimated GFR	89 mL/min/1.73m2	>90
CRP	174.9 mg/l	0.0-5.0
Calcium	2.26 mmol/l	2.20-2.60
Phosphate	1.14 mmol/l	0.80-1.50
Adjusted Calcium	2.39 mmol/l	2.20-2.60
Tot. Bilirubin	12 µmol/l	<21
Alkaline Phosphatase	95 U/L	30-130
Total Protein	78 g/l	60-80
Albumin	37 g/l	35-50
Globulin	41 g/l	20-40
Alanine Aminotransferase	45 U/L	<40

examination revealed multiple 1-2 mm erythematous macules on the arms, legs and upper trunk. There was a marked erythematous area on the right ankle and a firm tender swelling with surrounding erythema just distal to the left elbow. The latter had developed spontaneously on the day of admission.

During the following 30 days of the patient being in

hospital, he spiked temperatures daily, ranging from 37.3°C to 38.6°C. He also complained of widespread arthralgia, reporting variable joint swelling. Towards the end of his admission, the patient developed multiple, red, round, warm nodules on the postero-medial aspects of the lower limbs, reminiscent of erythema nodosum.

**Investigations**

**Initial Investigations**

Routine bloods tests revealed a mildly raised neutrophil count and an elevated CRP. Renal function was not impaired and all electrolytes were within the normal range. Bone profile was stable – see Table 1.

ECG showed left axis deviation. Urinalysis was negative for nitrites, leucocytes and blood. Repeated blood and sputum cultures showed no growth. Auramine stain was negative.

**Specific Investigations**

In view of the history of travel in the Australian outback, relevant infectious diseases were investigated: Malarial screen, ASO titre, HIV and serology for Brucella, Chikungunya virus, Cytomegalovirus (CMV), Dengue virus, Epstein–Barr virus (EBV), Hepatitis B surface antigen, Hepatitis C antibody, Lyme, Mycoplasma, Orientatsutsugamushi, Q fever, Ross River Fever, Spotted fever and Syphilis but all were negative. Other immunological and biochemical investigations were unremarkable – see Tables 2 and 3.

The chest radiograph did not show any evidence of infection and was thought to be normal – see Figure 1.

CT of the chest/abdomen/pelvis showed widespread lymph node enlargement throughout the mediastinum, suggesting possible sarcoidosis – see Figure 2.

**Histology**

Endobronchial ultrasound (EBUS) guided needle aspiration of the sub-carinal lymph node showed large numbers of lymphocytes and scattered histocytes with no malignant cells or well-formed granulomas.

Biopsy of the skin lesions was considered but they were beginning to resolve before this could be done.

**Differential diagnosis**

Initial working diagnosis was cellulitis of the right leg. Septic arthritis of the right ankle was excluded by the Orthopaedic team.

Differential diagnoses could be categorised into four broad areas:

**Table 2. Immunology**

Description	Value	Range
ANA	Ratio 2.4	< 1.0
ANCA	Negative	
Rheumatoid factor	57 IU/ml	0-25

**Table 3. Chemical Pathology**

Description	Value	Range
ESR	70 mm/hr	
Protein electrophoresis	Inflammatory response	
Serum IgA	2.73 g/l	0.80-4.00
Serum IgG	13.77 g/l	5.30-16.50
Serum IgM	0.80 g/l	0.50-2.00
INR	1.0	0.8-1.2
Beta-2 microglobulin	3.3 mg/l	1.2-2.4
LDH	499 IU/l	225-425
CA 19-9	32 KU/L	0-35
CEA	0.9 µg/l	0.0-2.5
AFP	1.2 KU/L	0.0-10.0

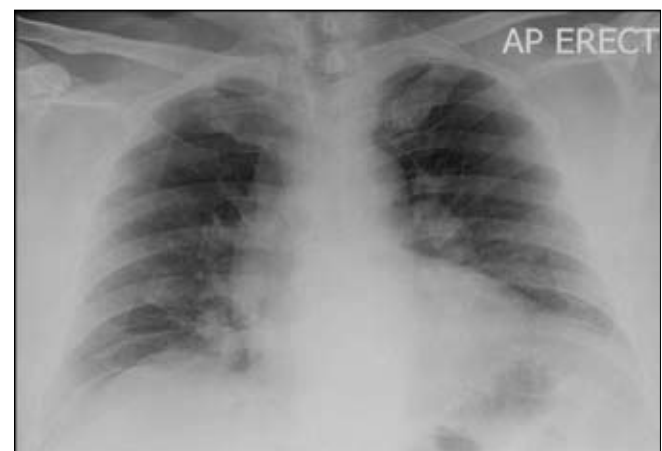


Figure 1. Anterior-posterior chest radiograph

1. Infections including demographic specific infections; bacterial infections including TB, Rheumatic fever, mycoplasma and typhoid; viral infections including HIV, EBV, CMV and hepatitis
2. Immune-mediated causes including sarcoidosis, vasculitis, SLE, reactive arthritis, psoriatic arthritis and amyloidosis
3. Malignancy including lymphoma, leukemia and metastatic cancer
4. Other causes of unexplained pyrexia such as

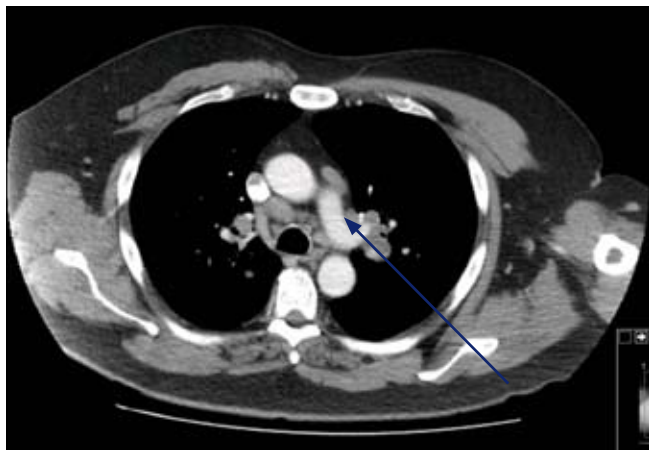


Figure 2. CT chest/abdomen/pelvis with contrast

abscess, haematoma, drug fever, pulmonary emboli, hyperthyroidism and sub-acute thyroiditis

Following the CT result, the patient was referred to the Respiratory team. A diagnosis of probable sarcoidosis was made. This was investigated by an EBUS guided needle aspiration which was performed in a regional tertiary hospital.

**Treatment and Progress**

Initial treatment was with flucloxacillin for cellulitis. However, the progression of the rash from the lower legs to the thighs, the bilateral swelling of the elbows and the development of tender red nodules, raised a concern that he had had a reaction to the antibiotic. This in conjunction with the ongoing pyrexia and elevated CRP (see graphs 1 and 2) prompted a switch to second line antibiotics (doxycycline), although this was not associated with any change in these outcomes.

Following a review by the Respiratory Team, antibiotic treatment was stopped and this did not cause any deterioration in the patient’s clinical state. Treatment with steroids was withheld until a histological diagnosis could

be made. The EBUS lymph node aspiration cytology was supportive of the diagnosis of sarcoidosis. He was referred to an Ophthalmologist, as per American Thoracic Society guidelines [3], who diagnosed ocular hypertension but did not find any evidence of uveitis or visual impairment.

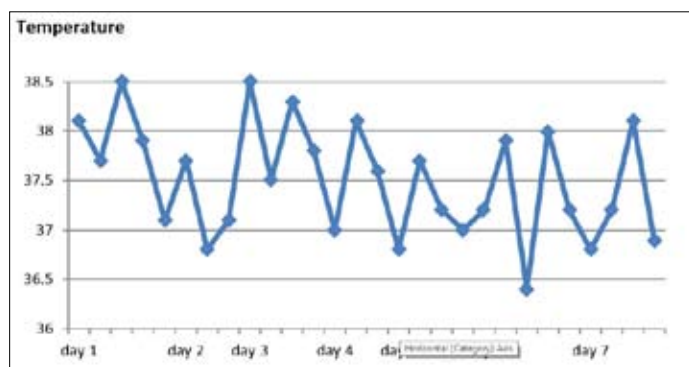
The patient was booked for an urgent follow-up outpatient appointment to discuss findings, prognosis and treatment options. At follow-up 2 months after discharge, he was asymptomatic and on no treatment.

**Comment**

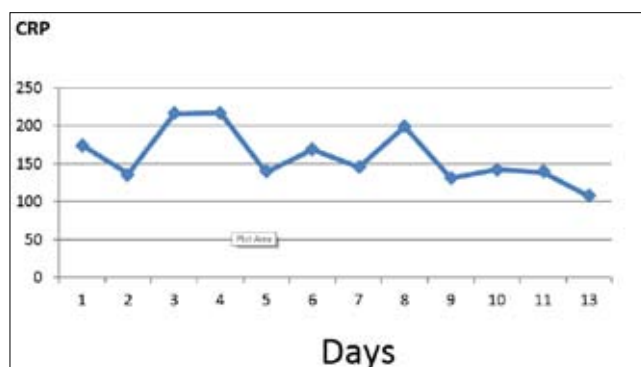
Pyrexia of unknown origin (PUO) was first defined in 1961 as a temperature greater than 38.3°C on several occasions, accompanied by more than three weeks of illness and a failure to reach a diagnosis after one week of inpatient investigation [4]. In adults, infections, cancer and autoimmune disorders account for most PUOs. However, drug fever, granulomatous diseases-including sarcoidosis, vasculitides, pulmonary emboli, hyperthyroidism and subacute thyroiditis are other important causes.

Erythema nodosum (EN) is characterized by purple or red, tender nodules, which can occur anywhere but are usually on the anterior aspect of the lower leg. Accompanying arthralgia occurs in more than half of patients. Streptococcal infection is the most common underlying cause. Granulomatous diseases, including sarcoidosis and tuberculosis must be considered. EN may correlate with a flare-up of Crohn’s disease or ulcerative colitis. It can precede the diagnosis of Hodgkin’s lymphoma and non-Hodgkin’s lymphoma. It can be drug induced. In many cases no cause is found.

Bilateral hilar lymph node enlargement can be a feature of infection (particularly fungal or mycobacterial organisms) or malignancy (e.g. lymphoma). However bilateral hilar lymphadenopathy is the most common radiological finding in sarcoidosis [5]; this should therefore remain high on the differential diagnosis list.



Graph 1. Fluctuating temperatures during admission



Graph 2. Fluctuating CRP during admission



With hindsight, the pattern of clinical features including pyrexia, erythema nodosum and bilateral hilar lymphadenopathy were highly suggestive of a clinical diagnosis of sarcoidosis. A good quality postero-anterior radiograph on admission to hospital may have brought the diagnosis to light much earlier.

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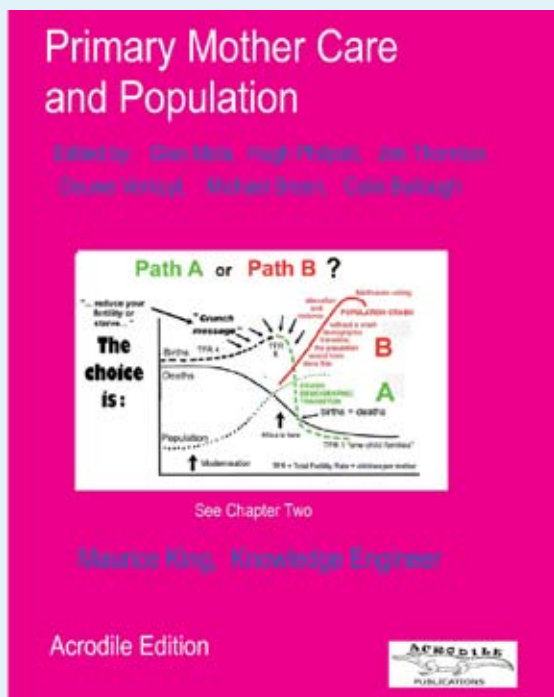
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**‘PRIMARY MOTHER CARE AND POPULATION’**

Authors: Glen Mola, Jim Thornton, Michael Breen, Colin Bullough, Hugh Philpott, Douwe Verkuyl, Priscilla Busynge, and Maurice King



“This book should be in every health unit in Africa”, so said a highly critical and long experienced doctor and aid worker of an earlier edition. Its purpose is to stop mothers dying and to reduce Africa’s maternal mortality. Although primarily intended for ‘the better educated midwives’, it should be useful for the less educated ones, and indeed for the more enquiring members of the general public. It is also highly suitable for medical students, and indeed

for trainee consultant obstetricians, since their cadres are presently becoming deskilled in Africa. We constantly have in our minds the isolated midwife who is trying to do her first destructive operation ‘out of the book’ on a mother with obstructed labour in the middle of the night, never having done one before.

We describe all the family planning methods in detail, including particularly the postcoital ones. The novel feature of the book is however its second chapter “How many children?” which deals with the problem of communities exceeding the carrying capacity of their local ecosystems. This is ‘demographic entrapment’, which requires an immediate reduction of fertility, in ‘a crash demographic transition’. Since demographic entrapment is tightly taboo to demography, development economics and the UN agencies and NGOs, this chapter breaks entirely new ground. We hope it will be a growing point for future ‘community disentrainment programs’.

The book is large with 28 chapters, two million words, and several pictures on almost every page. It is problem oriented, with detailed instructions as to how to deal with every difficulty that we have ever been able to find. The introduction contains a glossary of all technical terms in narrative form.

It was put together in an unusual way, over many thousands of hours, by a doctor who is not an obstetrician, putting himself in the position of the reader and then finding out what he should do and know. To reduce its cost, it is published without royalty, for the love of Africa. The book can be purchased from Kennedy Chadeka, Acrodile Publishing Ltd, Nairobi, Kenya. [www.acrodile.co.ke](http://www.acrodile.co.ke)

*Note the above review was provided by the publisher and does not necessarily reflect the opinion of SSMJ.*

# Suture associated corneal abscess three years after cataract surgery: a case report

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## Abstract

We describe a case of corneal abscess presenting three years after uneventful cataract extraction with posterior chamber lens implantation through a limbal incision secured with three sutures placed in the clear cornea. After removing the abscess, a loose 10/0 nylon suture was found at the base of an ulcer. The suture was removed and a scraping taken from the base of the ulcer after which the patient was started on topical antibiotics and cycloplegics. Results of Gram stain microscopy were negative. After one month follow up, the ulcer had healed without perforation leaving a deep depression on the cornea. Risk factors and bacteriology of suture related corneal abscess are discussed and suture associated complications of cataract surgery are reviewed.

## Case report

A 47-year old housewife presented to the Eye Clinic at Juba Medical Complex, Juba County, Central Equatoria State with a one-week history of tearing, pain, photophobia and reduced vision in the left eye. She had an uneventful left extracapsular cataract extraction with posterior chamber lens implantation through a corneal incision in Khartoum Sudan, three years prior to the onset of the present symptoms. There was no history of trauma, and systemic enquiry revealed no diabetes mellitus or hypertension. She had been on topical steroid therapy until one month prior to presentation.

## Clinical assessment

On examination, visual acuity was OD 6/60 and OS 3/60. The right eye had a posterior subcapsular cataract. The left eye was inflamed with corneal oedema obscuring iris details. At the one o'clock position near the limbus there was a large cystic abscess filling a corneal depression 1.8 x 2mm in diameter (Figure 1). The ulcer edge was vascularized with vessels originating from the site of the suture on the limbus. Stromal infiltrates could be seen in the cornea surrounding the ulcer. The anterior chamber was deep with no hypopyon. The pupil was round and central. No posterior synechiae were noted. A posterior chamber lens was centred on the pupil. Refraction was OD -3.50/-0.50 Axis 60 and OS +4.75/-2.75

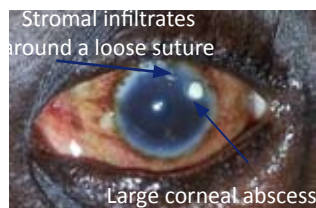


Figure 1. Left eye corneal abscess at 2 o'clock position close to the limbus (credit Wani Mena)

Axis 130. Visual acuity did not improve with correction. Fundoscopy revealed pale cupped discs with Cup:Disc ratio of 0.6 in the right eye.

## Treatment

The abscess was carefully removed on slit lamp using blunt tipped forceps without breaking the thin membrane covering it. There was a deep corneal depression at the bottom of which was found a loose 10/0 nylon corneoscleral suture. Another loose suture was present at the 12 o'clock position surrounded by stromal infiltrates. Both sutures were removed (Figure 2).

A corneal scraping was taken from the base and edges of the ulcer. Bacteriological examination of the smear was negative but culture facilities were unavailable. Topical gentamicin 0.3% and ciprofloxacin 0.3% was applied every four hours during the day and tobramycin ointment at night. Homatropine 1% twice daily was given to ease pain and prevent posterior synechiae. Combigan eye drops twice daily

were given to prevent glaucoma. The eye was patched and the patient followed up daily for the first week and then weekly.

At the end of the first week, visual acuity remained the same in both eyes but slit lamp biomicroscopic examination revealed a less inflamed eye with clearing of the corneal edema, resolution of the stromal infiltrates and thinning of the ulcer base. The patient was put on artificial tears, given an eye patch and asked to continue with antibiotics. Review after two weeks showed complete healing of the ulcer without perforation leaving a shallow depression on the cornea.

## Discussion

The technique of wound construction in cataract surgery has advanced tremendously from the traditional large 12 mm cataract wound closed with multiple sutures to small incision scleral tunnel and now to clear cornea self-sealing incision that guarantees minimum discomfort, better visual rehabilitation, faster postoperative recovery and minimum postoperative astigmatism. Coincident with these gains is an increasing incidence of post cataract surgery infections

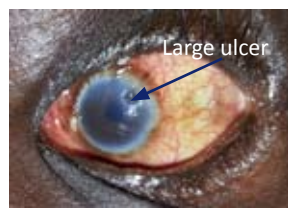


Figure 2. Large ulcer seen after removal of abscess (credit Wani Mena)

ranging from mild keratitis to endophthalmitis. These infections although rare are devastating as they can progress to endophthalmitis resulting in loss of vision or the whole eye.

Self-sealing clear corneal incisions are preferred by many surgeons performing phacoemulsification because of the short surgical time involved, avoidance of conjunctival trauma, reduction of post-surgery astigmatism and enhancement of post-operative recovery compared to scleral tunnel surgery [1]. Manual extracapsular cataract extraction and posterior chamber lens implantation through corneal or limbal incision requires suture to secure the integrity and security of the larger wound necessary for delivery of the nucleus in whole. Use of suture in clear cornea or limbal incision is attended with many problems including harbouring of bacteria by the suture which brings about local inflammation and necrosis. Exposed or broken sutures may cause foreign body sensation necessitating repeated visits to physician thereby increasing the cost of post-operative care. Loose sutures provide a tract through which bacteria may gain entry into the cornea.

Suture related corneal infections, including corneal abscess and endophthalmitis, have mainly been reported in patients undergoing penetrating keratoplasty [2, 3]. Some cases of suture related corneal infection complicating cataract surgery have also been reported in the literature [4, 5]. Suture related corneal abscess typically present as a delayed complication occurring months or even years after uneventful cataract surgery. Common incisions associated with suture related abscess include corneal and limbal incisions in which one end of the suture is placed in clear cornea

Unburied, loose or broken suture seems to confer risk for development of keratitis after cataract surgery [4]. Contact lens wear, use of topical steroids and history of Herpes Simplex Keratitis are additional risk factors that may predispose a patient to infection. The mechanism by which loose sutures induce keratitis are not well understood although it is thought that organisms adhere to the suture leading to formation of a biofilm that aids bacterial entry into the cornea through the suture tract

The most common organisms recovered from culture of + sutures recovered from such ulcers include *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus pneumoniae* [3, 6, 7, 8]. Takashi *et al* [2] isolated *Corynebacterium macginleyi* from a keratoplasty patient with suture related keratitis and argued that loose sutures made it easy for organisms to attach and migrate into the cornea.

The sources of organisms isolated in suture-related abscesses seem to be the eye lids or conjunctiva suggesting that the normal flora of the lid and conjunctiva may be the source of the offending organisms. Prolonged use of topical steroids and antibiotics necessary for postoperative control of inflammation following cataract surgery may result in selection of more virulent forms of organisms which then

invade the cornea.

Suture-related abscesses can progress to perforation and endophthalmitis despite aggressive treatment with fortified antibiotics. Surprisingly the ulcer in this patient healed without perforation. This could be because antibiotic treatment had been started at a general clinic prior to presentation to the eye clinic

Understanding risk factors for the development of suture-related corneal abscess is crucial in informing decision as to what surgical steps to take in a particular patient. Proper preoperative preparation, sterile intraoperative technique, meticulous wound construction and closure, early post-operative removal of corneal or limbal suture and prompt recognition and treatment of infection can reduce the incidence and effect of this rare but devastating complication of uneventful cataract surgery.

### Acknowledgements

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### Disclaimer

The author declares that there is no conflict of interest in the production of this article

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## Maternal and newborn life saving skills course, Juba, November 2013

South Sudan has the unenviable reputation of having one of the worst rates of maternal deaths in the world. The challenge for everybody is to reduce this horrific loss of valuable lives and reduce the high levels of morbidity in mothers and the newborn. At least 80% of all maternal deaths result from five complications: haemorrhage, sepsis, eclampsia, obstructed labour and miscarriage (abortion). There are relatively inexpensive, effective, evidenced-based interventions for the management of these conditions which can be readily used in low resource regions with appropriate training of staff.

Since independence and the establishment of the Republic of South Sudan much excellent work has been done to develop medical services and to extend the services to the whole community. A lot of equipment has been donated, purchased and arrived. The Aid agencies and the Ministry of Health have worked tirelessly at developing and rolling out health care programs. Training programmes have been developed for nurses, midwives, clinical assistants and doctors. A notable success has been the establishment of the Juba College of Nursing and Midwifery (JCONAM), which has now produced its first tranche of graduate midwives with more on the way.

### Developing and Ensuring Essential Life Saving Skills

Ensuring that all health care staff have high standards of clinical skills, are up to date and undergo regular professional development is essential to good quality health care and outcomes. Often Governments and NGOs have concentrated on providing facilities and equipment and overlooked the importance of proper training, and maintaining the training, for staff who are needed to make these facilities effective. In many developed countries all

medical, nursing and midwifery staff undergo basic and advanced life saving skills courses relevant to their area of practice. The best of these courses use evidence-based

adult teaching methods with interactive teaching sessions, scenarios and drills and the courses are repeated on a regular basis. Such courses include: - ALS – Advanced Life Support, ATLS – Advanced Trauma Life Support, and NALS – Neonatal Advanced Life Support.

In obstetrics and gynaecology the courses are: – ALSO (Advanced Life Support Obstetrics), and PROMPT (Practical Obstetrical Multi Professional Team) courses. The Royal College of Obstetricians (RCOG) and the Liverpool School of Tropical Medicine (LSTM) cooperated to develop and promote a modified course suitable for training staff in low resource countries. This has proven very successful in many countries in Africa. So far LSTM has not found it possible to run such courses in South Sudan.

### The Team and JCONAM

In November 2013 a team of facilitators / trainers from the UK and South Sudan ran the first Essential Obstetric Care and Newborn Care Intensive Course at JCONAM. The team included:

- A consultant obstetrician, midwives, a neonatal nurse specialist and specialist nurses from Northern Ireland, UK,
- A midwife from St Mary's Hospital, Isle of Wight, UK,
- Dr Graham Poole, a GP/obstetrician working in Yei, and
- Dr Jenny Bell, a GP / Medical Education Specialist who had been working in Bor trying to establish a medical training facility.

All were volunteers (i.e. non-paid and self-funding). The course was held in the Juba College of Nursing and Midwifery, which was very generously made available by



Figure 1 Participants and trainers: Maternal and Newborn Life Saving Skills Course, JCONAM (credit Paul Weir)



Figure 2. Adult CPR training (credit Paul Weir)

the Principal Ms. Petronella Wawa. JCONAM is a superb, high quality venue in which to run such an intensive and practical course and, without doubt, its availability was crucial to making the course a success.

### The Course

The course covered the major causes of maternal death (hemorrhage, sepsis, eclampsia, obstructed labour and miscarriage), maternal resuscitation, newborn resuscitation, basic surgical skills and the management of miscarriage (abortion). The course uses a mixture of adult learning techniques in a 'skills and drills' training format. These included lectures, interactive scenarios, and practical skills teaching.

The programme covered

- Resuscitation using ABC process – **A**irway, **B**reathing, **C**irculation.
- Shock.
- Resuscitation of the Newborn.
- Severe preeclampsia.
- Partograms and obstructed labour.
- Sepsis.
- Assisted vaginal delivery.
- Management of miscarriage (abortion).

Although the programme was intensive and challenging both for the facilitators and the trainees, it was successful and well received. Feedback from the participants was positive; they felt that the programme was relevant to their day-to-day professional needs and skills.

### Participants

Twelve participants enrolled for the course, five midwives, a clinical officer, four midwifery tutors and two doctors. On the first day all appeared anxious and uncertain of the new experience, but by the final day all were relaxed, enthusiastic and involved in the teaching programme. This change was remarkable and the willing involvement of the participants was great to see. A pre-course and post-course knowledge and skills assessment was carried out.

This demonstrated that the participant's knowledge and skills significantly increased over the course, on average scores for the knowledge and skills doubled.



Figure 3. Newborn resuscitation (credit Paul Weir)



Figure 4. Hands on training for vacuum assisted delivery (credit Paul Weir)

One notable success was the session on assisted vaginal delivery. The initial assessments at the start of the session indicated that assisted vaginal delivery (vacuum extraction) was rarely performed and indeed there was doubt whether the necessary vacuum extractors were available within the hospitals. Following the course, feedback from the doctors indicated that vacuum extractors were available within the hospitals and indeed they had started to use them. The correct use of Kiwi vacuum extractors would have the ability to successfully assist difficult vaginal deliveries and therefore avoid some caesarean sections and the associated complications and difficulties for future deliveries.

A major aim of this programme of developing essential skills training is to identify and promote trainers from within the region. One of the highlights of the November 2013

course was the fact that at least five of the participants showed all the abilities and aptitudes to become facilitator / trainers for future courses. This would mean that there is a strong potential for this course to become fully delivered by facilitators based in South Sudan with minimal outside support. To achieve this would be a great success.

### The Future

In recent months South Sudan has undergone difficult times with political instability, conflict and loss of life resulting in large numbers internally displaced persons. Despite these massive problems the Directorate of Reproductive Health, Department of Health is continuing to develop its programmes of maternal and child health care and many NGOs have re-commenced operations. Against this background of re-establishing health care systems the Essential Life Saving Skills for Africa training team is intending to hold another course in December 1-5th 2014. If you would like to register for this course please email Dr Paul Weir: [p.weir11@ntlworld.com](mailto:p.weir11@ntlworld.com) or contact Judith Agwer at JCONAM or email: [agwerjudith@yahoo.com](mailto:agwerjudith@yahoo.com)

## Resources

### MATERNAL, NEWBORN AND CHILD HEALTH

#### Bringing maternal and newborn health together for 2015 and beyond

The Every Newborn Series in The Lancet highlights many of the future opportunities and challenges in forging true integration between the maternal and newborn health communities. In the post-2015 agenda there needs to be a cluster of targets on reproductive, maternal, newborn, and child health so that their linkages across the continuum of care are clear. Also as countries adopt more integrated approaches to designing, implementing, and funding health services and health systems, there is less appetite for externally driven initiatives. In keeping with country preferences, the Every Newborn Action Plan calls for strengthening a specific newborn focus within maternal, child, and reproductive health plans. This needs to include ways to deliver the most effective technical interventions for saving the lives of newborn babies, which in turn needs an educated, enabled workforce in sufficient numbers; functioning commodity systems; attention to quality of care; and effective mechanisms for recording, analysing, and using data.

Ref: Starrs A.M. Survival convergence: bringing maternal and newborn health together for 2015 and beyond *Lancet*, Volume 384, Issue 9939, Pages 211 - 213, 19 July 2014

#### Cost of preventing deaths of newborns

The authors reviewed existing interventions and then modelled the effect and cost of scale-up in the 75 high-burden countries. More effective quality care for all women and newborn babies delivering in facilities could prevent an estimated 113 000 maternal deaths, 531 000 stillbirths, and 1.325 million neonatal deaths each year by 2020 at an estimated cost of US\$4.5 billion per year. Increased coverage and quality of preconception, antenatal, intrapartum, and postnatal interventions by 2025 could avert 71% of neonatal deaths, 33% of stillbirths and 54% of maternal deaths per year at an annual cost of US\$5.65 billion (which amounts to US\$1928 for each life). Most (82%) of this effect is attributable to facility-based care which, although more expensive than community-based strategies, improves the likelihood of survival. The maximum effect on neonatal deaths is through interventions delivered during labour and birth, including for obstetric complications (41%), followed by care of small and ill newborn babies (30%). To meet the unmet need for family planning with modern contraceptives would contribute to around a halving of births and therefore deaths.

Reference: Bhutto et al. Can available interventions end

preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? for The Lancet Newborn Interventions Review Group. The Lancet Every Newborn Study Group *The Lancet*, Volume 384, Issue 9940, Pages 347 - 370, 26 July 2014

#### Maternal, fetal and neonatal deaths in low- and middle-income countries

An estimated 340 000 maternal deaths, 2.7 million stillbirths and 3.1 million neonatal deaths occur worldwide each year – almost all in low-income countries. In some parts of sub-Saharan Africa, a woman's lifetime risk of dying in childbirth is as high as one in seven.... Most deaths occurred near to delivery and most obstetric complications are not recognized in advance, so the intervention most likely to reduce mortality is the provision of high-quality emergency obstetric and neonatal care in hospitals capable of carrying out deliveries by caesarean section, blood transfusion and neonatal resuscitation in addition to other key elements of obstetric care, such as uterine evacuation of the retained products of conception, manual removal of the placenta, assisted vaginal delivery by forceps or vacuum and the administration of oxytocin, anticonvulsants and antibiotics. This paper underlines the importance of increased investment in healthcare facilities.

Ref: Sarah Saleem et al. A prospective study of maternal, fetal and neonatal deaths in low- and middle-income countries. *Bulletin of the World Health Organization* 2014;92:605-612. From HIFA August 2014.

#### Malaria and pregnancy – a review

Infection with malaria during pregnancy causes severe anaemia, miscarriages, and preterm births, and kills about 10,000 women and 100,000 children each year. This paper reviewed 37 studies in Africa and concluded: 'Barriers to access to WHO-recommended treatment among women included poor knowledge about drug safety, and the use of self-treatment practices such as taking herbal remedies. Factors that affected the treatment-seeking behavior of pregnant women included prior use of antenatal care, education, and previous experience of a miscarriage. Among healthcare providers, reliance on clinical diagnosis of malaria was consistently reported, as was poor adherence to the treatment policy.'

Ref: Jenny Hill et al. Women's Access and Provider Practices for the Case Management of Malaria during Pregnancy: A Systematic Review and Meta-Analysis. <http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1001688>.

From HIFA August 2014.

### Integrated community case management (iCCM) of childhood illness in Rwanda

Between 2008 and 2011, Rwanda introduced integrated community case management (iCCM) of childhood illness nationwide. Community health workers in each nearly 15,000 villages were trained in iCCM and equipped for empirical diagnosis and treatment of pneumonia, diarrhoea, and malaria; for malnutrition surveillance; and for comprehensive reporting and referral services. Data from the health management information system (HMIS) were used to calculate monthly all-cause under-5 mortality rates, health facility use rates, and community-based treatment rates for childhood illness in each district. A 3-month baseline period prior to iCCM implementation was compared with a seasonally matched comparison period 1 year after iCCM implementation, and the actual changes in all-cause child mortality and health facility use over this time period was compared with the changes that would have been expected based on baseline trends. The number of children receiving community-based treatment for diarrhoea and pneumonia increased significantly in the 1-year period after iCCM implementation. On average, total under-5 mortality rates declined significantly by 38%, and health facility use declined significantly by 15%. These decreases were significantly greater than would have been expected based on baseline trends. This is the first study to demonstrate decreases in both child mortality and health facility use after implementing iCCM of childhood illness at a national level. While the study design does not allow for direct attribution of these changes to implementation of iCCM, these results are in line with those of prior studies conducted at the sub-national level in other low-income countries.

Ref: Mugenia and Levine et al. Nationwide implementation of integrated community case management of childhood illness in Rwanda. <http://m.ghspjournal.org/content/early/2014/08/04/GHSP-D-14-00080.abstract?ma>

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From CHILD2015 and Malaria Update

### Pneumonia and counting beads

CHWs are trained to count the respiratory rate of a child with cough and/or difficulty breathing, and determine whether the child has fast breathing or not based on how the child's breath count relates to age-specific respiratory rate cut-off points. This can be difficult and counting beads were designed to overcome these challenges. This article presents findings on the using these beads, with a timer, to improve classification of fast breathing, and found that, in some situations, the use of counting bead improved the assessment and classification of fast breathing but that it decreased the accuracy of counting breaths among literate CHWs. The key messages from these finding were that:

- The use of age-specific and colour-coded beads enables community health workers to track rather than mentally count the child's respiratory rate and eliminates the need to remember the age-specific fast breathing cut-offs for pneumonia classification.

- Well-designed age-specific and colour-coded counting beads, when used with an accurate timing device, have the potential to improve correct classification of fast breathing by CHWs with limited numeracy and literacy.

Ref: Noordam AC et al. The use of counting beads to improve the classification of fast breathing in low-resource settings: a multi-country review. *Health Policy Plan.* (2014) doi: 10.1093/heapol/czu047

<http://heapol.oxfordjournals.org/content/early/2014/07/07/heapol.czu047.abstract.html?papetoc>

From CHILD 2015 <https://dgroups.org/groups/child2015>

### Tippy tap (see page 72)

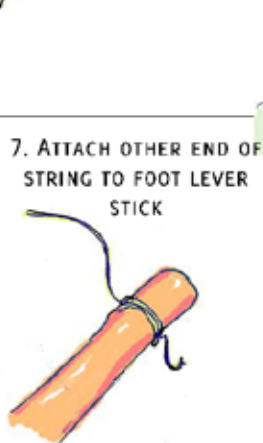
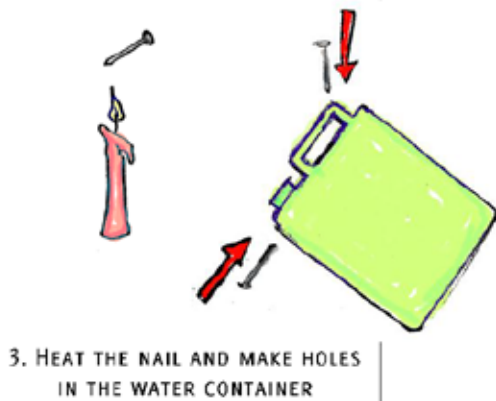
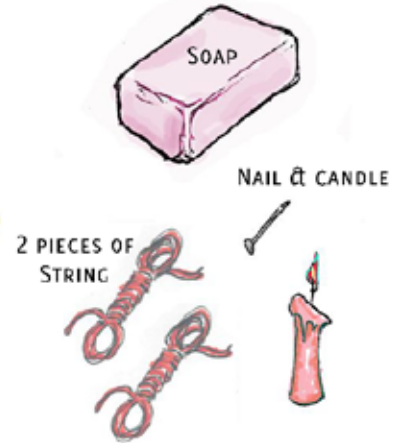
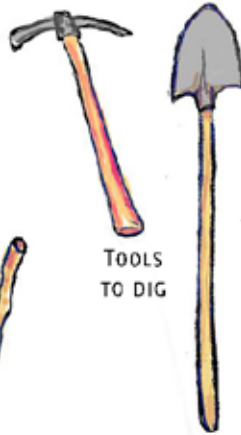
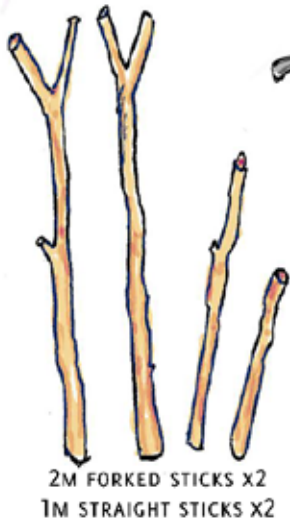
The tippy tap is a hands-free way to wash your hands that is especially appropriate for rural areas where there is no running water. It is operated by a foot lever and thus reduces the chance for bacteria transmission as the user touches only the soap. It uses only 40 millilitres of water to wash your hands versus 500 millilitres using a mug. Additionally, the used "waste" water can go to plants or back into the water table.

While the tippy tap is a great technology, it is just that – a technology. It is important to recognise that there is a difference between great technology and adoption of the technology. However, it is a great tool that can help kick start the conversation about hand washing with soap and help increase this behaviour. And it does so in a fun and easy manner that is especially appealing to children.

For more information about the tippy tap and how to use it as part of hand washing promotion campaign, see [www.tippytap.org](http://www.tippytap.org)

SSMJ thanks Sowmya Somnath, WASH Program Director, for permission to publish the directions on how to build a tippy tap.

# HOW TO BUILD A TIPPY TAP



Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.