



## Glycaemic control and associated factors

- Rolling back malaria in South Sudan
- Indications for C Section for low risk women
- Symptoms of breathlessness in Uganda
- Teaching and learning in the clinical workplace
- Case report: primary cystic echinococcosis
- Case report: retroperitoneal pelvic packing

# SSMJ

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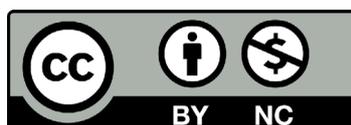
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# Rolling back malaria in South Sudan: what have we missed?

Malaria remains a public health problem, not only in South Sudan, but also globally. According to the World Health Organization (WHO), there were an estimated 247 million malaria cases in 2021 compared to 245 million in 2020 and 230 million in 2015. The Democratic Republic of Congo, Uganda, Nigeria, and Mozambique had the highest burden of the disease and accounted for almost half of the global caseload.<sup>[1]</sup>

The South Sudan Ministry of Health reports that since 2017, the number of confirmed malaria cases treated has been increasing with 2019 recording 3.5 million cases. By June 2021, there were already 3.1 million cases, and that “the last Malaria Indicator Survey (MIS) was conducted in 2017 in which only 39% of South Sudan’s population were sleeping under Insecticide Treated Nets (ITNs) even though 54.8% of households had access to ITNs.”<sup>[2]</sup>

The First National Malaria Conference held in Juba from 8th – 10th November 2022 came at the right time to re-focus the efforts in the fight against malaria in the country (See story on page 37). The presence of the H.E. Vice President Hussein Abdelbagi Akol Agany gave the conference the political support of the government in the fight against malaria. However, the recommendations fell short of the needs in the country. Although increased government funding is needed to supplement donor support, the conference should have emphasized the active implementation and operationalization of the 5-year National Malaria Strategic Plan 2020-2025 launched in December 2020.<sup>[3]</sup> Where is that bold new strategy, two-years down the line? How much of it has been implemented? What are the challenges and how can they be mitigated? What needs to be done differently?

The new strategy called for implementation of new prevention methods such as the Seasonal Malaria Chemoprevention (SMC) based on the results from a Médecins Sans Frontières (MSF) pilot study.<sup>[4]</sup> When implemented correctly, SMC will contribute to reduction of malaria child morbidity and mortality, especially if integrated into the Boma Health Initiative.<sup>[5]</sup>

Another issue not addressed is the potential emergence of antimalarial drug resistance within the region, as reported in northern Uganda.<sup>[6]</sup> The rational use of antimalarials, and other drugs in the country has been an issue due to poor drug enforcement policies. Without proper therapeutic efficacy studies to detect whether artemisinin-resistant malaria has emerged in the country and work to address the issues around it, South Sudan maybe in a losing battle in the fight against malaria without knowing it. It maybe the missing piece.

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# Glycaemic control and associated factors in adult patients with diabetes mellitus, South Sudan, 2021

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## ABSTRACT

**Introduction:** Many patients with diabetes mellitus are not attaining optimal glycaemic control, although the rate is unknown in South Sudan. Maintaining adequate glycaemic control is the most effective means of preventing complications associated with diabetes. This record review assesses the proportion of patients with diabetes on follow-up not adequately controlled using glycated haemoglobin (HbA1c) and describes associated factors.

**Method:** This is retrospective cross-sectional review of electronic patient records from a private for-profit health facility in Juba, South Sudan. The study assesses follow-up HbA1c levels of type I (T1DM) and type II (T2DM) patients with diabetes 18 years and older. An HbA1c value of less than 7% was regarded as reflecting adequate control. Logistic regression was used to assess factors associated with inadequate control. From an unadjusted analysis, variables were retained for the adjusted analysis that were significant at the 95% confidence level. Crude and adjusted odds ratios (AOR) were reported.

**Results:** Of the 291 patients assessed, 62.2% were male, mean age was 54 (SD =12.6) years, and the median body mass index (BMI) was 27.2 (IQR=24.5-30). Those with hypertension were 28.5% and 35% had medical insurance. Overall, 60 patients (20.6%) achieved target HbA1c levels of <7%. One hundred patients had HbA1c levels between 7-10% and 131 had values of >10%. Independent predictors of non-achievement of target HbA1c were female gender, adjusted prevalence ratio, PR (95% CI) =1.18 (1.01-1.32); normal BMI, adjusted PR (95% CI) =1.41 (1.07-1.83) and having no medical insurance cover, adjusted PR (95%CI) =1.13 (1.10-1.29).

**Conclusion:** About 80% of patients did not attain target HbA1c levels. Diagnosis of diabetes, care and treatment of patients with diabetes is not well organised in South Sudan leading to poor outcomes even in private clinics. Women and those without medical insurance cover are at greater disadvantage. We recommend better diagnosis and classification of patients with diabetes as well as reorganisation of care and treatment. We also recommend initiatives that will increase coverage of services to women and putting more people on medical insurance cover.

**Key Words:** glycated haemoglobin, diabetes, South Sudan

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## INTRODUCTION

Diabetes mellitus is a group of metabolic disorders characterized by hyperglycaemia resulting from defects in insulin secretion, action, or both. Chronic hyperglycaemia is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.<sup>[1]</sup> According to the World Health Organization (WHO), the number of people with diabetes has risen from 108 million in 1980 to 422 million in 2021.

The International Diabetes Federation (IDF) estimates the age standardized prevalence of diabetes in South Sudan in 2021 at 6.5%.<sup>[2]</sup>

Intensive glycaemic control (keeping blood glucose as near to normal as possible) reduces the incidence and progression of microvascular complications (retinopathy, nephropathy and neuropathy) in Type I Diabetes Mellitus (T1DM).<sup>[3]</sup> Similarly, in patients with Type II Diabetes Mellitus (T2DM) the risk of diabetic complications is strongly associated with previous hyperglycaemia.<sup>[4]</sup> Any reduction in glycated haemoglobin (HbA1c) levels is likely to reduce the risk of complications, with the lowest risk being in those with HbA1c values in the normal range.<sup>[4]</sup>

Although the association between glycaemic control and risk of complications is established, many patients do not attain adequate control.<sup>[5,6]</sup> Factors associated with adequate glycaemic control include understanding of pharmacist's advice; younger age; treatment with oral anti-diabetic drugs plus insulin; absence of T2DM history in the family; obesity; absence of current alcohol consumption and presence of fewer comorbidities.<sup>[5,6]</sup> No study in South Sudan has documented the status of control of diabetic patients and associated factors. This study assessed glycaemic status of patients using HbA1c levels and describes associated factors.

## METHOD

### Design

A retrospective cross-sectional electronic record review of patients with diabetes.

### Study setting

Juba, the capital city of South Sudan, has a population of over a million people and is in Juba County. The Ministry of Health Service Availability and Readiness Assessment (SARA) survey, (2018), found only 39% of facilities in this County offered diabetes services. Of these, the non-governmental organizations and the private for-profit sector were six times more likely to have diabetes services compared to government operated facilities. The SARA survey findings imply that patients with diabetes in Juba City are more likely to seek diabetes care and treatment in the non-governmental health facilities and private for-profit sector such as the Evidence Based Clinic (EB Clinic) where this study was undertaken.

### Study population

The study participants were known cases of T1DM or T2DM, 18 years or older accessing care at the EB Clinic located in the suburb of Juba City. It provides services to a wide range of patients of various social classes. Most diabetes care in Juba is paid from patients'

personal resources because of the scarcity of services in the government facilities. The EB Clinic diabetes guidelines recommend follow-up HbA1c tests on all patients every three to six months. During a follow-up visit, case-based electronic records were updated. This study reviewed HbA1c results of patients who were confirmed cases of diabetes receiving treatment at the clinic at any point in time. Where more than one follow-up HbA1c readings were recorded in the electronic system, the first record was considered (first follow-up HbA1c). All HbA1c tests done during diagnosis of diabetes were excluded. Records were reviewed over 30 months (1st January 2019 to 30th June 2021).

Measurement of HbA1c: Glycated haemoglobin was measured using a point of care test machine that uses Fluorescence Immunochemical Analyzing (FIA) System. The clinic uses the Finicare™ FIA Meter II Plus SE (FS-114) system which has a built-in quality control mechanism.

Glycated haemoglobin reflects average glycaemia over approximately the previous three months and has a strong predictive value for diabetes complications.<sup>[7]</sup> The American Diabetic Association (ADA) recommends HbA1c goal of < 7% for non-pregnant adults and <8% in patients with a history of severe hypoglycaemia or in those with limited life expectancy.<sup>[8]</sup> The test however, is of limited value in conditions that affect red blood cell turnover.<sup>[9]</sup>

### Data Collection

The EB Clinic uses a password-protected electronic patient record system. Patient data were exported from the software to an Excel spreadsheet. Patients' names were removed before data were shared with the statistician.

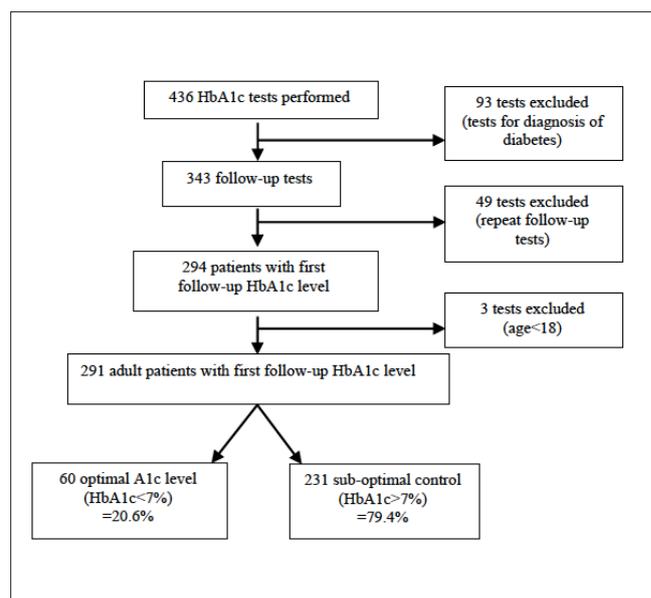


Figure 1. Study flow chart

## Data Analysis

Participant characteristics were described using summary statistics (means, standard deviation and percentages). Binary logistics regression was used to assess factors associated with HbA1c level. The stepwise backward elimination technique was used to remove variables of no significance, one variable at a time, starting with the most non-significant p-value. From an unadjusted analysis, variables were retained for the adjusted analysis that were significant at the 95% confidence level. Since uncontrolled HbA1c level was common in this study population (Prevalence >10%), the odds ratios were corrected to obtain prevalence ratios as the adjusted odds ratios tend to overestimate the association when the prevalence of the outcome of interest is greater than 10 percent.<sup>[10]</sup> We corrected the crude and adjusted odds ratios to obtain corresponding crude and adjusted prevalence ratios (PR) using the expression:  $PR = OR / ((1 - P) + (P \times OR))$ , where P is the prevalence of uncontrolled A1C level in the reference group.

## Ethical consideration

The clinic administration provided approval for the study. All diagnostic tests in the clinic were conducted voluntarily after explanation. All data extracted did not include participants' identifiers.

## RESULTS

A total of 436 HbA1c tests were performed during the 30-month period. Of these, 93 tests were excluded because they were performed for diagnosis of diabetes, 49 tests were repeat follow-up tests. The remaining 291 tests were analysed after excluding three children. Figure 1.

### Study participants' characteristics

Of the 291 patients assessed, 62.2% were male, mean age 54 (SD =12.6) years and the median body mass index (BMI) was 27.2 (IQR=24.5 -30). Those with hypertension were 28.5% (Table 1).

### Distribution of HbA1c levels

Sixty (20.6%) patients achieved target HbA1c levels of <7%; 100 patients (34.4%) achieved intermediate levels 7-10% and 131 (45.0%) had HbA1c levels >10%. Those under 40 years old were more successful (25.6%) than other age groups at achieving target levels, as were males than females (24.3 % versus 14.5%), obese (39.5%) than overweight (23.6%) or normal weight (15.5%) and having medical insurance cover than without (29.4% versus 15.9%) (Table 2).

### Factors associated with non-achievement of target glycaemic levels

**Table 1. Characteristics of study participants**

Characteristic	n (%)	
Sex	Female	110 (37.8)
	Male	181 (62.2)
Hypertensive*	No	208 (71.5)
	Yes	83 (28.5)
Health insurance	No	189 (65)
	Yes	102 (35)
Age – years	Mean (SD)	54 (12.6)
	Median (IQR)	
BMI		27.2 (24.5 -30)

SD = Standard Deviation; IQR=Interquartile range

\*hypertensive: definition based on diagnosis of hypertension logged on the electronic patient record system but not BP at clinic visit.

The independent predictors of non-achievement of target HbA1c were being female, adjusted PR (95% CI) = 1.18 (1.01-1.32); having normal BMI, adjusted PR (95% CI) = 1.41 (1.07-1.83) and having no medical insurance cover, adjusted PR (95%CI) = 1.13 (1.10-1.29). Table 3.

## DISCUSSION

### Glucose control among follow-up diabetic patients

In this review of 291 patients with diabetes on follow-up, we found only a fifth (20.6%) attained HbA1c levels of <7%. Nearly half (45%) had HbA1c values >10% and one third (34.4%) had intermediate values between 7-10%.

The ADA recommends goal HbA1c levels of <7%. The basis for the recommendation is the finding that intensive glycaemic control significantly decreases rates of microvascular complications. The relationship between HbA1c levels and microvascular complications is curvilinear.<sup>[4]</sup> When such a relationship is applied to the population level, it suggests that the greatest number of complications will be averted by taking patients from very poor control to fair/good control. It also suggests that further lowering of HbA1c levels from 7% to 6% is associated with further reduction in the risk of microvascular complications, although the absolute reductions become much smaller.

The findings in our study of 80% of patients not attaining goal HbA1c levels are worse when compared to those from similar studies conducted in Ethiopia<sup>[5]</sup> and Brazil<sup>[6]</sup> that showed 45% and 49% of patients respectively not attaining goal values. The findings of this study are from patients attending a private health facility, it is likely that the proportion of patients with inadequate glycaemia attending public health facilities is worse given the limited services in the public sector.

Table 2. Distribution of glycated haemoglobin (HbA1C) levels of diabetic patients on follow-up by participants characteristics

Characteristic	n	HbA1c range			p-value
		<7 n (%)	7 to 10 n (%)	>10 n (%)	
<b>Age (years)</b>					
<40	39	10 (25.6)	11 (28.2)	18 (46.2)	0.928
40 - 49	61	12 (19.7)	19 (31.1)	30 (49.2)	
50 - 59	90	18 (20.0)	32 (35.6)	40 (44.4)	
60 +	101	20 (19.8)	38 (37.6)	43 (42.6)	
<b>Sex</b>					
Male	181	44 (24.3)	58 (32.0)	79 (43.7)	0.128
Female	110	16 (14.5)	42 (38.2)	52 (47.3)	
<b>Hypertensive</b>					
No	208	44 (21.1)	63 (30.3)	101 (48.6)	0.059
Yes	83	16 (19.3)	37 (44.6)	30 (36.1)	
<b>BMI</b>					
≥30	38	15 (39.5)	13 (34.2)	10 (26.3)	0.007
25 - <30	72	17 (23.6)	26 (36.1)	29 (40.3)	
<25	181	28 (15.5)	61 (33.7)	92 (50.8)	
<b>Health insurance</b>					
Yes	102	30 (29.4)	36 (35.3)	36 (35.3)	0.010
No	189	30 (15.9)	64 (33.8)	95 (50.3)	
<b>Overall</b>	291	60 (20.6)	100 (34.4)	131 (45.0)	

### Factors associated with inadequate control of glycaemic level

Independent predictors of non-achievement of target HbA1c were being female, a normal BMI and no medical insurance cover.

We found patients of normal BMI (<25) were 41% more likely to have inadequate control compared to obese patients (BMI≥30). These findings are consistent with those from the US National Health and Nutrition Examination Survey.<sup>[11]</sup> In the US survey, Nguyen et al. found that the mean fasting glucose and HbA1c levels were highest for patients with diabetes whose BMI was less than 25.0, suggesting a state of higher severity of disease.<sup>[11]</sup> They also found that mean insulin and C-peptide levels were highest for patients with diabetes with BMI equal to 35.0, suggesting a state of insulin resistance. The authors concluded that many of the patients with diabetes falling within normal weight range (BMI<25) had T1DM classification and those in the obese range were mostly T2DM.

Based on these findings, it is possible that most of the patients with lower BMI in our study are T1DM or patients with Latent Autoimmune Diabetes in Adults (LADA) but misclassified as T2DM and put on inappropriate treatment regimen resulting into inadequate control. The diagnosis of T1DM in this private clinic, as is the case in South Sudan, is made clinically and not based on measurement of C-peptide or insulin levels. This differs from the findings from similar studies in the Brazil and the US.<sup>[6,12]</sup> It is likely that the diagnosis of T1DM is more accurately made in the US and Brazilian settings.

Females were about 18% more likely to have inadequate control compared to males. Many studies have documented a similar relationship.<sup>[13]</sup> Possible explanations for this difference include socioeconomic status, psychological factors, differences in treatment response and glucose homeostasis. Salcedo-Rocha et al.<sup>[14]</sup> suggested that women have several social and economic disadvantages that might decrease their ability to achieve glycaemic control compared to men. This is possible in South Sudan where literacy rates in females above 15 years

**Table 3. Factors Associated with non-achievement of Target HbA1c level**

Variable	COR (95% CI)	p-value	Crude PR (95%CI)	AOR (95% CI)	p-value	Adjusted PR (95%CI)
<b>Sex</b>						
Male	ref		ref	ref		ref
Female	1.89 (1.01 - 3.54)	0.048	1.13 (1.01-1.68)	2.54 (1.28 - 5.03)	0.008	1.18 (1.01-1.32)
<b>BMI</b>						
≥30	ref		ref	ref		ref
25 - <30	2.11 (0.90 – 4.92)	0.084	1.26 (1.00-1.64)	2.16 (0.88 - 5.27)	0.091	1.25 (0.94-1.66)
<25	3.56 (1.66 - 7.66)	0.001	1.40 (1.24 1.75)	4.02 (1.72 – 9.34)	0.001	1.41 (1.07-1.83)
<b>Health insurance</b>						
Yes	ref		ref	ref		ref
No	2.21 (1.24 – 3.93)	0.007	1.19 (1.11-1.28)	1.78 (1.02 -3.22)	0.044	1.13 (1.10-1.29)
<b>Age</b>						
<40	ref	0.483				
40 - 49	0.70 (0.54 - 3.66)	0.476				
50 - 59	0.71 (0.57- 3.34)	0.452				
60 +	0.75 (0.59 - 3.33)					
<b>Hypertensive</b>						
No	ref					
Yes	1.12(0.59- 2.13)	0.721				

**COR**, crude odds ratio; **PR**, Prevalence ratio, **AOR**, adjusted odds ratio

is only 28.9% compared to men at 40.3%.

Patients without medical insurance cover were nearly 13% more likely to have inadequate glycaemic control. It is likely that medical insurance cover is a proxy for factors favorable for glycaemic control such as better access to medical care. However, our findings are inconsistent with similar reviews.<sup>[15]</sup> The study setting where there was no correlation between medical insurance cover and glycaemic control status was Switzerland. It is likely that patients in Switzerland without insurance can still access better medical care.

We found no correlation between hypertension and glycaemic control, although multiple comorbidities were associated with poor control.<sup>[6]</sup>

### Implications for diabetes care in South Sudan.

South Sudan has a growing burden of diabetes. In 2021, the IDF estimated the age standardised prevalence of diabetes to be 6.5%.<sup>[2]</sup> Most patients with diabetes receive treatment and care from non-governmental organizations including private for-profit clinics. There is a limited supply of anti-diabetic medication and trained teams in the public sector. The organisation of diabetes care in the private facilities is largely by a single clinician rather than system run by care teams. Disadvantages of such a system

include, fragmented delivery of care, poor coordination and limited clinical information.

An effective framework for improving quality of diabetes care that can be adapted in South Sudan is the Chronic Care Model (CCM). This model has the following key elements: team based where scheduled visits are organised; self-management and decision support is offered; patient registers are maintained; resources for healthy lifestyle are offered such as leaflets and other health education materials; and it is focused on quality-oriented care.<sup>[16, 17]</sup> Implementation of this model has shown better patient outcomes and individual healthcare cost savings.

Additionally, there is need for use of better diagnostic tests to classify patients with diabetes. Current clinical means of classifying patients into T1DM and T2DM could lead to T1DM patients or patients with LADA being treated with oral anti-hyperglycaemic agents as T2DM thus, leading to inadequate control.

**Limitations:** We did not assess conditions associated with false HbA1c readings like anaemia. This was a single private for-profit centre study and may not truly represent the population of patients with diabetes in South Sudan. We did not assess additional factors that might influence HbA1c levels such as insulin treatment and duration of diabetes.

## CONCLUSION AND RECOMMENDATIONS

About 80% of patients did not attain target HbA1c levels. Diagnosis of diabetes, care and treatment of patients with diabetes is not well organised in South Sudan leading to poor outcomes even in private clinics. Women and those without medical insurance cover are at greater disadvantage. We recommend better diagnosis and classification of patients with diabetes as well as reorganisation of care and treatment. We also recommend initiatives that will increase coverage of services to women and putting more people on medical insurance cover.

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## Juba Medical Complex: Striving for excellence in healthcare and reducing referrals abroad for treatment

The South Sudan Chamber of Commerce has elected the Juba Medical Complex (JMC) as the best provider of non-public funded healthcare for the third year in a row. This is third time the award has been made since 2014. The trophy was received on behalf of the JMC by Dr Ronald Woro, Chief Physician and Medical Director of the Medical Centre.

The JMC makes an important contribution to healthcare in South Sudan by running outpatient and inpatient, high quality laboratory, endoscopy, paediatric, obstetrics and gynaecology services, surgical interventions, an ophthalmology service, computerised axial tomographic (CAT) and magnetic resonance imaging (MRI) which are competitively priced. The scan reporting is carried out remotely by trained radiologists in India (some trained in the United Kingdom) with a turnaround time of reports of three hours. These services ensure that South Sudanese do not have to travel to other countries for these services at great expense.

Recently the JMC has added to its services an orthopaedic unit with a state of the art dedicated orthopaedic theatre with a brand-new Siemens C-Arm Xray equipment. Currently specialist orthopaedic surgeons come periodically from hospitals in Egypt to perform operations locally instead of patients travelling abroad for such procedures. In addition, plastic surgery and complex gynaecological operations are carried out by visiting Egyptian specialists. Plans are also underway to reach an understanding with hospitals in India for Indian specialists to complement the work of the local obstetrician and gynaecologist and that of the Egyptian specialists since our theatres are equipped to the desired international standards.

Opportunities for cooperation with units in developed countries in areas of medical research, training and clinical attachments in a developing country are in place.

The JMC has a data bank of clinical and imaging information which is awaiting analysis by any enthusiastic specialist or an out of programme specialist registrar looking for unique opportunities to engage in research in a friendly atmosphere. The Centre will welcome interested colleagues by mutual arrangement. Suitable accommodation can be arranged for them.

For enquiries, please email the Medical Director, Ronald Woro at [ronaldworo@yahoo.co.uk](mailto:ronaldworo@yahoo.co.uk)

# Indications for Caesarean Section for women of low obstetric risk - an audit

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## ABSTRACT

**Introduction:** The Caesarean Section (CS) rate is dramatically increasing across obstetric populations. This study aimed to determine the adherence to criteria for standard diagnosis of the common indications for CS among women of a low-risk group. This group, known as group 3 in the Robson classification, is multiparous, term with singleton pregnancy and have not had a previous CS.

**Methods:** We conducted a cross-sectional study at Muhimbili National Hospital from August to December 2018. The criteria for standard diagnosis of foetal distress, obstructed labour, arrested labour and cephalopelvic disproportion were adopted from peer groups publications based on local expert consensus. Data were analysed using a statistical package for social sciences (SPSS) version 20.

**Results:** A total of 1,670 emergency CS's were performed during the study period, 392 (23.5%) were women of Robson group 3, of these women 101 (25.8%) had foetal distress, 92 (23.5%) obstructed labour, 88 (22.4%) arrested labour and 64 (16.4%) cephalopelvic disproportion. The proportion of CS's which met the criteria for standard diagnosis of indications for CS were 61.4% foetal distress, 52.2% obstructed labour, 58% arrested labour, and 45.3% CPD with total average of 55.1%.

**Conclusion:** Generally, the standard criteria for audited indications of CS have been met by 55.1% during the study period. Thus, follow up, on the job training and updating about adherence to standard criteria for best practice are recommended.

**Key words:** Caesarean Section, criteria, standard diagnosis, Robson group 3, Tanzania

## INTRODUCTION

The Caesarean Section (CS) rate is dramatically increasing globally, nationally and regionally independent of economic considerations.<sup>[1]</sup> CS is a lifesaving procedure, but may be associated with complications, disability or death particularly in settings where safe surgery and management of surgical complications cannot be guaranteed.<sup>[2]</sup> The 10-group classification (Robson classification: See Box at end and <https://robson-classification-platform.srhr.org/about>) has allowed meaningful and relevant comparison of CS rates and obstetric characteristics that explain the risk for CS.<sup>[3]</sup> Among the ten groups, group 3 includes women of low risk. They are multiparous, term with a singleton pregnancy, and have not had a previous CS.<sup>[4]</sup>

Women of low risk for CS have contributed significantly to the increase of CS rate among different health facilities.<sup>[5]</sup> At Jaipuria Hospital, Western India, women in a low-risk group formed 11.6%.<sup>[6]</sup> In Tanzania, the rate of CS among women with low obstetric risk was found to be 33%. This contributed to the overall CS rate by 12%.<sup>[7]</sup>

Indications for primary CS among multiparous women includes obstructed labour, foetal distress, antepartum haemorrhage, malpresentation, cephalopelvic disproportion (CPD) and arrested labour.<sup>[8]</sup> Auditing the management of obstetric emergencies is a quality improvement step that systematically and critically improves obstetric care.<sup>[9]</sup> Previous studies have shown improvement in compliance with guidelines.<sup>[10, 11]</sup> This study aimed to determine the adherence to criteria for standard diagnosis of indications for CS among women of low obstetric risk, Robson group 3.

## METHOD

### Study design

A descriptive cross-sectional study was conducted at Muhimbili National Hospital (MNH) in Dar-es-Salaam, Tanzania from August to December 2018 in the maternity unit.

### Data collection

Data were collected using a structured checklist which consisted of the patient characteristics, indications for CS and adapted criteria for diagnosis of foetal distress, obstructed labour, arrested labour and CPD. Criteria for foetal distress and obstructed labour were adapted from peer publications conducted at MNH by Mgaya et al.<sup>[10, 11]</sup> The diagnosis for foetal distress and obstructed labour consisted of both major and minor criteria where the fulfilment for standard diagnosis of foetal distress and obstructed labour required at least one major and one minor criterion. Criteria for arrested labour were adopted from the American College of Obstetrics and Gynaecology (ACOG) and Society of Maternal Foetal Medicine (SMFM) obstetric care consensus.<sup>[2]</sup> Standard diagnosis of arrested labour has three criteria where the diagnosis requires one of the three criteria. Criteria for CPD were adopted from the Royal College of Thailand practical guideline which consisted of three criteria.<sup>[12]</sup> The standard diagnosis of CPD requires all the three criteria.

### Data analysis

Data were analysed using SPSS version 20. The number of cases that met the standard criteria for diagnosis of obstructed labour, foetal distress, arrested labour and CPD were analysed through SPSS composite scoring formulation method. (Available online at [https://en.wikiversity.org/w/index.php?title=Composite\\_scores&oldid=1750584](https://en.wikiversity.org/w/index.php?title=Composite_scores&oldid=1750584)).

### Ethics approval and consent to participate

Ethical clearance was obtained from the Senate Research and Publications Committee of Muhimbili University of Health and Allied Sciences. Permission to conduct the

study was obtained from MNH authority as per hospital management protocols.

## RESULTS

During the study period 2,306 CS's were performed, 1,670 (72.4%) emergency CS's whereby 392 (23.5%) were performed among women of Robson group 3. Among 392 women, Robson group 3, 345 (88.0%) were audited for diagnosis of obstructed labour, foetal distress, arrested labour and CPD by which 190 (55.1%) met the criteria for standard diagnosis.

The mean age was 30 years, most were aged between 25-29 (35.7%) and 30-34 years (32.9%). More than 50% had one normal delivery followed by current CS delivery. Table 1.

**Table 1. Demographic and characteristics of women of low obstetric risk for CS Robson group 3 (N=392)**

Variable	Frequency n (%)
<b>Age (years)</b>	
<24	48 (12.2)
25-29	140 (35.7)
30-34	129 (32.9)
>35	75 (19.1)
<b>Parity</b>	
2	202 (51.5)
3	103 (26.3)
4	87 (22.2)
<b>Admission status</b>	
Referral hospital	244 (62.2)
Muhimbili National Hospital	148 (37.8)

**Table 2: Indications for emergency CS among women of low obstetric risk for CS Robson group 3 (N=392)**

Indication	Frequency n (%)
Foetal distress	101 (25.8)
Obstructed labour	92 (23.5)
Arrested labour	88 (22.4)
CPD	64 (16.3)
Abruption placenta	14 (3.6)
Placenta praevia	12 (3.1)
Bad obstetric history in labour	10 (2.6)
Cord prolapse	7 (1.8)
Cervical cancer	3 (0.8)
Vaginal cyst	1 (0.3)

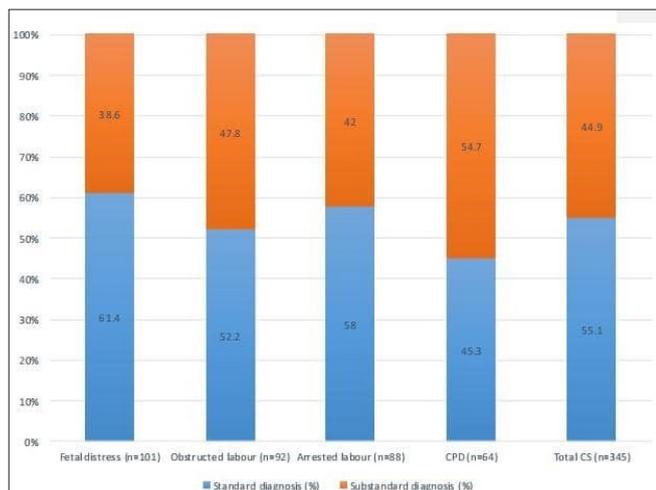


Figure 1. Proportion of indications for CS that met the criteria for standard diagnosis among women of low obstetric risk for CS, Robson group 3 (N=345)

Foetal distress (25.8%) was the leading indication for CS followed by obstructed labour (23.5%), arrested labour (22.4%) and CPD (16.3%). Table 2. Standard diagnosis for foetal distress and arrested labour were 61.4% and 58% respectively and the standard diagnosis for CPD was 45.3% Figure 1.

## DISCUSSION

There has been a dramatic increase in the rate of CS globally but is questionable whether the indications met the standard criteria for diagnosis. This study aimed to address this issue in Tanzania at a national referral hospital which serves the largest number of obstetric cases countrywide. During the study period the rate of CS among women of Robson group 3 was 23.5%. This finding showed the improvement in reduction of CS among the low-risk group compared to the previous rate as found by Helena et al in her study done at the same facility.<sup>[7]</sup> According to

the Robson classification on evaluation for CS rate and indications these group 3 women have shown the lower rate of 5.5%.<sup>[4]</sup>

The most common indication for CS in this group was foetal distress (25.8%) followed by obstructed labour (23.5%), arrested labour (22.4%) and CPD (16.3%). Audit for the most common indication for CS based on standard criteria for diagnosis, foetal distress scored a higher percentage of adhering to the criteria for best practice. In comparison with the previous study that evaluated improvement in quality of care for management of foetal distress there was improvement in adherence to the criteria by about 10% higher.<sup>[11]</sup>

Obstructed labour was the second most important indication for CS in this study. The adherence to criteria for diagnosis in our study was more than 50% but shows a drop of more than 30% when compared with a study that was done in the same facility where adherence was 81%.<sup>[10]</sup>

Arrested labour in our study was audited and 58% of cases had met the standard criteria for diagnosis. In a study that was conducted in Canada, adherence to the diagnostic guidelines for cervical dystocia was 52% up to 68%.<sup>[13]</sup> The adherence to the diagnosis of arrested labour in both facilities showed similarity in performance despite differences in geographical location.

In our study the criteria for diagnosis of CPD that met the standard of diagnosis was 45.3%. Such a finding appears to be contrary to what was found in India where the same adherence was found to be 80.4%,<sup>[14]</sup> and similarly to that found in Thailand where adherence was 83%.<sup>[15]</sup>

## CONCLUSION

Generally, the standard criteria for audited indications for CS has been met by 55.1% during the study period. The criteria for the diagnosis of CPD was violated by more

## Robson Classification Platform

Michael Robson is an obstetrician in charge of the maternity hospital in Dublin, Ireland. In 1988 he began to set up a system of categories of women having babies in order to help maternity staff make good decisions on the possible need for Caesarean Section. He started with one category, a mother with a single baby in spontaneous labour at 37 weeks or more.

In the end the Robson classification has ten categories. It is a way of looking at the advantages and disadvantages for the management of care of the mother and baby according to whether they are at low or high risk. He rejects a simplistic setting of a "ideal" C/S rate.

The latest version of his work is an app which maternity units all over the world can access for information and training. Maternity staff can input their own local information becoming part of a very large study. They can discuss this important question with colleagues engaging with the same issues and contribute to an international resource.

See <https://robson-classification-platform.srhr.org/about>.

than 50% of audited cases. This shows the need for more regular audits, training and updating on adherence to the standard criteria for best practice to improve the quality of obstetric care.

**Acknowledgments:** We wish to acknowledge MNH for provision of a conducive environment to conduct the study.

**Disclosure:** The authors reported no conflicts of interests.

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### Quiz based on 'Reflections from the first South Sudan malaria conference' see p37

Answers on p31

- Which malaria species is the most deadly?
- What is the current (2021) number of annual cases of malaria worldwide?
- Name four countries with the highest burden of malaria.
- In a survey in South Sudan in 2017 what percentage of people slept under Insecticide Treated Nets (ITNs)?
- Approximately what percentage of the population have access to ITNs in South Sudan: 40%, 55% or 75%?
- What are the three key challenges in strengthening the Boma Health Initiative in South Sudan?
- What two groups are especially vulnerable to dying from malaria?
- In South Sudan what percentage of hospital admissions are because of malaria: 10%, 30%, 50%?
- In Kenya what initiative was used to engage the Community malaria control interventions?
- Is malaria considered to be a serious emergency?

# What words best capture the symptom of breathlessness in Uganda?

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## ABSTRACT

**Introduction:** Anecdotal experience suggests that Ugandan patients complain infrequently of breathlessness. The Luganda language, spoken in Uganda, does not have one word to express breathlessness but uses various phrases. Therefore, many of these patients may not be able to express what they feel when they are breathless by a single English word. Our aim was to determine the frequency and severity of the symptoms captured by a Luganda translation of the Dyspnea-12 (D12) questionnaire, a well validated measure of different dimensions of breathlessness.

**Method:** All alert non-pregnant adult patients fluent in Luganda who presented to the hospital's combined outpatient and emergency department were asked to complete the D12 questionnaire.

**Results:** Out of 466 patients, 137 (29.4%) had at least one D12 symptom. Patients' D12 responses expressed as a numerical severity score was only weakly associated with a respiratory rate >20 bpm. Two questions ("My breathing requires more work" and "My breathing is uncomfortable") identified >90% of patients likely to be breathless.

**Conclusion:** For patients whose first language is Luganda a translation of the D12 questionnaire captures the symptom of dyspnoea.

**Key words:** breathlessness; dyspnoea; respiratory rate; cardiopulmonary disease; Luganda

## INTRODUCTION

Dyspnoea or breathlessness is a common symptom strongly associated with cardiorespiratory diseases and mortality, which can affect up to half of all acutely ill patients admitted to hospital and a quarter of ambulatory patients.<sup>[1]</sup> However, during the introduction of a modified South African Triage System,<sup>[2]</sup> 4,340 patients presenting to Kitovu Hospital, Uganda were asked if they were breathless; only 88(2%) said they were.

Although many patients attending the Kitovu Hospital understand English, it is not the first language of most. Breathlessness is not a single sensation, and not all languages use a single word to describe it and may use several different words, such as air hunger, tightness, or a sensation of work or effort.<sup>[3]</sup> If patients are not asked questions they fully comprehend and capture what they are experiencing, then the symptom will be under-recognized and poorly managed.<sup>[4]</sup> The Luganda or Ganda language, spoken by more than 10 million people in central Uganda, expresses breathlessness by various phrases. The Dyspnea-12 (D12) questionnaire<sup>[5]</sup> was developed to measure different dimensions of breathlessness and has been validated in several languages and cardiorespiratory diseases.<sup>[6]</sup>

The aim of this study was to determine the frequency and severity of the symptoms captured by a Luganda language translation of the D12 questionnaire in alert consenting patients presenting to Kitovu Hospital.

## METHOD

This prospective observational study, which is part of an ongoing quality improvement audit, was performed in the combined emergency and outpatient department of Kitovu Hospital, a low resource hospital located near Masaka, Uganda, 140km from the capital city of Kampala. It is a private not-for-profit (PNFP) hospital, accredited by the Uganda Catholic Medical Bureau.

Participants were all alert non-pregnant adult patients (i.e., >12 years of age) fluent in Luganda who presented to the hospital's combined outpatient and emergency department between 13th and 31st August 2022 between 8 am and 5 pm who verbally consented to participate. A dedicated researcher entered patients' age, sex, respiratory rate, oxygen saturation, heart rate and responses to each of the twelve symptoms of the D12 questionnaire<sup>[5]</sup> into an Excel database (Version 2102, Microsoft Corp., Redmond, WA). The D-12 questionnaire was translated

into Luganda by JV, HK and IN and validated by several native speakers (Table 1).

The severity of each itemised symptom was ranked numerically as: asymptomatic = 0; mild symptom = 1; moderate =2; severe = 3 points. Therefore, the minimum D12 severity score was 0 points and the maximum 36 points. Respiratory rate was measured using the RRate smartphone application,<sup>[7]</sup> and oxygen saturation and heart rate by a Handheld Pulse Oximeter available from Shenzhen YKD Technology CO., Ltd (<https://www.ykdmedical.com/products/fingertip-pulse-oximeter/handheld-pulse-oximeter/>)

Descriptive statistics were performed using Epi-Info version 6.0 (Centre for Disease Control and Prevention, USA). Odds ratios were determined using the Yates correction to demonstrate the association between the D-12 questionnaire and its components with tachypnoea and hypoxia; tachypnoea was defined as a respiratory rate >20 breath per minute and hypoxia as an oxygen saturation below 96%, in accordance with the criteria of the UK National Early Warning Score.<sup>[8]</sup> The p-value for statistical significance was 0.05.

**Table 1. Dyspnoea-12 questionnaire translated into Luganda**

Question number	Symptom
1	My breathing does not go in all the way Okussa kwange tekuyingira mu mawuggwe
2	My breathing requires more work Okussa kwange kwetaaga okukola ennyo
3	I feel short of breath Mpulira nga nfuuwa omukka
4	I have difficulty catching my breath Nzibuwalira okukwata omukka
5	I cannot get enough air Sisobola kufuna mpewo emala
6	My breathing is uncomfortable Okussa kwange tekunyuma
7	My breathing is exhausting Okussa kwange kunkooya
8	My breathing makes me feel depressed Okussa kwange kundeetera okwenyamira
9	My breathing makes me feel miserable Okussa kwange kunfuula ow'ennaku
10	My breathing is distressing Okussa kunnyigiriza
11	My breathing makes me agitated Okussa kwange kundetera okwekyanga
12	My breathing is irritating Okussa kwange kunnyiiza

## Ethics

Ethical approval of the study was obtained from the Scientific Committee, Kitovu Hospital. The study conforms to the principles outlined in the Declaration of Helsinki.

## RESULTS

Of the 466 patients who consented to participate, only 14 (3.0%) were admitted to hospital, none of whom died while in hospital. The mean age of the participants was 43.5, SD 19.4 years, and 291 (62.4%) were female; their mean respiratory rate was 19.8, SD 4.8 breaths per minute, their heart rate 80.2, SD 17.0 beats per minute, and their mean oxygen saturation 96.6%, SD 5.2%.

The mean total D12 score was 4.5, SD 8.3, and 137 (29.4%) patients were symptomatic (i.e., scored more than zero points). Symptomatic patients were older than those who were asymptomatic (46.7 SD, 21.5 versus 42.2, SD 18.3 years,  $p$  0.02) and had a higher mean respiratory rate (21.3, SD 6.3 versus 19.2, SD 3.8 breaths per minute,  $p$  <0.0001), but did not have significantly different heart rates (80.9, SD 16.9 versus 79.8, SD 17.0 beats per minute,  $p$  0.57) or oxygen saturation (96.8%, SD 4.5% versus 96.5%, SD 5.5%,  $p$  0.58)

The number of patients who were symptomatic for each of the itemized questions of the D12 questionnaire ranged from 120 (25.6%) for Question 6 to 75 (16.1%) for Question 11 (Figure 1). By a process of trial and error the following combinations of questions were found to

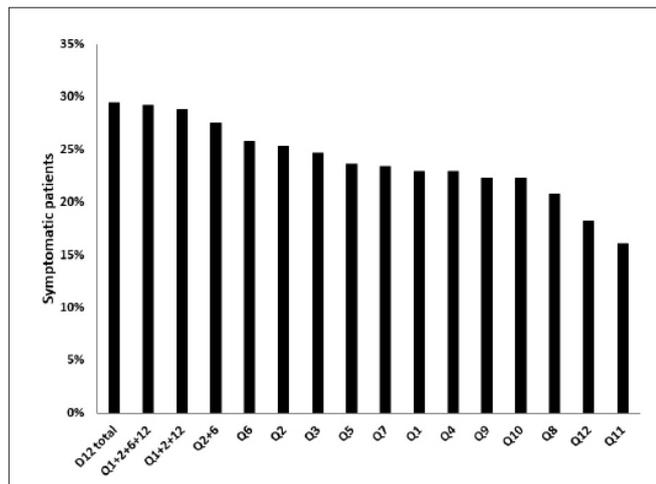


Figure 1. Percent of patients who were symptomatic for the total D12 questionnaire, each of the itemized questions of the questionnaire, and selected combinations of questions. Q1 = question 1, Q2 = question 2, etc.

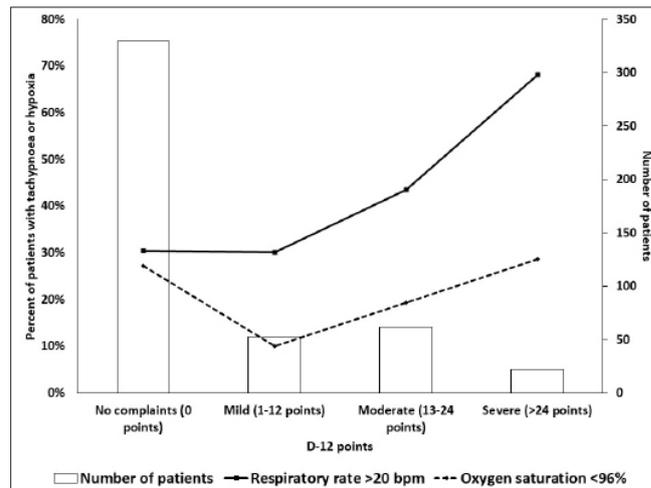


Figure 2. Number of patients and percent with hypoxia (i.e., oxygen saturation <96%) and tachypnoea (i.e., respiratory rate >20 breaths per minute) according to the D-12 points score

Table 2. The number of patients complaining and the proportion with a respiratory rate >20 breaths per minute for each item of the D12 questionnaire according to severity

D12 question	Number of patients (percent with respiratory rate >20 breaths per minute)			
	No complaint (zero points)	Mild (1-12 points)	Moderate (13-24 points)	Severe (>24 points)
Q1	359 (31.2%)	70 (32.9%)	36 (61.1%)	1 (100.0%)
Q2	348 (30.5%)	55 (25.5%)	55 (56.4%)	8 (87.5%)
Q3	351 (30.2%)	49 (38.8%)	45 (42.2%)	21 (66.6%)
Q4	359 (30.1%)	40 (35.0%)	50 (44.0%)	17 (82.4%)
Q5	356 (29.8%)	49 (32.7%)	45 (53.3%)	16 (75.0%)
Q6	346 (29.8%)	43 (25.6%)	56 (51.8%)	21 (71.4%)
Q7	357 (30.3%)	51 (47.1%)	54 (42.6%)	4 (75.0%)
Q8	369 (30.9%)	42 (28.6%)	44 (54.5%)	11 (72.7%)
Q9	362 (30.9%)	39 (33.3%)	40 (42.5%)	25 (64.0%)
Q10	362 (30.4%)	36 (33.3%)	39 (56.4%)	29 (48.3%)
Q11	391 (30.9%)	45 (51.1%)	24 (54.2%)	6 (16.7%)
Q12	381 (31.2%)	40 (40.0%)	33 (48.5%)	12 (58.3%)

identify the most patients with more than zero D12 points: Question 2 +6 identified 128 (27.5%) patients, Question 1 + 2 + 12 identified 134 (28.8%), and Questions 1 + 2 + 6 + 12 identified 136 (29.2%) (i.e., one less patient than the total D12 score).

Out of 329 asymptomatic patients (i.e., scored zero D12 points) 100 (30.4%) had tachypnoea (i.e., a respiratory rate >20 bpm); the proportion of patients with tachypnoea increased with the D12 points score and the odds ratio for tachypnoea in a symptomatic patient was 1.68 (95% confidence interval 1.09 – 2.60, p 0.02); similar patterns were observed for all the 12 itemized symptoms of the D12 score (Table 2).

In contrast, the odds ratio for hypoxia (i.e., oxygen saturation below 96%) in symptomatic patients was negative at 0.56 (95% confidence interval 0.32 – 0.97, p 0.04) as there was a U-shaped relationship between hypoxia and D-12 points (Figure 2).

## DISCUSSION

### Main findings

This study found that more than a quarter of patients presenting to a low resource hospital in Uganda had at least one of the symptoms itemised by the D12 questionnaire, which is a well validated measure of breathlessness.<sup>[6]</sup> These findings suggest that if asked using language that patients understand, breathlessness is as common in acutely ill Ugandan patients as it is elsewhere in the world.

### Interpretation

Breathlessness has been described as a polymodal sensation, which comes from muscle and tendon tension in the respiratory muscles in the chest and neck, the feeling of skin pressure over the stomach as it fails to rise on inhalation, and gastrointestinal tract distension if the abdomen becomes distended, preventing normal inhalation.<sup>[9]</sup> It is not surprising that different cultures and languages may choose different words to describe these mixed sensations. Clinicians should be aware that ethnic differences may exist in the words used to describe breathlessness. For example,

asthmatic African Americans use primarily upper airway words to describe their breathlessness, whereas whites used lower airway or chest-wall descriptors.<sup>[10]</sup> Therefore, our findings may be relevant to other patient populations outside of Uganda.

### Clinical relevance

Although only 3.0% of the patients in this study were admitted to hospital and none died, 34% had a respiratory rate >20 bpm, 24% an oxygen saturation <96%, and 11% a heart rate >100 bpm. Therefore, it is likely that many of these patients had significant cardiopulmonary disease. Failure to recognise that a patient is breathless may result in a serious life-threatening cardiopulmonary diagnosis being overlooked.<sup>[4]</sup> Although asking all the D12 questions during emergency care may not be practical, this study shows that asking questions 2 and 6 identified >90% of patients likely to be breathless.

Dyspnoea, tachypnoea, and hypoxia are all associated with mortality.<sup>[1,8]</sup> However, there was a weak association between the patients' D12 responses expressed as a numerical severity score and respiratory rate, and more than 30% of patients without D12 symptoms were tachypnoeic and 27% hypoxic. Counterintuitively, patients without symptoms were more likely to be hypoxic, which suggests the sensation of dyspnoea may be part of a physiologic response to improve oxygen saturation. Therefore, breathlessness, respiratory rate, and oxygen saturation levels must each be assessed in acutely ill patients, as a normal value for one cannot imply normal values for either of the other two.

### CONCLUSION

For patients whose first language is Luganda a translation of the D12 questionnaire, unlike the single English word breathlessness, captures the symptom of dyspnoea. Between two and four questions identify dyspnoea nearly as well as the entire questionnaire.

**Limitations:** This study was performed in a single centre and did not consider patients' diagnoses or their follow-up after discharge.

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translated the Dyspnoea-12 questionnaire into Luganda.

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# Teaching and learning in the clinical workplace

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## ABSTRACT

Participation in clinical practice is key to the development of clinical skills, and so the goal of clinical work is both to deliver healthcare and facilitate learning. Four factors shape learning in the workplace: safe access to practical experience; the role of talk in the workplace; teaching opportunities; and the learning climate. The challenge is to structure and carry out work so that support for learning is built into normal work routines.

**Key words:** clinical workplace, learning, teaching, education

## INTRODUCTION

Healthcare professionals learn and refine their practice in the clinical workplace. This means that the goal of clinical work is both to deliver healthcare and to facilitate learning. ‘Learners’ may be students, present in the workplace for a limited time, or qualified clinicians, with a job to do but with much still to learn. This article discusses how to optimise learning within the workplace, whilst meeting the demands of clinical care.

## INTEGRATING WORK AND LEARNING

In classroom teaching, the focus is entirely on learning. In the workplace, the focus is on clinical care. Yet because clinical care provides the basis for learning, the needs of patients and of learners must both be accommodated. It is important

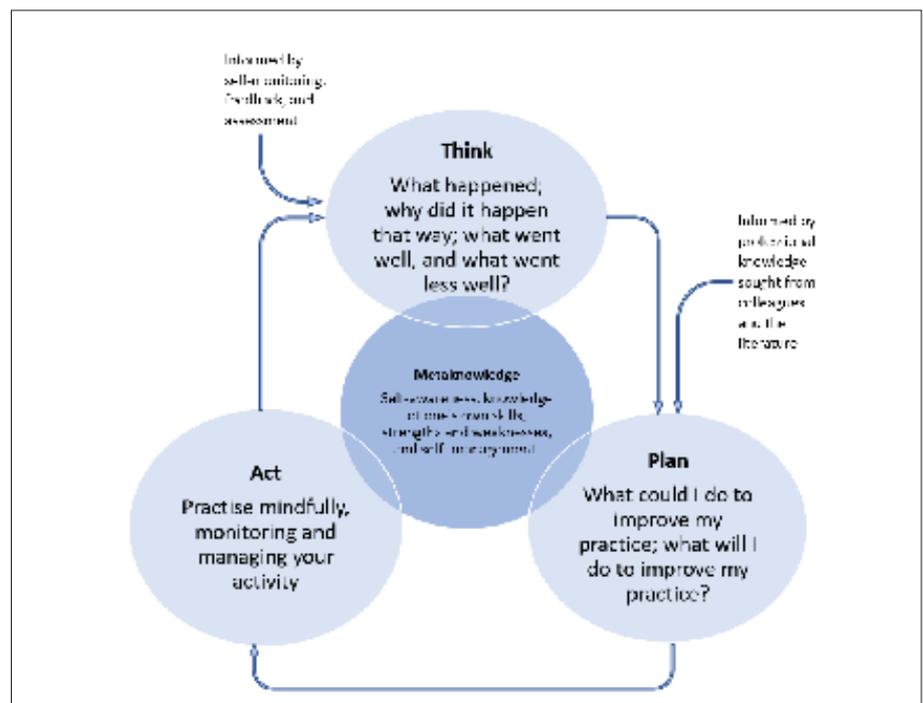


Figure 1. A process of learning from experience

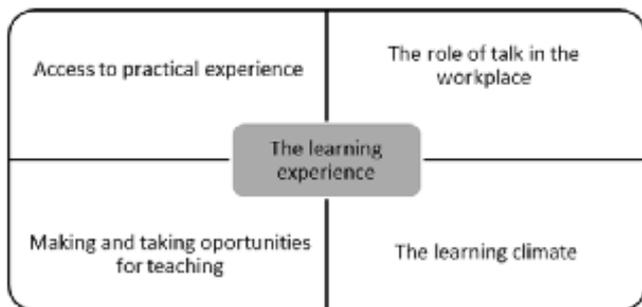


Figure 2. Four factors shaping learning in the workplace

that learners are accepted as learners, as well as part of the clinical team. Their role is to work and to learn, and so they should approach work as active participants in a process of learning from experience (Figure 1).

The challenge for the wider clinical team is to structure and carry out work in a way that supports this learning process, so that support for learning is built into normal work routines. Figure 2 identifies four inter-related factors that shape learning in the workplace.

### ACCESS TO PRACTICAL EXPERIENCE

By expanding their participation in clinical work, learners develop their ability across the eight trajectories<sup>[1]</sup> shown in Figure 3. How work is allocated and supervised is key to supporting their learning through safe participation in clinical practice. It is important that supervisors know where the boundaries lie for each learner, between needing and not needing help.

A learner may be allocated work that they can do without help. This is productive, and it releases senior staff to their own tasks. It offers the learner some limited autonomy to exercise their clinical skills, but is unlikely to support development beyond their current competence. To develop further requires them to take on more challenging tasks, which require help, provided by supervision and other forms of 'scaffolding'.<sup>[2]</sup>

Scaffolding enables safe working. It includes, for example, placing limits on what a learner can do, giving instruction on when and how to ask for help, providing advice, showing how, or ensuring the presence of a more knowledgeable colleague. When allocating work, then, the supervisor has to know the learner's ability, their learning needs, and the availability of appropriate scaffolding.

Learners may need close supervision: the 'hands-on' presence of a more experienced clinician, working directly with the learner. On other occasions supervision may be required in a more general role of checking and advising, or it may mean being available to the learner if they need to call for help. This last option requires the supervisor to be confident that the learner will recognise when they

need help. Asking for help requires learners to exercise 'metaknowledge', situational awareness and knowledge of their own abilities (see Figure 1). Learners' must also trust that a call for help will be dealt with constructively. Their previous experience of asking for help may affect their willingness to ask in the future.

### THE ROLE OF TALK IN THE WORKPLACE

Routine talk between team members in the workplace has several functions, including a social function, a team management function, and a performance function.<sup>[3]</sup> Each is significant to the development of the 'community of practice'<sup>[4]</sup>, within which learning takes place.

Including learners in social talk helps confirm their acceptance within the community. Excluding them from social talk can isolate learners from the team and affect how they participate in the work of the team.

The team management function concerns organising the team to get the job done. It includes what tasks need be done, their allocation, and the provision of supervision. This is central to shaping the learner's clinical experience: their participation in clinical work, their understanding of their job role, and their place in the team.

Performance talk concerns standards of work and how they can be improved. At its simplest, performance talk offers 'normative' feedback<sup>[5]</sup> to the learner: on the spot, task-based feedback about how things ought to be, what is OK and what is not OK. Performance talk also allows opportunities for questions, sharing experiences, perspectives and clinical reasoning. Talk of 'How?' and 'Why?' brings us close to the point of teaching: the point where we intentionally invest time and effort in the learner as a learner, rather than as a worker. It may lead to extended feedback, teaching that goes beyond the task in hand, and the identification of learning objectives.

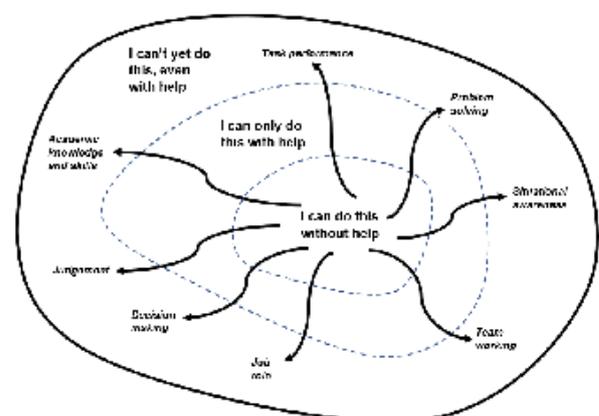


Figure 3. Developing clinical ability

### Extended feedback

Extended feedback is a conversation with the learner that describes, explains, and evaluates performance, identifying learning needs and how to meet them. It is intended to inform, motivate and direct improvement. Its routine use demonstrates and reinforces the habit of learning from experience.

The normal courtesies and expectations of communication are culturally shaped, and so the various models developed in, say, European contexts may need to be adapted to different cultures. However, it seems important to be specific, rational, to focus on observable elements of practice and their consequences, to acknowledge effective as well as less effective performance, and to maintain the motivation and self-esteem of the learner. A basic model of feedback, known as 'Pendleton's Rules'<sup>[6]</sup> is summarised here:

1. Ask the learner what they did well
2. Discuss what went well, adding your own observations
3. Ask the learner to say what went less well and what they would do differently next time
4. Discuss what went less well, adding your own observations and recommendations for improvement

### MAKING AND TAKING OPPORTUNITIES FOR TEACHING

Workplace conversations that offer feedback, information and advice, and lead to improvement plans, are indistinguishable from teaching. Variables include the breadth and depth of the conversation, and whether the focus remains specific to the case-in-hand, or builds upon the case to teach more general principles.

Workplace teaching opportunities may be planned or unplanned. They may arise in ward rounds, at or near the bedside, and from case briefings/debriefings, which can be extended to case-based small-group teaching sessions. Time is a determining factor, and this is acknowledged in the following three approaches, summarised from Chacko et al,<sup>[7]</sup> each of which describes a model of workplace teaching. All three approaches have their place in the clinical teacher's toolbox, to be used according to circumstances.

#### The Traditional Model

The traditional model<sup>[7]</sup> is a patient centred approach, in which the learner presents the case, and is then questioned in order to clarify the presentation and establish diagnosis and treatment. This may be followed by brief teaching concerning the case-at-hand. It is an efficient

way of making clinical decisions, with the participants maintaining their respective roles of novice and expert. It does not prioritise the learner's wider learning needs, offer extended feedback, or explore clinical reasoning in any depth, and so is time-efficient, but this limits its value for learning.

#### The 'One Minute' Model

The 'One Minute' model<sup>[7]</sup> entails feedback, teaching, and the identification of improvement objectives. Following the learner's examination of a patient, discussion is based on the case and the learner's knowledge, and so involves the clinical supervisor in thinking about both the patient and the learner:

1. Ask the learner what they think is going on.
2. Ask for their reasons, alternatives, and next steps.
3. Use the case, and what you know about the learner's understanding, to teach a general rule relevant to the case.
4. Acknowledge what the learner did well
5. Correct any errors and make a recommendation for improvement.

#### The SNAPPS Model

The 'SNAPPS' model<sup>[7]</sup> is a learner led discussion. The supervisor contributes expertise, building upon and validating the learner's analysis of the clinical case, agreeing a management plan, and advising on a learning goal. This takes more time than the previous models, and is appropriate for more advanced learners:

1. The learner summarises the history and findings.
2. The learner narrows the differential to two or three possibilities, and explains their reasoning.
3. The learner asks the supervisor specific questions to aid their reasoning.
4. The learner offers a management plan, which the supervisor discusses, builds upon, and informs.
5. The learner identifies an issue for their further, self-directed learning, and the supervisor offers guidance.

### THE LEARNING CLIMATE

The idea of a 'learning climate' refers to aspects of the workplace that contribute to the learners' feelings of belonging, safety, and support for learning. It is important because it shapes learners' willingness to participate in challenging work, and engage in learning activity.

In the clinical workplace, the over-riding concern is for

**Table 1. Applying these ideas to your practice**

The aim is to structure and carry out work so that support for learning is built into normal work routines. How will you:

- support learners to be active participants in their own learning (see Fig. 1).
- take account of learning needs when allocating work
- ‘scaffold’ work to facilitate learners’ safe access to clinical practice
- ensure appropriate supervision of learners
- improve your feedback to support learning in the workplace
- make opportunities to use each of the three teaching models described above
- improve learners’ feelings of belonging, safety and support, and reduce vulnerability
- become a role model for your junior staff

patients and the task-in-hand. The clinical team will have established ways of doing things, and expectations of their junior staff and students. When a learner joins the clinical team, even for a brief period of time, an early conversation to clarify role expectations, how work is managed, and opportunities and support for learning, can reduce misunderstandings.

Feeling vulnerable in the workplace can affect a learner’s ‘self efficacy’,<sup>[8]</sup> their confidence to sustain effort and master challenging tasks. Vulnerability can be affected by a range of factors, including workload, the challenge posed by the task, supervision, inter-personal relationships and behaviours, attitudes to learning, and how power is used within the team.

It is unlikely that we can rid the clinical workplace of stress. This is especially true in resource-poor, high workload, and exposed situations. We can, though, support learners by working in ways that reduce their vulnerability in these situations.

Feeling responsible for something beyond your capability is particularly stressful. Isolating learners and exposing them to situations beyond their ability, with insufficient access to support, is a feature of the clinical workplace that we need to work to minimise, and finally eradicate – for the sake of both clinicians and patients.

### **BECOMING A ROLE MODEL**

There is a way in which we can contribute to the learning climate that does not take any additional time. It is by being a role model for clinical practice and continual learning. This is ‘teaching by being’: by being authentic, by being a capable clinician, by being a learner, and by caring about the learning of team members.

In Table 1, we encourage you to think further about these ideas, discuss them with colleagues, and apply them to your situation as you continue to develop your own teaching repertoire.

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# Primary cystic echinococcosis presented as prolonged disabling knee osteoarthritis: a case report

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## ABSTRACT

Cystic echinococcosis (hydatid disease) is a neglected tropical disease common in Asia, South America and Sub-Saharan Africa. It is a parasitic disease caused by larval stage of *Echinococcus granulosus*. The commonest organs affected by hydatidosis are the liver and the lung. Primary bone hydatidosis in humans is a rare disease accounting for 1–2% of echinococcosis cases. To our knowledge secondary hydatidosis of joints is uncommon and few cases of hydatid disease of the knee joint have been reported.

We present a case of primary cystic echinococcosis of the knee joint occurring in a 43-year-old female presenting mainly as disabling right knee arthritis in the form of chronic (13 years) painful swelling, which ultimately led to her inability to walk. Imaging and histopathologic examination revealed cystic echinococcosis of the right knee joint. Subsequent pulmonary, liver and bone screening for primary lesions were negative. To our knowledge, this is the first ever report on primary knee hydatid disease.

It is possible that pre-existing arthritis modulated the local environment of the knee, rendering it susceptible to hydatidosis. This should be taken into account in the differential diagnosis of arthritis particularly in endemic areas.

**Keywords:** hydatid cyst, knee hydatidosis, echinococcosis, knee osteoarthritis, Sudan

## INTRODUCTION

Echinococcosis is a zoonotic disease caused by infection with the larval stage of a helminth belonging to the genus *Echinococcus*.<sup>[1]</sup> Although it is rare in Europe and North America, hydatid disease (cystic echinococcosis) is endemic in North Africa and South America.<sup>[2]</sup> According to the WHO, the incidence rates can exceed 50 per 100000 person-years.<sup>[3]</sup>

Cystic echinococcosis can occur in a variety of human body sites, most commonly in liver (50–80%) and lungs (15–47%).<sup>[4]</sup> Few cases of secondary hydatidosis of the joints have been mentioned in literature. This case report describes a rare case of primary distal right femoral hydatidosis with involvement of the right knee joint.

## CASE REPORT

A 43-year-old female from Atbara, northern Sudan, presented with right knee pain which started 13 years earlier. The patient denied any history of trauma to her knee and said she was seen regularly by her physician. The problem was managed as a case of non-specific arthritis. However, the pain increased and became very severe during the last two years. The knee became swollen and the patient developed inability to walk.



Figure 1. X-ray of the right knee showing cystic lesion on the right medial condyle

Physical examination of the central nervous system, chest, and abdomen were unremarkable. Local examination showed swelling of the medial aspect of the right knee measuring 8 cm × 10 cm. The swelling was cystic and was not fluctuant or transilluminating. There were no signs of acute inflammation or regional lymphadenopathy on palpation. However, active joint movement was limited to 120°.

Laboratory investigations revealed negative Rheumatoid Factor and normal complete blood count, erythrocyte sedimentation rate, serum uric acid and renal function test. Lateral and anteroposterior X-rays of the right knee were suggestive of a cystic lesion in the right femoral condyle (Figure 1). MRI of the right knee showed a pathologic signal intensity involving the femoral metaphyseal and epiphyseal regions as well as the medial femoral condyle (Figure 2). The lesion was hypo-intense in T1 weighted image and heterogeneously hyper-intense in T2 weighted image with some multifocal cystic appearance. The MRI also showed some trabecular cystic appearance in the posterior aspect of the lateral tibial condyle, intra articular effusion, and marked synovial hypertrophy. These findings further suggested an unusual cause of arthritis in this patient.

The histopathological examination of a core needle biopsy taken from the medial condyle of the right femur showed pink lamellated membranes consistent with an Echinococcus cyst membrane. Based on imaging and histopathology the diagnosis of hydatid disease of the right knee was reached.

One month later the patient underwent right knee exploration under spinal anaesthesia via a medial parapatellar approach. Intraoperatively, synovial thickening was noted. Extended curettage was done and bone cement was applied to compensate the bone defect. Curettage

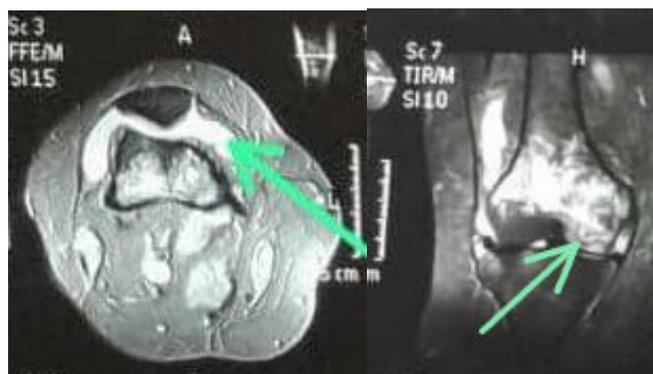


Figure 2. MRI of (left) the axial plane right knee joint showing joint effusion in T2W and (right) coronal plane of the right knee showing a serpiginous structure of low signal intensity in the medial femoral condyle representing a detached Echinococcus cyst membrane.

products were sent for histopathologic examination and the patient was started empirical antibiotics and analgesics. Microscopic examination of curettage products showed necrotic bony tissue with lamellated pinkish membranes and scolices along with extensive neutrophilic infiltrate and occasional calcification. This confirmed the initial diagnosis of hydatid disease of the distal femur and the knee joint. (Figure 3).

Abdominal and lung CT scan done on the patient revealed no abnormality and confirmed the notion of a primary disease of distal femur with knee joint involvement.

The patient was prescribed albendazole tablets 400mg daily for three months. On follow up after six weeks, the patient showed marked improvement. Her knee pain, swelling and tenderness all resolved. She started to regain her ability to walk. Radiological imaging showed complete resection and filling of the defect with cement and no signs of recurrence (Figure 4). Unfortunately, one month later she developed an acute drug induced hepatitis. Albendazole was withdrawn in anticipation of her recovery in order to put her on a second line antihelminthic agent. Regrettably, the patient failed to return for follow-up.

## DISCUSSION

Hydatid disease of bone and joints represent less than 0.5% of human echinococcosis.<sup>[5,6]</sup> The most frequently involved osseous areas are the vertebral column, the pelvis, the long bones, and the skull. Joint involvement usually occurs secondary to the involvement of the nearby osseous tissue.<sup>[7]</sup>

Several cases of secondary hydatidosis with joint involvement have been reported in the literature. These include knee hydatidosis extending from femur bone from primary liver lesions;<sup>[8]</sup> hip joint due to extension from the sacrum;<sup>[9]</sup> knee hydatid disease with tibial and femoral lesions secondary to hepatic hydatidosis;<sup>[10]</sup> lumbosacral

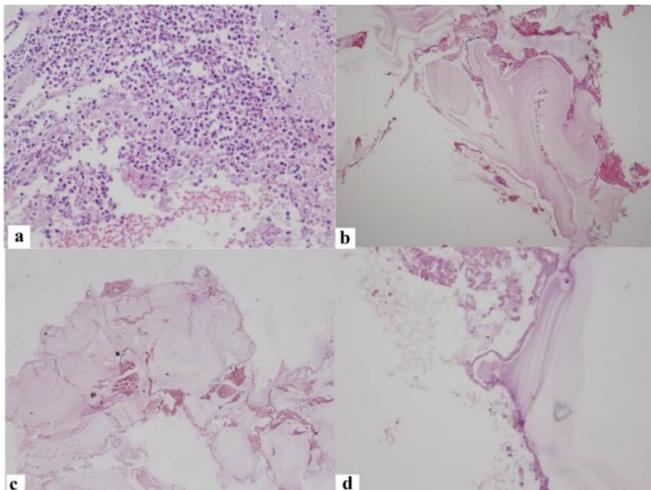


Figure 3. a) Necrosis and neutrophilic infiltration, haematoxylin and eosin stain (H&E) x4. (b) and (c) Lamellated membranes, H&E x40. (d) Lamellated membranes and scolices, H&E x60.



Figure 4. Follow up X-ray after surgery showing cement covering the gap after surgical removal of the cystic

joint involvement secondary to lung and liver hydatid disease; hip hydatidosis with nearby osseous destruction; shoulder joint secondary to liver hydatid disease;<sup>[5]</sup> and knee hydatidosis secondary to primary bone hydatidosis of distal femur.<sup>[11]</sup>

In contrast to the secondary hydatid disease cases reported in the literature, our case is unusual and possibly unique in that there was no primary lesion detected in the liver, lungs or brain. The only abnormality in this case was in the distal part of the right femur. Another unusual feature of our case is that the patient presented with a chronic history and total loss of ability to move the right knee joint because of pain and later swelling. This could be attributed to the slow growth and progression of the lesion. The unusual presentation mimicking osteoarthritis of the right knee perhaps initially inhibited the correct diagnosis. On histopathological examination the patient was noted to have extensive neutrophilic infiltration of the hydatid cyst membranes that involved the adjacent bony tissue. This could be attributed to post-biopsy secondary bacterial infection that resolved following removal of the infected tissue and administration of cephalosporin antibiotics.

An important lesson from this case report is that biopsies in cystic lesions are important and can help in reaching the correct diagnosis. A possible explanation of the primary knee hydatidosis is that the patient was initially suffering from another type of arthritis which damaged her knee joint and compromised blood supply to the area.<sup>[12]</sup>

The patient is originally from an area well-known for breeding livestock including camels, the herbivore most infected with hydatidosis in Sudan.<sup>[13]</sup> Some people in Sudan have the practice of eating raw camel liver. When exposed to the organism, possibly through ingestion of

raw camel meat, the larvae settled in her distal femur and subsequently caused knee hydatidosis.

Known side effects of albendazole use include gastrointestinal disturbances, thirst, dizziness, headache, alopecia and itching. However, it may rarely induce hepatitis.<sup>[14]</sup> This unlucky patient developed increased liver enzymes forcing treating physicians to stop albendazole and give her follow-up appointment. Unfortunately, the patient did not return for the appointment.

## CONCLUSION

Hydatid disease can present as chronic arthritis. Diagnosis depends on radiological and histopathological examination. Misdiagnosis or delayed treatment may lead to significant disability. Hydatid disease of a joint should be included in the differential diagnosis of arthritis with adjacent bone cysts in endemic areas.

**Conflicts of interest:** none

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## Deadline for Gordon Memorial College Trust Fund (GMCTF) applications

The closing date for Gordon Memorial College Trust Fund for the period 2023/2024 is 28th February 2023. Please apply online on the website [www.GMCTF.org](http://www.GMCTF.org) attaching two recent references, one of which must be from a referee in the area of study.

Applicants who are currently in receipt of a GMCTF grant must submit a reference letter from their course supervisor or head of department confirming progress to the next year of study.

Applications of short-listed candidates will be considered in March/April 2023.

### **Dr Eluzai Hakim**

Royal College of Physicians London International Adviser on South Sudan.

Associate Editor South Sudan Medical Journal

# Retroperitoneal pelvic packing for an abdominopelvic gunshot injury

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## ABSTRACT

The objective of the study is to demonstrate the significance of damage control surgery in saving lives and possibly preventing permanent disability in a resource poor environment. This is because in resource limited settings, advanced treatment modalities such as external fixation and angiography with embolization are not available. Moreover, besides being expensive, these treatment methods for pelvic fractures require training and skills to perform. The retroperitoneal pelvic packing is easy to learn and, thus can be used in an emergency to save lives and prevent long-term problems in patients who have sustained life threatening pelvic injuries and severe haemorrhage.

Therefore, specialist surgeons, especially those working in low- and middle-income countries, should be encouraged to learn and consider retroperitoneal pelvic packing as a stabilization and definitive treatment in some cases of pelvic fractures.

**Keywords:** Pelvic fractures, retroperitoneal pelvic packing, damage control surgery, external fixation, angioembolization.

## INTRODUCTION

The pelvic bone has a rich blood supply<sup>[1]</sup> so a fracture due to a gunshot wound can lead to torrential haemorrhage. The pelvic bone injuries are mainly limited to direct bullet tract damage. The bone fragments may become secondary missiles causing additional damage to surrounding structures.<sup>[2]</sup> Pelvic ring injuries are associated with a high morbidity and mortality.<sup>[3]</sup>

Retroperitoneal haemorrhage is the leading cause of death. Gunshot injuries have the highest mortality rate of 15.3%.<sup>[4]</sup> The standard management of pelvic fractures in the developed world consists of early recognition, resuscitation with blood and blood products, treatment of associated life-threatening injuries and finally control of pelvic bleeding with a combination of mechanical stabilization and arterial embolization.<sup>[5]</sup>

However, in a resource poor environment, where mechanical stabilization and arterial embolization are not available, emergency retroperitoneal pelvic packing alone can be lifesaving.<sup>[6]</sup>

## CASE HISTORY

A 17-year-old herdsman had been shot when cattle raiders came to steal his cattle about four hours prior to presentation. He was shot in the left lower abdomen and the bullet exited through the left outer upper quadrant of the buttock. On examination, he was sweating, in pain, moderately pale. His vital signs were: Pulse 131/ minute, thready and weak, BP 60/40 mmHg, and temperature 36.7°C.

The abdomen was moderately distended, not moving with respiration. A bullet entry wound of about 2.5cm was in the left lower quadrant and exited on the medial left inner quadrant of the buttock measuring 7cm with some fresh bleeding. There were no faecal or gastrointestinal contents noted on the entry or

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exit wounds. There was generalised tenderness, rebound tenderness and scanty bowel sounds. The abdomen was dull to percussion.

The perianal area and anal sphincter were normal with no evidence of rectal injuries.

He was resuscitated with 3 litres of normal saline and two units of whole blood. His blood pressure improved to 100/60mmHg. Furthermore, he was given intravenous ceftriaxone 1gram; metronidazole 500mg and gentamicin 80mg as stat doses. In addition, he received intramuscular tramadol 100mg. A nasogastric tube (NGT) and a urethral catheter were inserted. After two and half hours, his BP continued to fluctuate between 90/60mmHg and 60/40 mmHg and so he was taken to theatre for laparotomy and control of haemorrhage. Multiple small bowel injuries were found with the largest being 2.5cm in the ileum about 85cm from the ileocecal junction with moderate peritoneal soiling. Non-crushing clamps were applied to the injured bowel to control further contamination.

On further inspection it was noticed that there was still profuse bleeding coming from the pelvis. Bowel loops were retracted away from the site and the bleeding site was identified as the fractured iliac bone as shown in Figure 1. The major blood vessels were spared. As the patient was haemodynamically unstable and there was no more blood available, damaged control measures were instituted by enlarging the bullet tract and the bleeding site was packed with four large gauze packs. The latter were secured with interrupted sutures. The BP immediately improved to 120/70mmHg. The rectus sheath was not closed but skin closed with interrupted nylon no 1. The patient was taken to the recovery room for an hour and when his vital signs were stable he was transferred to the ward for further observation and treatments.

Postoperatively, he continued with ceftriaxone, metronidazole, gentamicin, and intravenous normal saline. He was transfused with two more units of blood and three more units of blood were sourced from family members. He remained haemodynamically stable with normal vital signs. The patient was then returned to theatre after 48 hours, the injured bowels were resected with primary anastomosis to restore continuity and prevent further contamination of the abdominal cavity. The gauze packing was found to be dry, there was no bleeding so the pack was removed. The injury site was closed with continuous suture, vicryl number 1/0.

Postoperative recovery was satisfactory. He had sustained a comminuted fracture of the iliac bone (Figure 1).

He now has left foot drop (Figure 2). A follow up X-Ray taken two months after surgery showed that the comminuted pelvic ring fracture was forming callus and thus healing well (Figure 3).



Figure 1. X-Ray of a comminuted Pelvic Wing Fracture (Credit: Koma Akim)



Figure 2. Patient walking with an axillary crutch as part of his rehabilitation process. The foot drop is very noticeable. (Credit: Koma Akim).



Figure 3. A radiograph of the comminuted pelvic ring fracture taken almost two months after the injury. There is almost complete callus formation on the comminuted pelvic ring fracture.

### DISCUSSION

Retroperitoneal pelvic packing is lifesaving especially in resource-constrained environments where external fixation and angioembolization are not available. Serious pelvic fractures are caused by high-energy trauma such as from gunshot, motor vehicle accidents causing crush injuries, and falls from heights. These fractures are usually associated with life threatening injuries, haemodynamic instability, morbidity and mortality. The mortality rates range from 40% to 60%.<sup>[7]</sup> The single most important cause of death in patients with pelvic ring fractures is haemorrhage.<sup>[8]</sup> In a significant proportion of the patients, the bleeding is from the pre-sacral venous plexus and the fractured pelvic bones.<sup>[9]</sup> The standard of care of pelvic fracture consists of resuscitation, stabilization of the fracture with external fixation, control of haemorrhage with angioembolization and or retroperitoneal pelvic packing. However, because most patients experience venous bleeding, retroperitoneal pelvic packing is an effective and lifesaving technique that needs to be considered by surgeons working in resource limited countries.

In general, retroperitoneal pelvic packing is a safe procedure. The main complications associated with it are local infections, and re-bleeding after removal of the packs.<sup>[10]</sup> The infection rate was thought to be high especially when the packs were left in for more than a few days i.e. more than 72 hours and in patients who were critically ill and had coexisting impaired immune system. In this category of patients the infection rates was as high as 35%.<sup>[11]</sup> The risk of infection was found to be higher especially when

the patient sustained an open pelvic fracture, hollow bowel injuries, perineal injuries and in patients in whom repacking was done.<sup>[12]</sup>

### CONCLUSION

The study highlights the use of retroperitoneal pelvic packing as an emergency resuscitative and therapeutic intervention in severe pelvic fractures with concomitant haemodynamic instability and thus this method can be used to treat patients with pelvic fractures in developing countries and hostile environments where resources are limited. In lieu of either external fixation or angioembolization.

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## GF allocates \$141 million to South Sudan to fight HIV, TB and Malaria during the period 2023-2025

The Global Fund (GF) has sent a letter to the South Sudan Country Coordinating Mechanism (CCM) to officially communicate the Global Fund Board's decision in November 2022 on the funding available for the 2023- 2025 allocation period. South Sudan has been allocated US\$141,955,200 for HIV, tuberculosis (TB), malaria and building resilient and sustainable systems for health (RSSH).

The allocation amounts for all countries have been determined according to a methodology approved by the Global Fund Board, primarily based on disease burden and income level. South Sudan is classified as a low-income country.

South Sudan is requested to submit its HIV and TB applications for funding using the Full Review funding request and to submit its malaria application for funding using the Program Continuation funding request.

As part of the Grant application process, South Sudan Ministry of Health has concluded in October the TB and HIV Programme Reviews and held Malaria Conference to measure progress, identify gaps and suggest priorities. This will enable the South Sudan AIDS Commission (SSAC) to review and update the HIV National Strategic Plan (NSP). SSAC concluded an NSP Retreat in Torit in early December 2022 and a fully review NSP is expected to be completed in March this year.

The South Sudan CCM has already shared a revised roadmap for the Global Grant Application in which South Sudan is expected to submit its application to the Global Fund on the first window around July 2023.

[https://www.theglobalfund.org/media/11612/strategy\\_globalfund2023-2028\\_narrative\\_en.pdf](https://www.theglobalfund.org/media/11612/strategy_globalfund2023-2028_narrative_en.pdf)

### Answers to quiz on p15

1. Plasmodium falciparum.
2. 247,000,000.
3. DRC, Nigeria, Uganda and Mozambique.
4. 39%.
5. 55%.
6. Lack of funding, low initiatives and inadequate community-based initiatives
7. Children under five years and immunocompromised people.
8. 30%
9. The Community Action Cycle.
10. Yes.

# Lui Hospital and the beginning of a modern health system in the Greater Mundri Counties

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In Greater Mundri, erstwhile Amadi District, the Lui Hospital and modern health system came into being as from 1921. Dr. Kenneth Grant Fraser (Scottish), his wife Eileen Charlotte Fraser (Irish) and his sister-in-law Alice Galbraith (Irish) were members of the Church Missionary Society (CMS). Their coming to Lui was inspired early in their lives before they were married.

For Dr. Fraser it was the ambition to emulate Dr David Livingstone, the famous missionary doctor, who gave his life to healing Africans in southern Africa. For Eileen it was to fulfil a childhood dream of teaching black African children. This story covers their pioneer works in the introduction of modern medicine to a health system in Greater Mundri, together with their successors until the hospital was taken over by the Sudan Government in 1958.

After qualifying in their respective fields, they were married but before they could settle down as a couple they had to go to the war, the World War I. Fraser as a medic in Turkey and Eileen as a volunteer nurse in France. After the War, Fraser specialized as a surgeon and both joined the CMS and went to the Sudan. Before sailing Fraser succeeded obtained medical equipment and medicines from friends sufficient to start healing immediately.

In the Sudan they were directed by the missionary-in-charge to go and start work in Amadi District (Moru land) which fell in the CMS Sphere of Operation but had had no missionary activity. In the District they arrived at Lui, the village of Sub-chief Yilu on 22 December 1920. At the time of their arrival there were still no roads, except tracks; no schools; no health service in the District and therefore modern western medicine was unheard. The subsequent story relies heavily on the book by Mrs. Eileen Fraser "The Doctor Comes to Lui."

Read the full story on our website [here](#).

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*The old hospital, Lui*

# A medical elective in Uganda

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In the summer between graduating from medical school and starting my first Foundation Doctor post in the UK, I decided to travel to Uganda for an elective period. I was keen to experience medicine in a different health care system, particularly in a resource-poor nation.

I spent the first week working with a project in Namuwongo, in the suburbs of the city. Namuwongo Community Foundation (NCF) is a small charity that runs a school, a feeding programme and social work in the slum (see Figure 1). Children from the slum community received free education and a hot meal every day, which their families could not otherwise provide. Social workers visited the community to support the more vulnerable families and offer counselling and training programmes in wellbeing, health, and finances.

NCF also ran a clinic to provide for the health needs of the community (see Figure 2). The clinic had limited resources with only a handful of beds, an examination room and a pharmacy. It had rapid antigen diagnostic tests to confirm malaria, syphilis, and HIV, and was able to dispense antibiotics and basic medications.

But without access to blood tests and further investigations, there was a limit to what the clinicians can do for their patients. The clinicians can recommend a patient attends hospital but this is often met with resistance from patients as treatment can be very expensive. People may consult traditional healers first. This is a cultural matter but also with a degree of mistrust in conventional medicine and its association with Western culture. Fortunately, it seemed this clinic had a good reputation within the community, thanks to its connection with the project. Similar health clinics can be seen everywhere in Kampala, providing primary care to local communities. However, these clinics do not appear to be well regulated. Some are not run by fully qualified doctors and instead by nurse practitioners, clinical officers or midwives so the quality of care is variable.



Figure 1. Children at the NCF school. (Credit: Matthew Bearley, Chair of Trustees at NCF)

After spending time at NCF, I started a 4-week placement at Nsambya Hospital, a 'private-not-for-profit' Catholic hospital on the edge of Kampala. I worked within the maternity department and spent time on the labour ward, in the operating theatres, wards and clinics. There was a high proportion of emergency cases, including those having been referred from other hospitals in Kampala. Women were admitted with pre-eclampsia, foetal distress, placental abruption and postpartum haemorrhage, amongst other complications.

I was surprised at the proportion of deliveries that progressed to Caesarean Section (CS) rather than normal vaginal births. I learnt that there is a high prevalence of cephalo-pelvic disproportion (CPD) in Uganda, which contributes to a higher rate of CS's. Previous studies have associated CPD with contracted pelvis (due to protein malnutrition) or adolescent or early

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marriages.<sup>[1,2]</sup> Hence, obstructed labour is a frequent indication for emergency CS. Furthermore, as a private hospital, concerns about expensive healthcare meant women presented late with pregnancy complications. It is also possible that women do not receive appropriate antenatal care due to limited access, increasing their pregnancy risk. I would have liked to have spent longer to gain a better understanding of these limitations and difficulties.

The antenatal care in Uganda was, in many ways, like that in UK. The Ugandan Ministry for Health follows the World Health Organisation recommendations, aiming for a minimum of eight contacts with the mother during her pregnancy, in uncomplicated cases. There was a great emphasis on diagnosing, treating and vaccinating against infectious diseases which are much more prevalent in Uganda compared to the UK, and included tetanus, HIV, viral hepatitis, parasitic worm infections and syphilis. Other non-communicable diseases were much less common, such as gestational diabetes mellitus and cancers. I saw one patient with endometrial cancer during my placement, which I was assured was quite rare in Kampala.

Moreover, there was greater dependence on clinical examination due to limited technological resources. Obstetric examination was used to confirm the foetal presentation and a fetoscope for determining heart rate, rather than relying on ultrasound scans and Dopplers which are common place in the UK. In these resource-limited settings it was obvious that taking a proper history and carrying out a thorough clinical examination were crucial. Maybe this is something we should reinforce in our practice in the West. Some mothers' care was limited by cost of medications. For example, one mother had a history of deep vein thrombosis but was reluctant to start prophylactic clexane (low molecular weight heparin) injections, putting her at greater risk of venous thromboembolism during pregnancy.

Theatre practices were largely the same in the UK. However, at Nsambya hospital, I did notice a few differences. For instance, it was standard practice to cut out the scar from a previous CS due to the increased likelihood of keloid scars forming in dark skin. It was also common for surgeons to externalise the uterus when closing, to help visualise the wound and identify any areas of bleeding. There seemed to be a small gynaecological caseload and the most theatre time was dedicated to CS's. Often women had already progressed into labour before a decision was made to deliver by CS and this made the delivery more challenging as the uterus was contracting.

Despite lots of differences to the UK, I was surprised by how familiar the hospital environment felt with ward rounds, morning handovers, clinical governance meetings



Figure 2: Health workers at NCF clinic. (Credit: Matthew Brearley, Chair of Trustees at NCF)

and interns who had been through similar training to myself. This meant after a month I had started to get settled in, just as the time came for my return home.

I was pleased to find that Continuing Professional Development was taking place. I attended weekly audit meetings where cases of neonate or maternal mortality were reviewed and discussed, to identify areas where there were any oversights or areas for future change. I also attended presentations from residents in training who had just returned from rural placements where they discussed and reflected on what they had learnt. All the interns had to do five case reports during their year.

I am very grateful for the time I spent in Uganda. It was a great opportunity to experience medical work in a different culture and it gave me an insight into the frustration of trying to provide healthcare with more limited resources. I have a greater appreciation for how health needs vary across countries and it has made me want to get more involved in global health work in the future.

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# East Central Southern Africa College of Physicians (ECSACOP)

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East Central Southern Africa College of Physicians (ECSACOP) is a regional college comprising Kenya, Malawi, Tanzania, Uganda, Zambia, and Zimbabwe. The main purpose of the College is to address the shortage of physicians in the region. ECSACOP is one of six constituent colleges of the ECSA College of Health Sciences, established following a resolution passed at the 52nd Health Ministers Conference held in Harare, Zimbabwe 2010 (ECSA/HMC52/R9: Strengthening Partnerships for Health). The College was formed to address the region's shortage of Internal Medicine specialists. ECSACOP is immensely grateful to the Royal College of Physicians of London for its support from its inception. The support has been in capacity building, logistics, and monetary.

The College was officially inaugurated in 2015, and training commenced in 2018. The College has successfully held five face-to-face scientific and annual general meetings in Zimbabwe (2016), Uganda (2017), Kenya (2018), Zambia (2019), and Malawi (2022). In 2021, due to COVID-19 travel restrictions, the College held a Virtual Scientific Conference and AGM in Blantyre, Malawi.



*ECSACOP Inaugural graduation ceremony at Lilongwe, Malawi September 23rd 2022  
(Credit: Dr Stella Oloo Program Manager ECSACOP, ECSACOP Secretariat Kampala, Uganda)*

The six countries have a population of approximately 210 million,<sup>[1]</sup> with only about 1,000 Internal Medicine specialists. This gives a combined ratio of 1 physician to 210,000 inhabitants, against the WHO projected recommendation of 4:1000.<sup>[2]</sup>

The Vision and Mission of the College embrace this deficit. The Vision: Healthy communities through access to well-trained physicians, and the Mission: To improve healthcare standards throughout the region by providing specialist training for physicians committed to lifelong learning are meant to drive the agenda of bridging the physician gap.

It is also important to note that the few physicians in the ECSACOP region are based mainly in urban centres. The main ethos of ECSACOP is to train physicians close to where they reside. This would stem the migration of young doctors seeking training in traditional urban-based universities and ending up not returning to practice in their rural homes.

The College awards Fellowships through instruction and examinations. Enrolled trainees participate in full-time teaching in approved training institutions. The first cohort of trainees who qualified graduated in September 2022 in Lilongwe, Malawi. See Figure 1. Five trainees graduated in the first cohort. There are currently seventeen accredited training sites throughout the region, with 72 trainees at various stages in their years of training. The training sites undergo a rigorous accreditation process conducted by the Accreditation Committee. One can obtain details of the accreditation process from the ECSACOP website [www.ecsacop.org](http://www.ecsacop.org).

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The training curriculum is delivered through an in-service apprenticeship model in appropriately accredited healthcare facilities. Through this approach, the College has harmonized internal medicine training across the six-country region, establishing regional training and healthcare standards to benefit countless patients.

The College website provides a robust teaching format. An e-Portfolio curriculum record is used to present evidence in an organized way to enable the educational supervisor and the relevant College committees, which include Training Committee, Examinations Committee, and Accreditation Committee, to determine whether satisfactory progress is being achieved. These include supervised learning events, evaluation of clinical cases, and personal performance. In addition, the record indicates activity to directed e-learning modules, literature reviews, workshops, audits, and quality improvement and assessments. Teaching attendance is recorded.

The Training Committee ensures that all trainees work under senior supervision by their clinical and educational supervisors. This allows review of the progression of their knowledge, skills, and behaviours, particularly professional conduct, and their maintenance of patient safety is paramount. The Training Committee ensures that trainees have access to online learning facilities and libraries and liaises directly with educational supervisors, regulatory authorities, and other relevant committees of the Council to ensure that problems with trainees or training are identified and flagged up. Thus, a structure is in place to provide regional, national and local quality control of training.

The candidate must fulfill regular e-learning programs (case discussions, literature reviews, etc.). Certain topics are covered in module form, where reading material is posted on the website, and evaluation exercises are carried out. Free library facilities are accessed on the website. An electronic logbook allows supervision (advising, monitoring, and providing feedback). The curriculum is competency-based and progressive over the four years in the complexity of content both in knowledge acquisition and competency skills.

Other learning virtual platforms are used as well. Modular learning is delivered through the Virtual Learning Environment platform, which has its schedule as per curriculum guidelines and is posted on the forum. The faculty comprises various internal medicine subspecialists in the ECSACOP region. So far, Modules such as Renal Medicine, Cardiology, and Neurology have been successfully delivered. Other subspecialty modules in the queue are Infectious and Tropical diseases; Respiratory medicine; Gastro-enterology and Hepatology; Endocrinology and Diabetes; Genito-urinary medicine; Rheumatology and Rehabilitation; Haematology;

Medical Oncology; Palliative medicine; Dermatology; Clinical Pharmacology, Therapeutics, and Toxicology; Geriatrics; Psychological Medicine and Intensive Care. The Physician is also trained in some aspects of related specialties, e.g., Clinical Biochemistry, Immunology; Microbiology; Radiology, Research Methodology, and Nuclear Medicine.

Examinations are carried out at the end of year II Fellow College Physician (FCP) Part I), and exit examinations at the end of year 4 (FCP Part II). It is important to note that at the end of every year, i.e., the year I, II, III, and IV, there is a rigorous Annual Review of Competency Progression (ARCP) to determine progression to the next year of training. Examinations at the end of years II and IV are taken by successful trainees in the ARCP assessment. The clinical supervision is by clinical supervisors located at the various accredited training sites throughout the region. All the clinical supervisors have had training in module delivery, trainee assessment processes, appropriate trainee feedback processes, identification of a trainee in difficulty, and examination setting processes, amongst other training skills needed for proper training.

The FCP (Parts I and II) comprise a written paper of 100 MCQs and 50 SAQs, followed by an Objective Structured Clinical Examination (OSCE) examination. External examiners are sought locally within the ECSACOP region and from the Royal College of Physicians (London) RCP and the West African College of Physicians (WACP).

There is an annual re-assessment of all accredited training sites to ascertain the maintenance of standards and compliance. The regular training site re-assessment is coordinated by each country's Training Director, Medical Council, and local physician association representatives.

ECSACOP plans to engage in collaborative research with other colleges and physician associations within and beyond. Some collaboration has already started with the WACP. We also intend to be actively involved in various healthcare activities, developing guidelines, and spearheading regional sub-specialty training. For now, the primary aim is to strengthen internal medicine training processes.

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# Reflections from the first South Sudan malaria conference

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## INTRODUCTION

Malaria is caused by the Plasmodium parasites (*P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae* and *P. knowlesi*), transmitted from one person to the other through the bites of infected female *Anopheles* mosquitoes and characterized by acute fever. The deadliest species and most prevalent in South Sudan and other parts of Africa is *P. falciparum*.<sup>[1]</sup> The trend in global malaria cases is rising in the 84 endemic countries. In 2021, there were an estimated 247 million malaria cases as compared to 245 million malaria cases in 2020 and 230 million in 2015. The Democratic Republic of Congo, Uganda, Nigeria and Mozambique had the highest burden of the disease and accounted for almost half of the global caseload.<sup>[2]</sup>

## MALARIA CONFERENCE – SOUTH SUDAN



Dr. Onyango Okech at the venue of the First National Malaria Conference on the closing day of the conference at Radisson Blu Hotel, Juba - South Sudan, 10/11/2022. Photo Credit, Dr. Duol Biem.

South Sudan held the First National Malaria Conference from 8<sup>th</sup> – 10<sup>th</sup> November 2022 which culminated with the launch of the ‘Zero Malaria in South Sudan Starts With Me’ (ZMSWM) Campaign. The main objective of the conference was “To advocate and build the case for more investment in burden reduction of the number one killer (malaria) in South Sudan” under the theme, “Saving lives from malaria in a protracted humanitarian emergency setting.”

The conference, which I attended, brought together local and international experts to discuss progress and advances made in the fight against malaria and share experiences. Approximately 200 participants consisting of national and international NGOs, diplomatic missions, donors, UN agencies, researchers, policy makers, civil society, academia, and private sector were in attendance. The general conclusion after the 3-day event was that malaria constitutes a serious emergency in South Sudan that requires immediate action from government, partners, communities, and all stakeholders. “Malaria, a problem to be solved and not simply a task to be performed”<sup>[3]</sup> said one speaker quoting Pedro L. Alonso.

Dr Kidiende Chong, the Ministry of Health Director General for Policy, Planning, Health Financing, Research and M&E, underlined that the last Malaria Indicator Survey (MIS) was conducted in 2017 in which only 39% of South Sudan’s population were sleeping under Insecticide Treated Nets (ITNs) even though 54.8% of households had access to ITNs. Further still, since 2017, the number of confirmed malaria cases treated has been increasing with 2019 recording 3.5 million cases and, by June 2021, there were already 3.1 million cases. He pointed out that the lack of recent data for malaria, general weak coordination mechanisms, inadequate health personnel, and delays in receiving supplies at the subnational level are affecting the response to malaria and other communicable diseases.

Dr Samson Baba, the Advisor to the Ministry of Health on Community Health and Special Programmes, emphasized the need to strengthen the Boma Health

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Initiative (BHI) to reinforce the fight against malaria. BHI was set to lay the foundation for a sustainable health care system in South Sudan. He said that by June 2021, only 42% (934/2219) bomas were implementing BHI. Major challenges facing the implementation of the initiative are the lack of funding, low incentives for boma health workers and parallel community-based initiatives.

Additional challenges pointed out by other presenters as hampering the fight against malaria in South Sudan were: the general lack and inadequate country ownership and political will, suboptimal coverage of preventive interventions especially in remote and hard to reach populations, poor access to health services due to inadequate integration, and inadequate engagement of the private sector.

“Malaria is widely accepted as a normal occurrence and not viewed as a life-threatening illness. This is coupled with inadequate political will that translates to poor domestic funding for the health sector and the national malaria programme,” said Dr Maru Aregawi, the World Health Organization Global Malaria Programme consultant.

### EXPERIENCES FROM OTHER NATIONS

#### Rwanda

Community Health Workers (CHWs) are key in the last mile to the delivery of malaria case management and expanding malaria Community Case Management (CCM) is essential in reducing severe cases and deaths. Rwanda adopted home-based management (HBM) for malaria in all age groups in 2017 following a sharp rise in malaria cases between 2016 and 2017. The CHWs were equipped and incentivized to diagnose and treat all cases of malaria at the community level, free of charge. Their use, coupled with key policy changes in malaria control, resulted into 87% reduction in both severe malaria cases and deaths.

#### Kenya

The use of the Community Action Cycle (CAC) approach for community engagement to increase uptake of malaria control interventions is a lesson that South Sudan can borrow from Kenya. The CAC approach is a community led process through which those affected and interested in tackling the health issues organize, plan and act collectively for improved health.

#### Uganda and Tanzania

The use of data to guide situational analysis and implement an effective response to malaria epidemic with the full involvement of all key stakeholders and strong political commitment from the highest level to the community leaders was paramount in managing malaria upsurges in Uganda in 2022. The same message was echoed by Tanzania where malaria remains a public health challenge

in the mainland with 94% of the population estimated to be at risk of malaria transmission annually. The National Malaria Control Programme (NMCP) in Tanzania, in collaboration with other stakeholders, developed a malaria dashboard within the District Health Information System 2 (DHIS2) that is accessible and easy to interpret hence facilitating tailored interventions to sub-national local context.

### CONCLUSION

At the conclusion of the three-day conference, the Honourable Minister of Health of South Sudan, Yolanda Awel Deng, commented that malaria is a disease that is preventable, treatable, and well known to everybody in South Sudan but still children under five years of age and those with compromised immunity continue to die from the disease. “Recent data indicates that three out of 10 hospital admissions are due to malaria which means that we still have a long way to go”, she said. On the other hand, H.E. Vice President Hussein Abdelbagi Akol Agany called upon everyone in the public and private sectors, NGOs, Civil Society Organisations, UN agencies, donors and communities to take action and fight malaria since it is a preventable and treatable disease that should not lead to the loss of lives. “Malaria is an emergency and cannot just be the business of the Ministry of Health”, he said before declaring the launch of the ZMSWM campaign.

### RECOMMENDATIONS

Key recommendations advanced during the conference included the following:

1. The need to increase domestic funding from the national budget and increase resource mobilization for malaria from the public-private sector and civil society organisations while prioritizing investment for a resilient and integrated health system.
2. Improve investment and expand implementation of the Boma Health Initiative (BHI) package for all the population to reinforce the fight against malaria and increase Universal Health Coverage (UHC).
3. Improve capacity and systems for forecasting, quantifying, procuring and supplying malaria commodities to ensure constant service delivery
4. Strengthen the regulatory system for enhanced quality assurance and control of pharmaceutical products and promote operational research in traditional remedies for malaria.
5. To fast track the development and implementation of the Public-Private Partnership (PPP) framework for health.
6. Given the context of South Sudan, there is need to prioritise universal coverage of Long-Lasting

- Insecticide Treated Nets (LLITNs) using innovative distribution approaches and implement Indoor Residual Spraying (IRS) and larvicide source management where applicable and sustainable.
7. Strengthen the use of the Health Management Information System (HMIS) and Integrated Disease Surveillance and Response (IDSR) tools for strategic use of data for decision making at all levels.
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## Super-mosquito ‘invasion’ could trigger malaria surge, warns WHO

An “invasion” of super-mosquitoes that thrive in cities could trigger a surge in malaria cases across Africa, according to the World Health Organization.

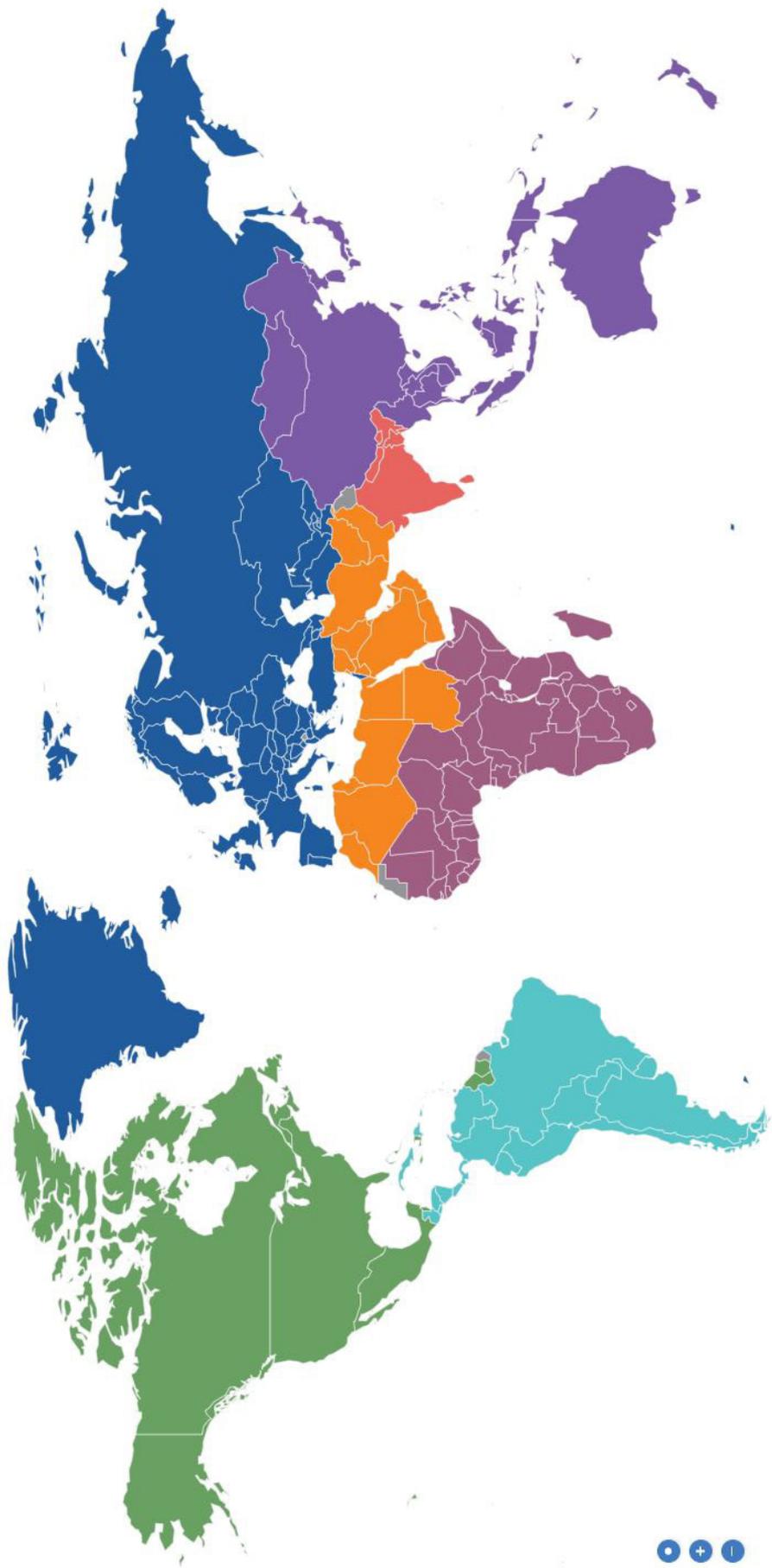
In the annual World Malaria Report, the UN agency warned that the arrival of the *Anopheles stephensi* in at least five African countries is a “threat to malaria control and elimination” – especially if the insect gains a foothold in the continent’s rapidly urbanising megacities.

The mosquito – which is native to parts of Asia and the Arabian peninsula – was first detected in Djibouti in 2012 and drove a 2,800 per cent surge in infections over the following eight years. It has since been found in Ethiopia, Sudan, Somalia and most recently Nigeria.

Unlike the *Anopheles gambiae* the highly adaptable *stephensi* mosquito thrives in urban areas and breeds almost anywhere – in a dirty puddle between slum shacks, a rubbish dump, or even water in an abandoned car tyre. It also survives in high temperatures in dry seasons, when malaria transmission usually lulls, and is resistant to many of the insecticides used to curb the parasitic disease.

<https://www.telegraph.co.uk/global-health/science-and-disease/super-mosquito-invasion-could-trigger-malaria-surge-warns-who/>

**IDF Diabetes Atlas**  
10<sup>th</sup> edition 2021



*Interactive Diabetes Data Portal <https://diabetesatlas.org/data/en/>*

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.