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Focus on Primary Health Care in South Sudan

- Using livelihoods to support PHC in refugee camps
- Integrated PHC approach for South Sudan
- Increasing capacity and access to primary care
- Addressing high vaccination coverage in PHC
- Preventing blindness from diabetic retinopathy

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LETTER TO THE EDITOR

BACK COVER

FRONT COVER IMAGE:

Photo by Alison Wright of a community health worker trained by the non-governmental organization BRAC in South Sudan fixing a long-lasting insecticide treated bednet for a family.

Forty years of primary health care programming and its future in South Sudan

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Primary health care (PHC) is a whole-of-society approach to health and well-being centred on the needs and preferences of individuals, families and communities. It addresses the broader determinants of health and focuses on the comprehensive and interrelated aspects of physical, mental and social health and wellbeing.

The PHC revolution was initiated by health leaders in the Alma-Ata Declaration in 1978 and so is now 40 years old.

From its start PHC was recognised, advocated, and adopted as fundamental to the comprehensive delivery of better health for all, and to the promotion of social justice and health equity. PHC is now at the heart of health care delivery and the corner stone upon which sound health systems are built.

It is estimated that 80–90% of people's health needs across their lifetimes can be provided within a PHC framework, from maternity care and disease prevention through to vaccination, management of chronic conditions and palliative care. As populations grow and age, and multi-morbidity increases, the role of PHC workers becomes ever more important.

Faced with variable challenges, in different contexts across the globe, the dream of "health for all by 2000" has not materialised, although a lot of effort, both joined up and scattered, from governments and donors from all sectors has been devoted to this noble vision.

However, this vision has not been realised. Instead, the focus has been on individual diseases with variable results. Now the Sustainable Development Goals provide a new impetus to reach Universal Health Coverage via strengthened PHC.

The Global Conference on Primary Health Care in Astana, Kazakhstan in October 2018 witnessed a transformation process to revive and invigorate all pillars of PHC. The Astana Declaration was endorsed, indicating renewed political commitment and leadership from member states and global organisations to developing people-centred PHC, building on the principles, gains and lessons learned from the Alma-Ata Declaration. Hence a new dawn for better PHC.

According to the Astana declaration, the predicament of PHC lies in a number of challenges including immature or weak health systems, and inadequate funding, recruitment and retention of human resources for health.

The World Health Organization (WHO) emphasises the starring role of PHC and lists key strategies for attaining health and well-being for all, at all ages. First is the development of inclusive policies, strengthening country leadership and building health systems based on PHC. The second is the prioritization of key areas for health improvement and context-specific approaches. Thirdly, WHO supports a multi-sectoral approach to address the wide inequities and social determinants of health. This endorses the values of health equity and stimulates steadfast mechanisms towards achieving the Sustainable Development Goals and Universal Health Coverage.

Despite all the declarations, policies, strategies and commitment, statistics are

Patients at a PHC centre queue to register (© 2018 SSGMC)

showing us that almost half of the world's population has no access to essential health services, and there is an estimated gap of 18 million health care workers to deliver these services, in spite of being so highly needed. With regards to health expenditure only eight out of the thirty countries, for which data are available, spent at least US$ 40 per person on PHC per year.

Recruitment and retention of health care workers, including community health workers, nurses, and doctors has been pointed out as a major challenge in most countries, and requires immediate action. Making PHC a more attractive working environment is crucial to recruit and retain the best staff.

Additional roles have been suggested for nurses and pharmacists in primary care, and efforts are being made or suggested - such as opportunities for professional development, infrastructure support, and technological innovations - to make the primary care world more attractive. Additionally, medical schools, by offering primary care clerkships, and exposing students to work in rural areas, can later on, help to recruit qualified family doctors for the most remote areas.

South Sudan earlier committed to the Alma-Ata Declaration and, recently, to the Astana Declaration, in order to revive PHC service delivery and accelerate the Sustainable Development Goals. The South Sudan National Health Policy 2016-2026 envisions a healthy and productive population living dignified lives. It aims at a strengthened national health system and partnerships for Universal Health Coverage and aspires to improve the health status of the people by effective delivery of the Basic Package Health and Nutrition Services (BPHNS).

The priority areas for South Sudan are improved health service delivery including organization and infrastructure development, strengthened leadership and management, improved management of health care/system resources, and strengthened health partnerships.

South Sudan's health statistics are some of the world's most alarming. The country suffers from a substantial burden of maternal and child health conditions, communicable and non-communicable diseases including malnutrition, as well as emergencies and disasters. Only 40% of the population can access PHC facilities.

There are a range of infrastructure and system challenges that need to be established upon which sustainable PHC services are built such as roads, poor infrastructure and health facilities, lack of equipment and technology, poor supply chain and repetitive drug stock outs, lack of community ownership and, most importantly, shortage of qualified human resources, their unmet training needs, and demotivated health care workers. However, in practice, and particularly in the case of South Sudan, service delivery has to go in chorus with setting up the systems because the need is severe and urgent.

The health system in South Sudan is structured in the order of community, primary, secondary and tertiary levels. Geographically, the Boma is the lowest level and comprise a group of villages, in which the services are delivered at Primary Health Care Units (PHCU) and by the Boma health committee. Primary Health Care Centres (PHCC) are placed at the Payam Levels, while hospitals exist at county or state levels. Hospitals may also be part of other organised services such as the police or military.

Only an unshakable leadership commitment, and peace and stability will pave the way for the fulfillment of the PHC goals of the Astana Declaration

In a promising move the Ministry of Health has launched the Boma Health Initiative which deals with the implementation of the community arm of PHC at the Boma level. Since Independence in 2011, the country has committed to the Basic Package of Health and Nutrition Services (BPHNS), which focuses on women and children, being accessible to all free of charge.

Because of the magnitude of the task and the numerous challenges, a lot of resources need be channeled and programmed to address PHC, but only unshakable leadership commitment, and peace and stability will pave the way for documenting sustainable gains towards fulfillment of the PHC goals of the Astana Declaration in South Sudan.

Using livelihoods to support primary health care for South Sudanese refugees in Kiryandongo, Uganda

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Introduction: Conflict in South Sudan has displaced 2.3 million people, of whom 789,098 (35%) have taken refuge in Uganda – a country that allows refugees to work, own property, start their own businesses and access public health services. In this context, refugees have identified livelihoods and primary health care as key priorities for their wellbeing.

Objective: Building on previous research in South Sudan and Uganda, the objective of our current work is exploring how income-generating livelihood activities and other interventions can be used to support primary health care for South Sudanese refugees in Kiryandongo District, Uganda.

Methods: We drew on existing secondary data and five scoping visits to the refugee settlements in Kiryandongo and northern Uganda to formulate our approach.

Results: In Kiryandongo District, primary health care and livelihoods can best be supported by an integrated combination of 1) providing standardised training to local Village Health Teams (VHTs); 2) helping organise VHTs into village savings and loan association groups; and 3) supporting VHTs with training to establish sustainable income-generating activities.

Conclusions: Integrated interventions that address income-generating activities for community health workers can meet the basic needs of front-line volunteer primary health care staff and better enable them to improve the health of their communities.

Keywords: primary health care, refugees, livelihoods, South Sudan, Uganda, Kiryandongo

INTRODUCTION

Renewed conflict in South Sudan has displaced 2.3 million people outside the country, of whom 789,098 (35%) have taken refuge in neighbouring Uganda (see Figure 1).[1] Eighty-two percent of South Sudanese refugees are women and children.[2] With increasing barriers to operating within the country due to ongoing instability, some organisations supporting primary health care in South Sudan have also turned to exploring how South Sudanese refugees in neighbouring countries can be assisted.

As action researchers with personal interests in South Sudan, we have worked to generate practical knowledge that can best contribute to both scholarly understanding and actionable implementation. Prior to our current work with South Sudanese refugees, we had collaborated with BRAC South Sudan (a non-governmental organisation) and the South Sudan Physicians Organization to explore how social enterprise income-generating activities can support primary health care via community health workers.[3] These experiments, funded by Grand Challenges Canada and in partnership with the South Sudanese Ministry of Health, included micro-franchising models, fixed and mobile clinics, and mobile health (mHealth) applications designed to improve maternal and child health.[4, 5] This exploratory work was leveraged and extended with additional funding from the International Development Research Centre, the Canadian Institutes of Health Research and Global Affairs Canada under their Innovating for Maternal and Child Health in Africa initiative.[6] This follow-on work is utilising a randomised controlled trial (RCT) methodology to understand the

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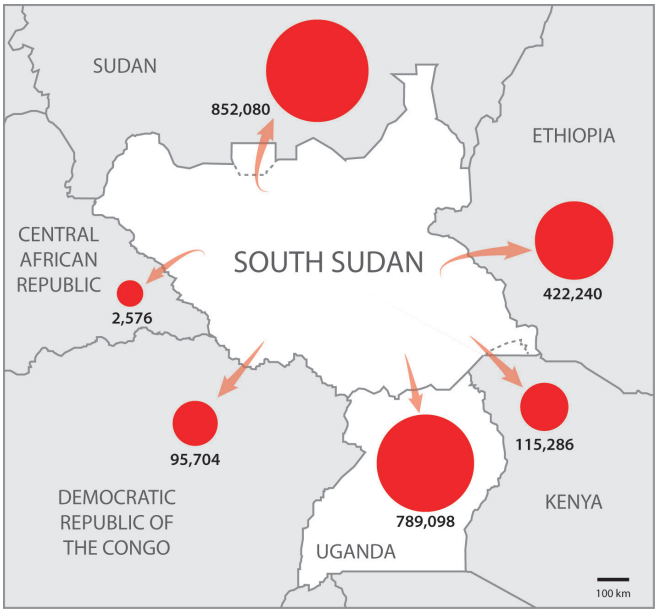

Figure 1. Numbers of South Sudanese refugees in neighbouring countries

most cost-effective ways to motivate and incentivise community health workers to improve primary maternal and child health care in both South Sudan and Uganda.

While undertaking this research it became increasingly challenging to implement a large-scale RCT in South Sudan due to the high levels of population displacement. Whereas the Ugandan portion of the RCT is ongoing, we began to explore ways to support South Sudanese refugees outside the country. The purpose of this most recent work, which was funded with an additional grant from Grand Challenges Canada, was to assess the health and livelihoods needs of South Sudanese refugees in the Kiryandongo settlement camp in Uganda and develop a plan for further implementation and learning.

South Sudanese Refugees

Between March and October 2018, the Office of the Prime Minister (OPM) of Uganda, in collaboration with UNCHR and the World Food Programme (WFP), undertook a biometric verification process of all refugees in the country.[7] Uganda is hosting a total of over 1.1 million refugees, with 66% originating from South Sudan, 26% originating from the Democratic Republic of the Congo, and the remaining refugees originating from Burundi, Somalia, Rwanda and other countries in the region.[8] Notwithstanding the South Sudanese peace and power-sharing agreements signed in 2018, UNHCR estimates that Uganda is likely to be hosting over 1 million South Sudanese refugees by the end of 2020 as the refugee influx is expected to continue due to the economic collapse and war in many parts of the country.[9]

The conflicts in South Sudan have also internally displaced an estimated 1.5 million people, meaning that one in three South Sudanese have been forced to migrate either inside or outside the country because of the conflict.[10, 11] South Sudan is generating Africa's largest refugee crisis, which has surpassed that associated with the Rwandan genocide.[11]

Refugees in Uganda

Uganda is the third largest refugee-hosting country in the world after Turkey, which is hosting an estimated 3.5 million refugees from Syria, and Pakistan, hosting 1.4 million refugees from Afghanistan.[12]

Unlike many other refugee-hosting nations, Uganda's policies toward refugees are relatively progressive. As embodied in the 2006 Refugees Act, the 2010 Refugees Regulations and the 2017 Comprehensive Refugee Response Framework, Uganda accepts all refugees regardless of country of origin or ethnic affiliation and allows them the right to work, establish a business, hold private property and move freely around the country, as well as the right to access basic public services, including education and health care.[13] South Sudanese (and Congolese) asylum seekers are granted refugee status on a prima facie basis, with refugees from other countries being required to undergo an interview and refugee determination process.[9] Uganda pursues a non-encampment policy so that refugees are provided with a plot of land for housing and cultivation and can settle alongside and integrate into existing Ugandan host communities.

In 2018, the government began including refugee issues into national and local development plans for the first time.[9] In 2019, the Ugandan government launched the Health Sector Integrated Refugee Response Plan (HSIRRP) to create equitable and well-coordinated opportunities for health services for both refugees and their host communities.[14] The HSIRRP confirms Uganda's commitment to the 2016 New York Declaration on Refugees and Migrants, the Global Compact on Refugees, and the Comprehensive Refugee Response Framework, which urge countries to stand in solidarity with refugees and share the burden of mass forced human displacement.[15]

Uganda currently hosts refugees in 11 settlements. South Sudanese refugees are primarily located in Adjumani, Yumbe, Arua, Moyo and Kiryandongo Districts (see Figure 2). Our work is based primarily in the Kiryandongo refugee settlement, which we chose because of its long history in accommodating South Sudanese refugees and its accessibility from Kampala, the capital of Uganda, and Gulu, the largest city in northern Uganda.

METHODOLOGY

Still in the early stages of our project activities, our results are based on existing secondary data sources, and informal interactions and consultations with a wide variety of stakeholders including health workers, refugees,

non-governmental organisations, church groups, and representatives from UNCHR and the OPM. During the consultations we focused on gathering background information on how best to implement health and livelihood activities among refugees and their host communities. As such, no primary research data about health and livelihoods has yet been formally gathered. One or both authors visited the Numanzi and Agojo refugee settlements in Adjumani District in April 2017 (3 days) and the Kiryandongo refugee settlement in April 2018 (10 days), July 2018 (10 days), October 2018 (3 days) and December 2018 (12 days).

RESULTS

Kiryandongo Refugee Settlement

The Kiryandongo refugee settlement comprises 54,977 refugees (approximately 10,000 households). The settlement is located on 27 square miles of land adjacent to the town of Bweyale in Kiryandongo District near the major highway that runs from Kampala to Gulu (see Figure 3).[8] The Kiryandongo area had previously been a resettlement area for refugees fleeing the Mau Mau conflict in Kenya in 1950s.[16] Subsequently the region became part of a cattle ranching area created by the Idi Amin government. This legacy lives on in the names of the three sections of the camp (Figure 3). The area was then re-assigned by the current government in the 1990s to settle members of the Sudanese People's Liberation Army (SPLA) who had fled across the Ugandan border from Parajok in Torit. By 1992, the allocation of plots of land was initiated and families began to build homes and plant crops.[16] The camp was then closed to new refugees in 1995. The settlement was reopened in 2014 to accommodate the huge influx of refugees fleeing the 2013 conflict in South Sudan. Like all refugee settlements in Uganda, Kiryandongo is governed by the OPM and UNHCR. Twenty-two additional multilateral and non-governmental organisations also support refugees in the settlement.

Host Communities

The Kiryandongo District of Uganda has a population of approximately 317,500. The area is poorer than the national average, with the majority of households (80%) earning their livelihood from subsistence farming (although 91% have other non-agricultural household-based enterprises).[17] Forty-two percent of adults over 18 years are illiterate and only 12.5% have access to electricity; 23% of households are more than 5 km from a public or private health facility.[17]

In Kiryandongo, as in other refugee settlements in Uganda, the OPM, UNHCR, the Food and Agriculture Organization (FAO) and non-governmental organisations provide basic services such as security, clean water and food

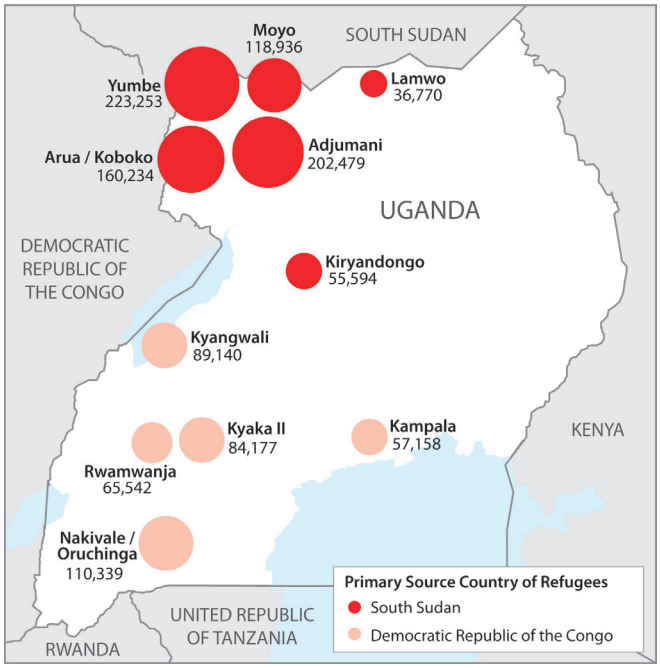

Figure 2. Refugee Settlements in Uganda with population sizes

to newly arrived refugees. Health facilities and schools are also located in the settlements. In poor districts this can result in refugees receiving better health, education, and security services than residents of local Ugandan host communities. As a result of this potential for inequities, the Ugandan government requires any refugee support programmes and activities by non-governmental organisations to allocate a minimum of 30% of support for local host communities. All health facilities and schools established in the refugee settlement must also be accessible to host community members.

Primary Health Care

Uganda has a decentralised health care system consisting of both public and private sectors. Refugees fall under public government health services, which is organised according to six different levels: national, district, county, sub-county, parish and village. In Kiryandongo District there is a General Hospital which is classified as a Health Centre 4. The refugee settlement has one Health Centre 3 facility, called the Panyadoli Health Centre, and two Health Centre 2 facilities, called Nyakadoti and Panyadoli Hills. The three health centres in the settlement serve both refugees and host community members. However, government funding is limited with medications regularly out of stock and the Ministry of Health often relying on NGOs and donors for support. In the Kiryandongo settlement, the Real Medicine Foundation (an NGO), with the assistance of UNHCR, has been actively supporting health care among refugees and their host communities. Serious health cases are referred to Kiryandongo or Gulu General Hospitals, which are outside the settlement.

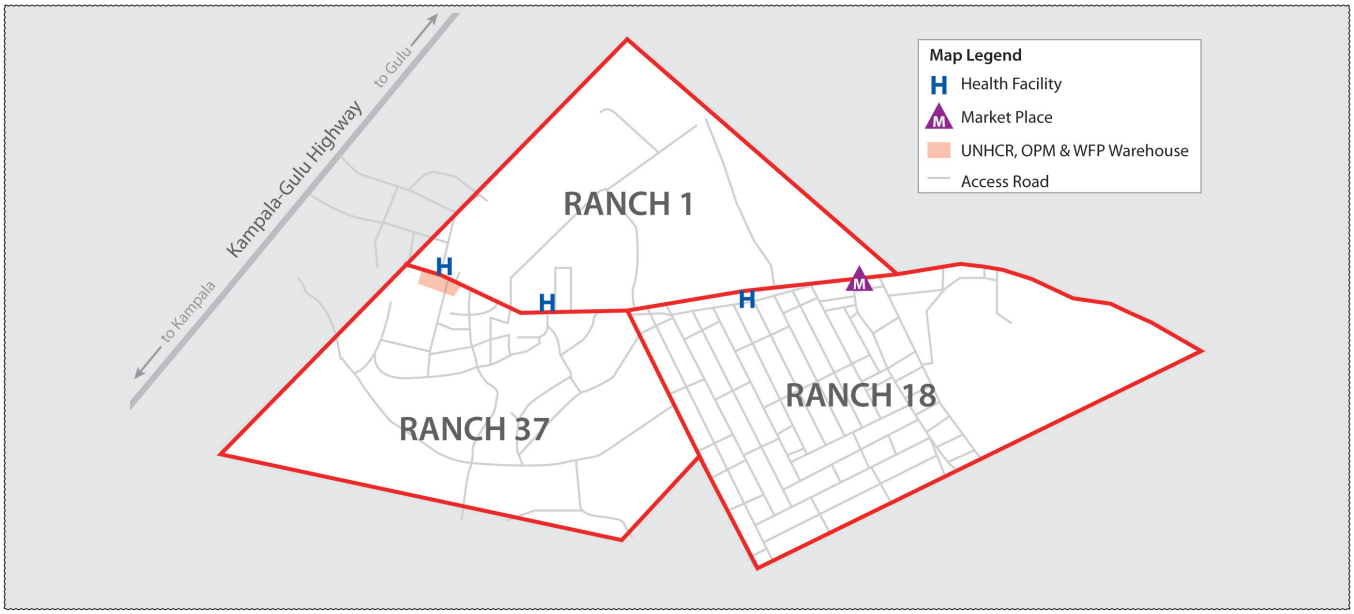

Figure 3. Kiryandongo Refugee Settlement

Currently, the provision of primary health care in the refugee settlement and surrounding host community is aided by government community health workers called Village Health Teams (VHTs). The VHTs are managed by the District Health Office (DHO), which is under the Ministry of Health. VHTs are volunteers who have received some very basic health training to promote primary health care in their communities. VHTs visit households and act as resource persons for disease surveillance, identification and education on hygiene, sanitation and other health issues. Existing evidence on community health workers like VHTs shows that, if properly trained, coordinated and incentivised, they can reduce neonatal and childhood mortality, maternal and child undernutrition, maternal mortality, the spread of HIV/AIDS, and mortality and illness due to malaria and TB. [18] There are approximately 138 VHTs within the Kiryandongo settlement and 62 in the surrounding host communities. On average, each VHT serves about 60 households (approximately 300 people) although some VHTs can serve up to 200 households (even though the government guideline is 25 households). The training of VHTs is not standardised as different VHTs may have received different trainings at different times from different NGOs. For example, only 60 of the 200 local VHTs have received the two-week generic training in primary health care (the World Health Organization's Integrated Community Case Management (ICCM) training), which is the basic standard. In addition to insufficient and inconsistent training, VHTs face the challenges of the health system not having access to drugs to treat community members and limited opportunities to generate income. VHTs also highlighted the need for additional training to identify and refer mental health cases.

Livelihoods

In the annual survey conducted by UNHCR in Kiryandongo, refugees identified opportunities for livelihoods and income-generating activities as their most important priority. Despite Uganda's progressive policies towards allowing refugees to start a business, own property and seek employment, at least 80% of Uganda's refugees live below the international poverty line of US$1.90 per day.[18] A 2018 survey found that refugee households tended to be less resilient than local host community households due to limited diversification of income sources, limited productive assets and the limited variety of crops cultivated.[18] Agriculture is the most common livelihood activity for refugees (38%). Although 97% of host community households and 95% of refugee households in northern Uganda were engaged in agriculture, only 45% of host community households and 22% of refugee households sold part of their production.[18] Other challenges to agricultural production among both refugees and host community members are low levels of productivity and access to animal health services, and high levels of post-harvest losses and crop diseases.[18] For non-agricultural livelihoods activities, barriers included the lack of training, credit and business support services. Refugees also reported the lack of social networks as an impediment to their livelihood and income-generating activities.

STRATEGIC INTERVENTIONS

Given our knowledge of the primary health care situation in the Kiryandongo settlement and the priority that South Sudanese refugees placed on income-generating activities and livelihoods, we have put forward a plan to address these priority needs. This approach has three pillars: 1)

training VHTs; 2) engaging VHTs and other refugees in savings and loans groups; and 3) providing training and support to allow refugees with existing skills to establish sustainable income-generating activities. Each pillar is described in turn.

1. Training Health Workers: Strengthening Primary Care

Interactions with existing VHTs and representatives from the DHO showed that providing standardised ICCM training to all VHTs who served the settlement and surrounding communities would make the greatest contribution toward primary health care. [19] This is based on the evidence that access to health care services can contribute to generally better population health outcomes. [19]

Delivering standardized ICCM training in the settlement would require coordination with the DHO as well as collaboration with the Real Medicine Foundation. Training would typically be accompanied by the provision of kits of medicines which would be approved by the DHO. UNHCR and the government do not allow the sale of medical items to refugees within the boundaries of the settlement, so if refugees have money to purchase medicines that are not available in the settlement, they currently go to private pharmacies just outside, in Bweyale.

2. Savings and Loans Groups: Building Financial and Social Capital

Livelihoods and income-generating activities were identified as a high priority activity by refugees and VHTs. The second pillar of support would be to mobilise VHTs and other refugee and host community members into village savings and loan association (VSLA) groups. VSLA groups comprise a group of 15–20 people who come together on their own or are mobilised by a support organization such as an NGO. To be included in a group, individuals need to demonstrate an intention and ability to work for themselves and their group. They receive training on group dynamics and financial literacy, how to organise, register and run the group, and a lockable metal savings box and a ledger for keeping track of savings deposited and loans taken by group members. The group may also receive some additional start-up capital or in-kind donations (goats, pigs, animal sheds, sewing machines, etc.). The group elects officers and meets regularly to collect savings and disburse loans as well as receiving additional refresher training from time to time. This approach is based on the principles of asset-based community development, which starts by considering resources available (rather than starting from considering unmet needs) and recognises the importance of social capital as an asset that can be leveraged and further developed.[20] Within the Kiryandongo settlement, the NGO BRAC was beginning a pilot project to organise VSLA groups.

After training in running a VSLA group, each group identifies a particular livelihood activity that they would like to pursue. For example options possible in the Kiryandongo settlement are:

- Agriculture (crops): Maize, tomatoes, cassava, mushrooms, aubergines, okra, chia, cabbage, watermelon, sukumawiki (collard greens), kale, spinach
- Agriculture (livestock): Pigs, chickens, goats
- Agriculture processing: Milling
- Leatherwork: Shoes, sandals, belts, bags
- Paper products: Bags, cards, baskets, mats, trays
- Baked goods: Breads, cakes
- Fibre products: Banana fibre baskets, bark cloth mats
- Cosmetics and detergents: Creams, liquid and solid soaps, shampoo
- Clothing and accessories: Sewn cloths, knitted products, beading, table cloths, bed sheets, reusable sanitary pads
- Retail: Shops, kiosks and stands
- Services: Hairdressing, restaurants, construction, tailoring

After selecting an activity, each group would receive specialised training in that area (e.g. tailoring, pig rearing, etc.) as well as ongoing supervision, technical assistance and market linkages where available. Groups can graduate to financial self-sustainability with ongoing supervision and oversight. The VSLA groups can use their savings to purchase needed supplies for their activities (e.g. animal feed, cloth, etc.), with profits from sales returning to the savings pool.

3. Training: Supporting Existing Skills

Some South Sudanese refugees entering the Ugandan settlements come with a variety of existing skills and previous experience in agriculture, trading or production. These refugees may benefit most from some additional supplemental training (in tailoring or agricultural production for example) and from opportunities to join existing VSLA groups that are also interested in such kinds of livelihood activities. Existing skilled refugees may also benefit from access to capital and establishing linkages for them to sell their products in local marketplaces.

CONCLUSION

Recent conflict has displaced one in three people in South Sudan, with Uganda expected to host over one million South Sudanese refugees by 2020. With

Uganda's progressive refugee policies, we can look beyond humanitarian aid to view refugees as economic actors who can contribute to their own livelihoods and wellbeing. Refugees have identified livelihoods and income-generating activities as their most important priority along with an ongoing need for primary health care.

We explored opportunities for how health and livelihoods could be mutually supported using existing data and five scoping visits to refugee settlements in Uganda. We found that three strategic and mutually supporting interventions that could make the greatest difference were training of health workers, supporting existing skills and building social capital through savings and loans.

These interventions are currently being explored to further test these assumptions and learn more about how primary health care, livelihoods and peaceful co-existence between refugee and host communities can best be supported.

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Map Credits: All maps by Rebecca Langstaff based on UNHCR data.

Integrated Primary Health Care (iPHC) for developing countries: a practical approach in South Sudan

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Introduction: The founding vision of Primary Health Care (PHC) adopted in Alma Atta in 1978 has not worked as a result a number of countries have sought to re-engineer their own healthcare systems. Healthcare model in most developing countries needs to change from that inherited from the colonial era, which is predominantly hospital-based.

Objective: To describe an integrated primary health care (iPHC) model which encompasses public health services with enhanced basic diagnostic and curative services as a cost-effective delivery of healthcare in the rural areas where 95% of the population resides.

Method: A descriptive study of a proposed iPHC model following situational analyses and literature review of primary healthcare experiences from around the world with a view to inform a practical approach in South Sudan.

Results: The iPHC model consists of five pillars: (1) public health services (2) clinical services (3) universal registration of population in the catchment areas; (4) a standard building infrastructure; and (5) training of multi-disciplinary healthcare workforce. Once operational, within five years it is envisaged that one fully functioning iPHC centre can provide universal access to healthcare service to 10,000 population resident in a geographical catchment area.

Conclusion: South Sudan has a unique opportunity to improve the health of its population by embracing a new model of delivering health care: the iPHC. This model is simple, and can be the basis of delivering a health service for the rural population.

Key words: Integrated primary healthcare; iPHC; public health service; clinical services; developing countries.

INTRODUCTION

The existing model of healthcare in most developing countries is predominantly hospital-based and inherited from colonial systems without much modification. The founding vision of Primary Health Care (PHC) adopted in Alma Atta in 1978 seems not to have worked as recommended by Alma Ata in that it puts emphasis on the already poor communities to support their own health workers. Consequently a number of countries have developed their own primary healthcare systems or structures.[1-3]

An editorial in the Lancet (July 2014) highlighted the limitations of the vision of PHC and called for a fair, equitable, accessible, cost-effective, sustainable health system that improves the health of the population.[4] The article further recommended that future PHC needs to be universally accessible, integrated, person-centred, comprehensive and provided by a team of multi-disciplinary professionals.

This paper describes a model of primary healthcare provision which integrates various aspects of healthcare cost-effectively in the rural areas where 95% of the population resides. We believe that our proposal, which is referred to as integrated primary health care (iPHC), if implemented as recommended,

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will reach near universal coverage of the rural population in South Sudan and other developing countries that embrace it. We describe how it can be applied in South Sudan, as a case-study. The model could be applied in other countries. Our vision is to ensure "optimum health provision is enjoyed by everyone".

We define iPHC as: "*a system of health provision at the primary or rural (county) levels that integrates public health services with enhanced basic diagnostic and curative services, which would have otherwise been provided traditionally through hospitals.*"

PROPOSED MODEL OF DELIVERING PRIMARY HEALTH CARE

We describe five components of iPHC as shown in Figure 1. For a health service to be of high quality and yet universally available to the rural population, it needs to be free at the point of need and paid for by minimal taxation and supplemented with government grants.

Public Health Service Provision

Comprehensive public health services will be designed to deliver simple services to address the health needs of the local population through a joint strategic health plan covering the health priorities in the local area. The public health team will be charged with producing an annual public health report on the status of health in the county.

A strong partnership with chiefs, county administrators, non-governmental organisations (NGOs) operating in the area, faith based organisations, schools, women's groups and others with significant membership of local people will be forged.

The public health service will endeavour to implement public health programmes defined in the Government strategy for health at local level adapted to the local circumstances of the counties in question. Provision of potable water, universal sanitation facilities to stem the tide of diarrhoeal diseases, immunisation against communicable diseases, accident prevention programme, health promotion and health education programmes and securing a safe healthy environment are aspects of the service we propose.

The public health strategy should include preparation for, and responding to, major emergencies and disease outbreaks such as cholera, ebola, yellow fever, leishmaniasis and trypanosomiasis, depending on the area of South Sudan affected. These services will depend on comprehensive data collation and record keeping which is shared with the County Director of Public Health, who in turn, shares the information with the Public Health Department in the Federal or central Ministry of Health. This will ensure an integrated approach in the delivery of public health services at the County level throughout the country.

Figure 1. Components of Integrated Primary Health Care (iPHC) (credit Dr Victor Vuni Joseph)

Clinical Services

A range of clinical services shall be delivered by a multi-disciplinary team. These services include antenatal care provided by registered midwives; basic laboratory services such as stool microscopy and blood films for malaria and sleeping sickness provided by a laboratory assistant, a minor emergency service run by registered nurse(s) and clinical officer(s) to deal with minor injuries prior to transfer to a state hospital in the event of deterioration or requirement for more specialist intervention.

A simple purpose-built Primary Health Care Centre (PHCC) will provide a base for all these services. The structure is recommended to be simple, built with local materials and powered with solar energy. This will provide reliable energy to power refrigerators for vaccine storage and other medicines. With the PHCC in place the role of a Primary Health Care Physician to provide training and specialist knowledge shall be rapidly developed in conjunction with the South Sudan Postgraduate Medical Programme. The training of such a healthcare professional based in the rural area is long overdue and will add premium to the PHCC.

In time the PHCC will also provide opportunities for the training of young medical graduates on the Basic Medical Training (BMT) accreditation, a two year programme for medical graduates prior to registration which was implemented in 2012 by the South Sudan Postgraduate Steering Group and Ministry of Health. Exposure of young graduates to Primary Healthcare encourages holistic thinking in the provision of healthcare as it integrates Hospital Medicine (where these graduates

Table 1. Estimated number for iPHC Centres in each County over time (short- medium- and long-term)

Duration	Ratio of iPHC centre per head of population	Cumulative total number of iPHC centres per County	Cumulative total number of iPHC in South Sudan
Short-term 2-1 years	1:50,000	2	158
Medium-term 4-3 years	1:20,000	5	395
Long-term 10-5 years	1:10,000	10	790

Note: Calculation based on average county population of 105,000

train) and Primary Healthcare (where the majority of the citizens reside).

The Primary Healthcare physician and the trainee doctors will all work in an integrated team as part of the PHCC. Meticulous record keeping using solar powered computers shall be set up to facilitate planning of services and monitoring of communicable and non-communicable illnesses. A simple but workable pharmacy will be established to dispense simple medicines for treating such common conditions as malaria, diarrhoeal diseases, river blindness and sleeping sickness. A programme of audit, evaluation and research shall be embedded in practice at the centre to improve the quality of services.

Universal Registration of Population (Information System)

The iPHC shall establish a system for a population-based register for all persons living in the catchment area of the iPHC. Each person will have a unique identification (ID), which can identify the patient by state and county. All South Sudanese and long-term residents will be required to register with an iPHC in their respective locality. The purpose of this universal registration is to provide information that can be used for planning health services, to improve and protect the health of the public (e.g. before, at the time of epidemics, and thereafter), and to achieve universal health coverage to the population, in line with United Nations Sustainable Development Goals.[5] There shall be established a clinical record system (information system) compatible with ICD-10 (or future revised version) in consultation with the Ministry of Health. The information system shall be used to generate epidemiological reports covering health service activities, and health outcomes performance.

The Building (iPHC Centre)

A standard architectural drawing for PHCC is proposed. The building is intended to be cheap and built rapidly in multiple sites around the country. Design specification needs to be agreed and rolled out throughout the country to minimise construction costs. Competitive tendering from construction firms, we believe, will generate cost-effective buildings. The PHCC are not hospitals and their development is intended to influence the development of smaller, better equipped and efficient Regional Hospitals to deal with complex interventions referred from the PHCC.

Training

Health workforce development is integral to successful delivery of iPHC in South Sudan. It will require training from bottom-up: community development / health workers, nurses/midwives, clinical officers, and doctors. Significant in-roads have been made in the field of health workforce development in South Sudan, such as the clinical officers training, nursing and midwifery, and doctors. What is required is the integration of these healthcare professionals into cohesive teams at each centre under an effective leadership.

The shortage of low-level but essential health cadres can be addressed by having a comprehensive national strategy, for example, the community health workers national strategy as in Malawi[6] and the training of Primary Healthcare Physicians to the level of Master of Medicine in Primary Healthcare (MMed[PHC]) at the University of Juba in South Sudan. The training of Primary Healthcare Physician is in line with developments in a number of other countries aiming to promote rural generalist medicine.[7] Similar training of health cadres will also need to be developed.

Career pathways for all healthcare workers need to be developed and agreed by the Ministry of Health and the relevant educational and training institution. These should include career pathways for clinical officers, nurses and midwifery, pharmacies, etc. Schools of Public Health at national universities are crucial in developing public health leaders for the country. The curriculum at these public health schools needs to be strengthened in line with the Association of Schools of Public Health in Africa (ASPHA).

It is envisaged that over time, South Sudan should build iPHC centres; each of these can serve a defined population as indicated in Table 1, starting from the short-term (1-2 years) to medium (3-4 years) and long-term (5-10 years)

CONCLUSION

South Sudan has a unique opportunity to improve the health of its population by embracing a new model of delivering health care: the iPHC. This model is simple, and can be the basis of delivering a health service for the rural population. It is built on the principle of multi-disciplinary team working, and consists of the key pillars of public health service, clinical service, universal registration, training, and iPHC building.

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WHO guideline on health policy and system support to optimize community health worker programmes.

Geneva: World Health Organization; 2018.

Community health workers have been acknowledged as a vital component of primary care since the Alma Ata Declaration in 1978. Forty years later, we now have compelling evidence demonstrating the valuable contribution of community health workers in delivering basic and essential life-saving health services. Investing in community health workers represents good value for money. And yet, they are often operating at the margins of health systems, without being duly recognized, integrated, supported and rewarded for the crucial role they play.

This new WHO guideline has identified state-of-the-art evidence on what is required to facilitate the proper integration of community health workers in health systems and communities. It contains pragmatic recommendations on how to improve and strengthen their selection, education, deployment, management, supervision, career advancement, community embeddedness and system support.

The overall goal of this guideline is to assist national governments and national and international partners to improve the design, implementation, performance and evaluation of CHW programmes, contributing to the progressive realization of universal health coverage.

See https://apps.who.int/iris/bitstream/handle/10665/275474/9789241550369-eng.pdf?ua=1

Addressing high vaccination coverage in primary health care setting: challenges and best practices

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INTRODUCTION

It is an undoubted fact that vaccines have proven to be one of the most successful public health interventions to combat the burden of infectious diseases in a cost effective manner thereby alleviating adverse health consequences and improving quality of life in the population. Vaccines can save countless lives in a country provided there is an ongoing successful immunization programme with high vaccine uptake rates. This in turn depends on many factors such as population understanding of the need and value of vaccination, availability of vaccines and accessible immunization services through all levels of health care, especially primary health care services.

Global vaccination coverage – the proportion of the world's children who receive recommended vaccines – has remained the same over the past decade. Despite various technological innovations, huge investments in terms of money and manpower, an estimated 21.8 million infants globally are still not being reached by routine immunization services.[1] The percentage of children receiving the diphtheria, tetanus and pertussis vaccine (DTP) is often used as an indicator of how well countries are providing routine immunization services. In 2017, an estimated 19.9 million infants worldwide were not reached with 3 doses of DTP vaccine, and around 60% of these children live in 10 countries: Afghanistan, Angola, the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan and South Africa.[2] About 71 countries are yet to achieve the Global Vaccine Action Plan (GVAP) target of 90% or greater coverage of DTP3.[3]

Addressing immunization gaps through country-specific tailor made vaccination strategies in order to reach every person with lifesaving vaccines is thus the need of the hour. Therefore strategies to increase immunization uptake combined with strengthening of primary health care services are key components for achieving high vaccine coverage in any community. With this background this paper aims to outline the challenges in achieving good immunization coverage in primary health care setting, and strategies undertaken by developed countries for increasing uptake. The best practices of India in her endeavour to achieve 100% immunization coverage have also been highlighted in this article.

VACCINE HESITANCY: THE GLOBAL CHALLENGE

Out of all the challenges outlined in Table 1, currently vaccine hesitancy has been identified as one of the ten major public health threats to global health in 2019.[4] Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services.[5]

Numerous instances of vaccine hesitancy have been reported from different parts of the world. In America, during the Influenza (H1N1) pandemic in 2009, hesitancy to take influenza vaccine was noted among many pregnant women despite the recommendations provided by their health-care provider and their country's immunization programme leaders.[6] Hesitancy in accepting measles vaccine in Europe, the human papillomavirus (HPV) vaccine in Japan and India, and the polio vaccine in parts of Nigeria and Pakistan are some more examples of this growing threat to achieve universal immunization coverage.[7]

The reasons of vaccine hesitancy are complex, vaccine specific and country specific. Lack of confidence among the beneficiaries in vaccines and its side

Table 1. System approach (S) in analysing the challenges of achieving high vaccine uptake in primary health care settings

S	Components	Challenges
Input	Beneficiaries – children, mothers	Vaccine hesitancy; drop out; left out
	Vaccinators	Vaccine hesitancy; lack of in-service training; complacency
	Vaccine supply & logistics	Irregular supply of vaccines, diluents, syringes; Cold chain non functional
	Settings	Far away from human dwellings; frequent power supply cut-offs
Process	Timing	May not be aligned with community demand; long waiting; long queue
	Behaviour of health personnel	Not satisfactory; do not explain pros and cons
	Administration of vaccine	Painful; side effects
Output	Sufferings	Adverse events following immunization; drop out; diseased in spite of having vaccine
	Performance	Immediate gain not perceived
Feedback	How beneficiaries perceived	Becomes a burden to come regularly
	Community	Drop out and left out might be high
	Health sector	Percentage of beneficiaries vaccinated, utilisation rate of different vaccines might be low

effects, unpredictable vaccine supply chains, and mistrust in the policy-makers who decide which vaccines are needed and when, and complacent attitude owing to a belief that vaccination is not a necessary preventive action all contribute to the reasons behind vaccine hesitancy. Additionally, inconvenience in accessibility, availability, affordability, inability to understand due to language problems, low level of literacy among the community members, and poor attitudes of immunization service providers are also some of the causes cited by the SAGE Working Group on Vaccine Hesitancy.[7]

There is no-one stop solution to deal with vaccine hesitancy. Based on the final recommendations by the SAGE Group in 2014, the first step for any country to deal with this problem is to have an in-depth understanding of the root causes of vaccine hesitancy by the stakeholders. Capacity building of the health-care workers to deal with vaccine hesitancy in patients and parents and inclusion of appropriate training in the curricula of nursing, medical and other health-care students to alleviate their negative attitude and/or hesitancy towards vaccination would in future strongly influence acceptance rate of their potential vaccine recipients. The Working Group also noted that educating children about benefits of vaccination would help to shape their beliefs and behaviour in the future, and sharing effective practices and lessons learnt from various countries was also recommended.[8]

One potentially useful tool to address vaccine hesitancy is the Tailoring Immunization Programmes (TIP) model, developed by WHO/EURO. TIP model would help to identify and prioritize vaccine hesitant populations and subgroups, diagnose the demand and supply –side barriers and enablers to vaccination and design evidence based interventions appropriate to the setting to increase uptake followed by evaluation of impact and outcomes.[9]

STRATEGIES FOR IMPROVING IMMUNIZATION COVERGAE: LESSONS FROM DEVELOPED COUNTRIES

A systematic review conducted by Williams N et al on strategies to increase immunization coverage among preschool children in developed countries (mainly from

theUSA, UK, Ireland, Australia, New Zealand and Finland) revealed parental reminders (both generic and specific) had the capacity to increase uptake by 11%. Strategies aimed at immunization providers improved immunization rates by 7% when compared to reminders, 8% when educational programmes were studied and 19% when feedback programmes were studied.[13] Feedback of vaccine provider performance to authority or combined with strategies like providing them with financial incentives also improved immunization coverage rates. However there is limited evidence for patient-held records and parental education alone as contributors for improving immunization coverage.

Multi-component interventions aimed at both the parent (reminder cards plus educational posters) and the provider (education plus incentives) were also reported to be effective for augmenting immunization coverage.[10] Immunization levels in the United States are high, but gaps still exist. In order to increase immunization coverage rates, AFIX (Assessment, Feedback, Incentives, Exchange) approach is widely practiced which consist of - assessment of an immunization provider's coverage rates, feedback of the results of the assessment to provider staff, incentives to improve deficiencies and raise immunization rates, and exchange of information and ideas among healthcare providers.[11]

BEST PRACTICES FROM INDIA

The Government of India (GoI) in its commitment to provide 100% immunization coverage through universal immunization programme (UIP) has been operational for more than 30 years catering to a birth cohort of 2.7 crore children annually.[12] The Ministry of Health & Family Welfare (MoHFW), GoI, since the last decade has implemented various technological innovations and has finally achieved 91% coverage as per WHO and UNICEF estimates of immunization coverage in 2017.[13] Few of the innovative strategies that are operational in this success story of India are initiatives like ANMOL, Kilkari, eVIN, and Intensified Mission Indradhanush.

ANMOL or ANM Online is an android-based tablet application that is being provided in a phased manner to Auxilliary Nurse Midwives (ANMs) who work at subcentre level by the MoHFW with support from UNICEF. They record the services provided to beneficiaries and update them on a real time basis, ensuring high quality prompt reporting, and maintaining accountability. This application, with its pre-loaded audio and video files also facilitates the ANMs in providing counselling services on high-risk pregnancies, immunization and family planning.[14]

Another innovative technology to ensure data-driven and efficient management of immunization supply chain is Electronic Vaccine Intelligence Network (eVIN) introduced by GoI in collaboration with United Nations Development Programme. The goal is to ensure equity in vaccine availability across the vast and diverse geographic terrain of the Indian subcontinent, systemizing vaccine recordkeeping and digitalizing vaccine inventory and thereby avoid vaccine wastage, over-stocking and stock-outs. The eVIN also enables the cold chain handlers to track real-time temperature information of the cold chain equipment through installation of temperature loggers across all the vaccine storage cold chain points in the country.[15]

Furthermore, the Intensified Mission Indradhanush was also launched by GoI with an ambitious aim to move beyond 90% full immunization in districts by December 2018. In addition to routine immunization, four rounds of vaccination sessions, spread over 7 working days was conducted in selected low performing areas in full immunization coverage. The focus was on urban slums with migration, high risk areas identified by polio eradication programme, villages with three or more consecutive missed routine immunization sessions, and areas with vacant subcentres for more than 3 months.[16]

From January 2016 onwards, GoI launched Kilkari (a baby's gurgle in Hindi, national language of India). It is a nation-wide mobile health programme designed by BBC Media Action, to deliver free, weekly, time-appropriate audio messages about pregnancy, child birth, vaccination and other child care practices, starting from second trimester of pregnancy and continuing until the child is one year old through Interactive Voice Response (IVR). The idea of repetitive messaging and reaching out to even illiterate population by audio messages would help to generate vaccine demand among the beneficiaries and thereby ensure high immunization coverage rate.[17] Thus, the combined efforts of the above mentioned initiatives have proved to reach the unreached with all available vaccines in a sustainable manner in India.

WAY FORWARD

In the current decade of vaccines (2011-2020), four out of every five children receive at least a basic set of vaccinations during infancy and are therefore able to lead healthier, more productive lives. But unfortunately, this means one child in every five is not being reached.[18] Despite overwhelming efforts to close immunization coverage gaps by various countries, specially low or middle income group countries, unmet need still remains to be recognized and technologically and scientifically sound innovative strategies, need to be integrated with the existing immunization programme. On a futuristic note, introduction of new vaccines into routine immunization programmes would require research on immunological interference effects and optimization of delivery schedules. In order to achieve this, concerted action among the

research community, manufacturers, health professionals, programme managers, national immunization technical advisory groups, vaccine regulatory agencies and development partners is needed for the next decade.

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Preventing blindness from diabetic retinopathy through community screening

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INTRODUCTION

Diabetic retinopathy (DR) is the commonest microvascular complication of diabetes and a leading cause of blindness in working age adults. The global prevalence of diabetic retinopathy is estimated at 34% and varies from region to region.[1] Its prevalence is increasing in Sub Saharan Africa and other low and middle income countries, fuelled by the increasing number of people living in poverty with diabetes, poor control of blood sugar, lipids and blood pressure as well as lack of services for early detection and treatment of DR.[2]

Blindness from DR is preventable through early detection and treatment of the sight threatening stages of retinopathy. However, many diabetic patients are not aware that they have retinopathy or that it can cause blindness. Patients therefore do not present to health care providers until symptoms appear, by which time treatment cannot restore lost sight. Symptoms only develop at a late stage in the disease and even patients with good diabetic control may develop retinopathy.

Screening diabetic patients for retinopathy enables early detection and referral for treatment as well an opportunity for education about those risk factors which can be modified by treatment or behavioural change. At a screening examination patients can be told of the importance of maintaining normal blood glucose, blood pressure and serum lipids as well as regular checks of glycosylated haemoglobin (HbA1C) level ensuring that it is below 7%.

The purpose of this article is to create awareness among health workers and their patients that diabetes can cause irreversible blindness through development of retinopathy, that we can prevent this type of blindness through regular annual examination of those without retinopathy or more frequent examination and treatment of those with detected retinopathy and that early screening and treatment is cheaper than treating and rehabilitating the blind.

WHAT IS DIABETIC RETINOPATHY?

Diabetic retinopathy is a microangiopathy affecting retinal capillaries and venules that occurs in a response to persistent hyperglycaemia. It also affects the small vessels of the heart, kidney and brain as well as those supplying peripheral nerves.

Structural weakness of the wall of the capillaries results in development of aneurysms, exudation of plasma fluid and bleeding on the retinal surface.[3] Intra-retinal fluid can accumulate in the macular and is known as macular oedema. Damage to capillary wall also results in occlusion mainly due to platelet aggregation. This causes retinal ischemia and results in release of vascular endothelial growth factors that stimulate growth of new vessels.[4] New vessels develop on the posterior hyaloid face, the iris and in the angle causing vitreous haemorrhage, retinal detachment and neovascular glaucoma.

Diabetic retinopathy progresses through different stages before vision is affected. The purpose of screening is to identify those stages that threaten the person's sight and recommend treatment as early as possible.

Stages of diabetic retinopathy

1. Non proliferative diabetic retinopathy (NPDR)

NPDR is the earliest stage of retinopathy and is characterized by presence of

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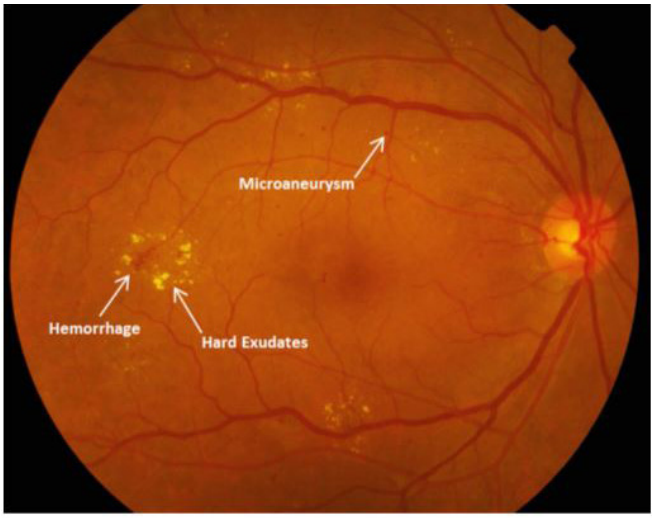

Figure 1a Non proliferative diabetic retinopathy (Credit International Council of Ophthalmology Guidelines)

Figure 1b. Pre-proliferative diabetic retinopathy – venous looping (Credit International Council of Ophthalmology Guidelines)

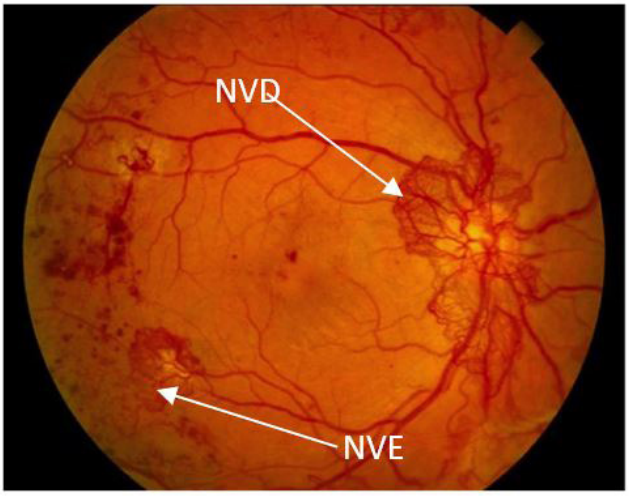

Figure 2a. Proliferative Diabetic Retinopathy (Credit Diabetic retinopathy photos American Academy of Ophthalmology)

Figure 2b. Intra-retinal and pre-retinal haemorrhages (Credit Diabetic retinopathy photos American Academy of Ophthalmology)

micro aneurysms, dot and blot haemorrhages and hard exudates (Figure 1a). As retinopathy progresses, more severe signs of non-proliferative retinopathy (referred to as pre-proliferative diabetic retinopathy) appear. These includes cotton wool spots and venous caliber changes (venous dilation, segmentation and looping) (Figure 1b). When detected early through screening pre-proliferative stage of NPDR can be treated to prevent its progression to proliferative diabetic retinopathy.

2. Proliferative diabetic retinopathy (PDR)

This stage is characterized by all the above signs plus new vessels growing at the disc or elsewhere (Figure 2a). This is a sight threatening stage of retinopathy which can progress to intra-retinal and pre-retinal haemorrhages (Figure 2b).

3. Macula oedema

Hard exudates and haemorrhages in the macula region with thickened retina (within 1DD of the fovea) is referred to as central macula oedema (DMO) and is a threat to vision (Figure 3). Macular oedema can occur independently of NPDR or PDR.

4. Sight threatening diabetic retinopathy (STDR)

Detection of macula oedema or proliferative diabetic retinopathy or both is a threat to patient's vision either because of haemorrhage, tractional retinal detachment or macula oedema. These patients need referral for urgent treatment with laser or injection of anti VEGF.

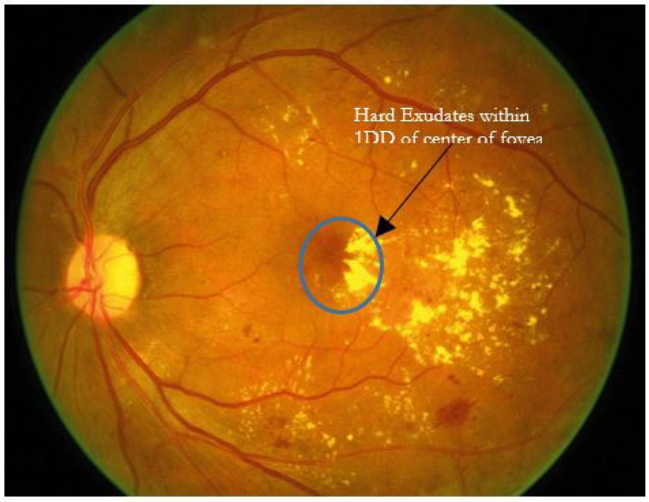

Figure 3. Significant macula oedema (hard exudates within 1 DD of the fovea) (Credit International Council of Ophthalmology Guidelines)

HOW TO SCREEN FOR DIABETIC RETINOPATHY

There are two approaches to screening for DR:

Systemic screening is the method applicable in resource adequate settings where diabetics can be identified through a data base or through their family practitioners who maintain adequate records of all diabetics visiting their clinics. These patients can then be invited for screening examinations at intervals as required by the stage of their retinopathy. Screening can also be done in remote areas to screen diabetics using mobile equipment.

Opportunistic screening is applicable is resource limited settings where screening examination is limited to those who can come to a diabetic clinic, ophthalmologist or optometry surgeries where they may be examined as part of eye examination. In some cases, some of these patients can be given a schedule of eye examinations by the practitioner. People who live in rural areas or who are unable to afford visit to clinics will be missed out.

In either method of screening, the number of people with diabetes who will need to be examined need to be known. To calculate this we need to know the size of the population of those aged 20 years and older in the country or district. (available from census records). Then we need to know the proportion of this population who have diabetes (available from diabetes atlas) lastly we need to calculate the proportion of people with diabetes who have sight threatening diabetic retinopathy. This is estimated to be 10% for low income countries.[5]

A screening examination involves examination of the retina through fundoscopy. This usually requires the skill of the ophthalmologist or an ophthalmic nurse trained in the technique of fundoscopy. Direct ophthalmoscopy with a hand-held direct ophthalmoscope is easy and can be performed by a trained nurse; however it is not possible to see to the periphery with direct ophthalmoscopy and some peripheral lesions may be missed. Use of binocular indirect ophthalmoscope or a Slit lamp with bio-microscopic lens gives a wide magnified view of the fundus and enables assessment of the presence of oedema of the macula. The equipment is expensive and the skill of the ophthalmologist is required which presents a human resource limitation to screening.

Equipment required for screening for diabetic retinopathy:

1. Direct and indirect ophthalmoscope
2. Slit lamp and bio microscopic lens
3. Fundus camera
4. Facilities for fluorescein angiography.

Screening for DR at primary health care level

Depending on the personnel and equipment available, fundus examination with a direct ophthalmoscope may be possible at this level. Otherwise basic history taking and measurement of visual acuity is all that is required for referral to be initiated.

Record the following during history taking: patient's age, the age at which diagnosis of diabetes was made, duration of diabetes, type of diabetes, current treatment, last-recorded blood sugar and glycosylated haemoglobin and whether systemic disease such as hypertension, heart and kidney disease is present. Weight, height and blood pressure should be measured and body mass index calculated.

Referral for diabetic retinopathy evaluation at the primary care level should be based on the type and duration of diabetes.

1. Refer type 1 diabetics for retinal assessment 5 years after initial diagnosis of diabetes.

2. Refer type 2 diabetics when diagnosis is made as the diabetes may have been present for a long time and some patients may already have retinopathy at the time of the initial diagnosis.

Before referral counsel the patients and give education about diabetes and its complication particularly eye complications. Patients must know that diabetes can affect the eye and can cause blindness, but that the blindness from diabetes can be prevented if it is detected and treated early. So it is important for patients to come for eye examinations, even if they feel well and have good vision. Referral to secondary care should include anybody with vision less than 6/18 and anyone with features of diabetic retinopathy or maculopathy.

Screening for DR at secondary level of health care

At this level resources for diagnosis may include an ophthalmologist and ophthalmic nurses, and equipment such as a slit lamp with bio microscopic lens and an indirect ophthalmoscope. There may be a fundus camera which is the best equipment for screening for diabetic retinopathy as it gives a permanent record of the fundus. When a systematic programme of screening is underway in a district, the camera can become mobile and take photos in the community. Photos are then graded by a multiple graders according to internationally agreed standards and only those with sight threatening features need to travel to the main secondary centre. In South Sudan, there is only one such fundus camera available at Buluk eye clinic in Juba. However with newer technology such as the PEEK adapter it is now possible to take retinal photos with mobile phones which may make developing a diabetic screening service more feasible and practical.

At this level all the processes undertaken at the primary care level are performed and then the patient is examined

Table 1. Treatment decisions and patient advice on management of diabetic retinopathy at secondary level

Stage of retinopathy	Signs	Advice to patients
Background diabetic retinopathy Mild to moderate non proliferative diabetic retinopathy (NPDR)	Aneurysms, haemorrhages, hard exudates	Diabetes is starting to damage your eyes although your vision is still good. return for eye examination within 12-6 months (12 months in mild retinopathy, 6 months in moderate retinopathy) Ensure that your blood pressure, glucose, and cholesterol are controlled Take your medications and, exercise regularly, eat a healthy (food plate containing ½ vegetables, ¼ carbohydrates and ¼ proteins). Avoid fizzy drinks
Pre-proliferative diabetic retinopathy Severe Non proliferative diabetic retinopathy (NPDR)	All the above plus cotton wool spots, venous calibre changes (venous dilation, segmentation and looping), IRMA	Diabetes has damaged your eyes although your vision may still be good. You will need Laser treatment to ensure that these changes do not progress to proliferative stage which would increase your risk of losing vision. Laser treatment will maintain rather than improve the current vision
Proliferative diabetic retinopathy	All the above plus new vessels at the disc (NVD) or elsewhere (NVE), Intra-retinal and pre-retinal haemorrhages	Diabetes has damaged your eyes severely and your vision has gotten worse. You need urgent treatment to prevent further loss of sight.
Maculopathy		
No macula oedema	No haemorrhage, exudates or retinal thickening in the macula region	Review in 12 months, maintain normal blood pressure, blood sugar and cholester-ol, perform regular exercise and eat healthy diet
Non centre involving macula oedema	Haemorrhages, hard exudates or retinal oedema >1DD from centre of fovea	Diabetes has damaged your eyes severely. Your vision may be good now but it may get worse in future. You need laser treat-ment to stop it getting worse. Treatment will preserve but not improve present vision
Centre involving macula oedema	Exudates or retinal thickening within 1DD of the centre of the fovea	Diabetes has damaged your eyes severely and your vision has got worse. You need urgent treatment with anti VEFG injections to prevent further loss of sight.

Table 2. Management of cataract in a diabetic with or without diabetic retinopathy

Assessment	Signs	Decision on surgery
No diabetic retinopathy	No retinopathy	Proceed with cataract surgery
Mild to moderate diabetic retinopathy	Hard exudates, haemorrhages, no significant macula oedema	Proceed with cataract surgery
Severe non proliferative diabetic retinopathy	Cotton wool spots, venous calibre changes, venous loopes	1. Fundus visible: treat with laser before surgery 2. Fundus not visible: Retinal surgeon give endolaser immediately after cataract extraction before lens implantation No retinal surgeon, then administer laser in the immediate postoperative period
Proliferative diabetic retinopathy	New vessels at disc or macula	Laser treatment or anti VegF injections before cataract sur-gery
Macula oedema	Haemorrhage, hard exudates or retinal thickening 1DD to fovea	Anti VEGF injections to ideally stabilise before cataract extraction but can be done with cataract surgery if access to services is limited.

with a slit lamp with bio microscopy. Any retinopathy observed is graded and the patient classified. The main intention is to detect signs of sight threatening diabetic retinopathy and, if present, refer for treatment.

The two signs of sight threatening diabetic retinopathy which must be detected on screening are macula oedema and new vessels at the disc or elsewhere. These two lesions cause loss of vision in a diabetic patient through retinal bleeding and accumulation of fluid at the macula. Patients with sight threatening diabetic retinopathy must be referred urgently for laser or anti VEGF injections.

To prevent vision loss from PDR laser treatment can be applied to the peripheral retina to preserve the central retina. This is called pan-retinal photocoagulation. Focal or diffuse argon laser is also done for macular oedema. Serial monthly intravitreal injections of Anti-VEGF are a significant advancement in the care of diabetic eyes but is rarely affordable in a low resource setting.

At this level patients are informed about the findings of their fundus examination, counselled about the stage of the retinopathy and advised what action to take in order to protect their sight. Table 1 is adapted from Community Eye Health Journal 2015:28(92).[6]

TERTIARY CARE FOR DIABETIC RETINOPATHY

Screening for diabetic retinopathy will be unproductive unless facilities for surgical treatment of diabetic retinopathy are in place. This means availability of equipment for Laser, anti VEGF and vitrectomy treatment as well as OCT for diagnosis and follow up of treatment progress. In South Sudan patients requiring treatment for sight threatening diabetic retinopathy have to be referred abroad. It may appear an unsurmountable obstacle to overcome for a country burdened by infectious disease, poverty and wars to even think of putting up such a facility, but the cost of these overseas referrals surely outweigh that of setting up and maintaining these unit.

DIABETIC RETINOPATHY IN PREGNANCY

Patients with diabetes who are pregnant or are planning to become pregnant should be assessed for retinopathy in the first trimester of pregnancy and at 28 weeks of gestation if the initial assessment was normal. However, if retinopathy was detected at the initial examination then another assessment should be scheduled at 16-12 weeks. Blood sugar must be controlled at all times during the duration of pregnancy. General Practitioners, midwifes and obstetricians must refer patients for assessment as soon as pregnancy is detected.

MANAGEMENT OF CATARACT IN A DIABETIC PATIENT

Cataract is the commonest anterior segment complication of diabetes. The majority of patients with diabetes will have cataract at some point in the course of diabetes and

this will require surgery at some stage. Cataract surgery can hasten the progression of diabetic retinopathy especially if surgery is complicated by capsule break or vitreous loss. Before undertaking cataract extraction in a diabetic patient retinal assessment to detect retinopathy should be undertaken and a decision taken as shown in Table 2.

RELATIONSHIP OF DIABETIC RETINOPATHY TO SYSTEMIC CONDITIONS

Patients with proliferative diabetic retinopathy may be suffering from heart disease, or nephropathy. They are therefore prone to developing renal failure, ischemic heart disease and stroke and should be promptly referred for ECG, Echo cardiography and renal assessment.

CONCLUSION

The prevalence of diabetes is growing rapidly in resource poor countries due to life style changes, migration to cities, poverty and lack of health care facilities. Blindness due to diabetic retinopathy is also increasing although it is a preventable condition. The key to preventing blindness is through early detection of retinopathy by screening, detection and early treatment of the sight threatening form of retinopathy. Health education on the need for regular eye examinations even in those without symptoms will prevent this needless loss of sight. Further, patients need to know that maintaining a near normal blood glucose, stable blood pressure, healthy weight and low cholesterol can delay the onset and slow the progression of diabetic retinopathy. The Government of South Sudan needs to do more to invest in facilities for screening and treatment of diabetic retinopathy.

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Other useful resources

- Diabetic retinopathy (DR): management and referral
- Empowering patients with diabetic retinopathy
- Planning a programme to prevent visual loss from diabetic retinopathy
- A3 poster with diabetic retinopathy (DR) grading system

First Aid Africa

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UK-South Sudan Alliance: a strategy for increasing capacity and access to primary care and public health

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INTRODUCTION

No one doubts the need for increased healthcare capacity in South Sudan. This need is exemplified by the statistics for maternal and child health.[1] These elucidate the serious challenge of healthcare in South Sudan, with estimates consistently placing the country towards the bottom of world rankings for maternal and child mortality.[2, 3, 4]

The scale and nature of this challenge requires resources to be directed both towards current health care provision, and towards developing capacity. This paper sets out an integrated strategy for developing the capacity, accessibility and delivery of primary care, and public health. It calls for international resources to fund a pilot and subsequent scale-up plan.

THE STRATEGY OUTLINE

This is a sustainable strategy, embedded within the health service institutions of South Sudan, and in-line with the Government's National Health Policy, 2016-2025. There are two care delivery elements: advanced healthcare centres, and provision for mobile service delivery. These will be supported by public health services, and the training and supervision of integrated healthcare teams.

Advanced Healthcare Centres and mobile service delivery

A model for an integrated Advanced Healthcare Centre (AHC), is described by Hakim and Joseph [5], and is adapted here with the addition of a supervised, mobile primary care element. The AHC acts as a healthcare delivery centre, and as a support 'hub' for the mobile service, and for smaller outlying clinics. It will deliver primary care, basic secondary care, provide referral to more advanced secondary care (as available), and develop public health and data collection services. The Centres will provide training, supervision and service experience for trainees, and communications systems will enable distant mentoring and clinical support.

Integrated healthcare teams

Staffing AHCs requires the training and development of integrated healthcare teams. This will be led by the College of Physicians and Surgeons of South Sudan, in collaboration with the College of Nursing and Midwifery, the Directorate of Public Health, and Juba Teaching Hospital, extending to other hospitals as conditions allow. Integrated healthcare teams will include a doctor trained in advanced primary care. A full team will comprise a doctor, clinical officer, midwife, nurse, public health officer, laboratory assistant, community health worker, health visitor, and manager.

THE PROCESS

The initial objective is to build, staff and resource a single, exemplary AHC, with mobile service provision. To be a 'fair test', this pilot centre should be located in an outlying district.

Lessons learnt from this pilot will inform a scale-up proposal. The initial goal is to provide one AHC per 50,000 of population, ideally rising to 1:10,000 in the long term. Hakim and Joseph [5] estimate that the lower figure requires

Table 1. A strategy for capacity building in primary care and public health: stage one

AIM	OBJECTIVE	OUTCOME
1. Establish an exemplary Advanced Healthcare Centre (AHC), providing primary care, public health services, and acting as a hub for mobile service delivery, referral, training and clinical supervision of doctors in outlying clinics.	• Build, equip and staff an AHC as a pilot project. • Create integrated service delivery at primary care level by developing healthcare team working practices, and integrated health management approaches • Evaluate the pilot, develop a costed, replicable model, and plan for scaling up provision.	• Fully costed and tested replicable model for scale-up. • Increased clinical services • Improved health outcomes
2. Provide a supervised mobile primary care service, linked to the Advanced Healthcare Centre, to provide safe service delivery in outlying, less accessible areas.	• Equip and supply suitable vehicles, including vehicle-to-AHC communication. • Develop a clinical referral/ advice service for practitioners in the field.	• Fully costed and tested replicable model for scale-up. • Increased access to clinical services in outlying areas. • Improved health outcomes
3. Train and develop an integrated healthcare team to staff the AHC, in collaboration with and by supporting the training of Nurses, Midwives, Associate Clinicians and doctors (see also 4 and 5, below). *Current status: training of Nurses, Midwives, Associate Clinicians, and the postgraduate training of doctors, is delivered through the College of Nursing and Midwifery, and the College of Physicians and Surgeons*	• Implement a training plan for an integrated healthcare team to staff the AHC and mobile service • Provide educational support from the UK in support of training in medicine, nursing, midwifery, and of Clinical Associates in basic obstetrics and gynaecology (see 7, below), comprising training visits, e-learning, distant mentoring and clinical support.	• Local staff training • Co-ordinated UK based delivery of clinical and educational support • Trained integrated healthcare team available to staff AHC and mobile service
4. Improve and extend the clinical capability of graduate doctors to provide an increasing supply of safe, competent, front line/primary care doctors, for service delivery and supervision of non-medical clinical practitioners. *Current status: Basic postgraduate medical training (BMT) established but not fully embedded in practice, through the College of Physicians and Surgeons (CPS).*	• Review the current situation re postgraduate medical education and agree action plan to improve and embed postgraduate medical education at Juba Teaching Hospital; extend to outlying hospitals as conditions allow • Build educational capacity of the College of Physicians and Surgeons in relation to needs. • Implement trainer training programme for doctors of Juba Teaching Hospital, and outlying hospitals.	• Increasing number of competent primary care doctors working in AHCs and elsewhere in the health service.

5. Implement training in advanced primary care (APC), with enhanced skills (in paediatrics and medicine, or O&G and surgery), to provide higher level skills for clinical practice, leadership, referral, and supervision of the wider primary healthcare team. *Current status: role agreed in principle with MoH and CPS*	• Develop and implement the APC curriculum within the College of Physicians and Surgeons' strategy for postgraduate medical education. • Embed the APC role within the healthcare system	• Numbers of post-BMT doctors trained in advanced primary care. • Numbers of advanced primary care doctors taking up leadership roles within primary care provision.
6. Develop the provision of Public health and pathology services to enable access to pathology services by clinicians, and to enable Public Health service delivery via AHCs.	• Develop a strategy with the Directorate of Public Health, linked to regional developments via the College of Pathology of East Central and Southern Africa, and supported by the Royal College of Pathology. • Train doctors and technicians in Public Health • Create effective working between primary care provision/AHCs, and Public Health/pathology services. • Surveillance and data collection of epidemic prone diseases.	• Improved speed and accuracy of diagnosis. • Improving healthcare services and general health resilience • Long term decrease in population mortality
7. Develop the UK-South Sudan Alliance to provide co-ordinated educational and clinical support *Current status: the Alliance was launched in 2017.*	• Facilitate networking and communication between UK-South Sudan to agree and co-ordinate support strategy • Implement a programme of visits to provide educational and clinical support • Develop e-learning support. • Provide distance mentoring and clinical support • Develop active links with UK medical colleges, in support of clinical training and supervision.	• Co-ordinated delivery of clinical and educational support
8. Develop data collection and management services to support patient care, and to provide evidence to inform research and development in clinical and healthcare services	• Establish health data collection and research unit within the College of Physicians and Surgeons. • Embed service/patient data collection into routine clinical practice.	• Evidence based strategy development • Research opportunities
9. Ensure medical resources and logistics match growth in service capacity	• Develop a health services resourcing plan to accommodate a planned uplift in training, numbers, and distribution of practitioners, arising from this strategy.	• Increased capacity and service delivery

158 ADHs, the higher, 790. These figures can be used as multipliers to indicate staffing requirements.

The ability to train sufficient integrated healthcare teams to staff ADHs, is essential. The development of training capacity (Table 1, items 3-6, and 7) must proceed in parallel with the provision and resourcing of ADHs, and the mobile primary care service.

An initial three year development project will establish and test the required processes. It will have three aims: to complete the pilot; to embed training and support processes; to test and complete an initial scale-up programme. Thereafter, a full scale-up programme will be developed. It is envisaged that this will take place over ten years, divided into five two-year programmes.

Development and support activity will require direct donor funding. Service sustainability will require a budget agreed with the Ministry of Health. Cost centres for funding comprise: building and equipment; staffing; medical resources and consumables; training and development; UK support.

IS THIS STRATEGY PRACTICABLE?

The establishment of healthcare institutions in South Sudan, led by the Ministry of Health, include the Directorate of Public Health, the College of Physicians and Surgeons, and the College of Nursing and Midwifery. These, along with the University of Juba, and Juba Teaching Hospital, provide the institutional framework for capacity building.

Meanwhile, 2017 saw the launch of the fledgling 'UK-South Sudan Alliance for Health Sector Development'[6], a collaboration between the Ministry of Health and colleagues in the UK, with the aim of supporting capacity building and health sector development in South Sudan. This has the potential of co-ordinating UK medical and educational support for the strategy, including visits, e-learning provision, and distant mentoring.

It would be naïve, though, to believe that the answers to all the challenges are apparent at the beginning of the journey. What is proposed is a 'learning project', in which we focus upon clear, practical goals, then act, learn, and improve. Success will be measured by: increased clinical capability; increased reach, access to and delivery of primary care and public health services; improving health outcomes; and improved clinical training and support.

CONCLUSION

South Sudan now has the institutional framework required to support essential capacity building in healthcare. This paper proposes a strategy for increasing capacity and access to primary care and public health services. Strategy aims, objectives and outcomes are summarised in Table 1.

The launch of the UK-South Sudan Alliance for Health Sector Development provides the means to co-ordinate international support for this strategy. As a first step, and to 'kick-start' the project, a scoping visit is required to bring members of the Alliance together, in Juba.

The purpose of the scoping visit is to appreciate the current situation on the ground, and to agree strategy, objectives, and ways of working with the Ministry of Health, health institutions, and colleagues.

Significant funding and long term commitment is required to enable this initiative to be realised, and so, finally, this is a call for international funding to support its achievement.

Acknowledgement: Dr Jamie Harrison, MA, FRCGP

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What is the best way for healthcare systems to charge sick patients?

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INTRODUCTION

What is the best way for healthcare systems to charge sick patients? Although everyone might like all health care to be free, this is increasingly becoming an unrealistic aspiration. Healthcare is getting more expensive and a major challenge facing both the developed and developing world is how to make it affordable and available to everyone. Putting aside concerns about charging patients, what method of levying fees would be the most economically efficient and ethically acceptable?

The purpose of this paper is to add to the debate on how sick poor patients should be charged for their care in low resource settings. We believe that the appropriate use of information technology (IT) can provide a partial solution to this troubling issue. We really would like this to be an addition to an ongoing debate, and really hope that your readers will engage us with constructive argument and suggestions.

THE CHALLENGES

Faith-based hospitals are significant providers of healthcare to the poor in sub-Saharan Africa, and they are facing many challenges and threats.[1] Paradoxically as African countries become richer medical staff are being lured away from poorly paying rural mission hospitals not just by opportunities in the developed world [2] but by the lucrative salaries now paid by private hospitals that cater to a growing wealthy African urban elite. In addition there are now almost no expatriate missionary doctors and nurses, foreign donors are becoming less generous, the population of poor and sick people is rising rapidly, and the cost of medical care is rising. The result is that the poor are getting worse care and there is little prospect of it improving in the future.[3] Hospitals that used to be able to provide a reasonable standard of care can no longer do so because there are not enough doctors, nurses, laboratory tests, diagnostic imaging or drugs.

The Financial Dilemma

Prior to the introduction of government or insurance funded healthcare many doctors charged rich patients far more than poor ones, never charged colleagues or their dependents, or members of the clergy, and frequently waived their fees to the destitute. As worldwide medicine transforms from a vocation to a business such professional courtesies are frequently no longer observed, and in truth are seldom required in countries with well-funded healthcare.

This, however, is not the case in low income countries, where many extremely sick patients are incapable of paying for their care. After the introduction of structural adjustment programmes in the 1980s, the World Bank recommended that low income countries reduce public spending for health and social programmes. Cost recovery mechanisms such as user fees for basic health services were introduced, and governments were expected to establish mechanisms to assure access to health care for people with no means to pay.

These innovations have not worked: the amount of money generated by user fees has been less than anticipated and few insurance schemes have been successful. [4] As a result many hospitals in sub-Saharan Africa either withhold treatment until payment is made[5], or imprison patients in hospital after their treatment until they have paid for it.[4] Even though it seems self-evident that these practices

contravene internationally agreed ethical guidelines[6] and a fundamental human right enshrined in the Alma-Ata Declaration[7], the sad truth is no one so far has come up with a practical solution to the problem. However, the use of information technology may be part of the answer by providing systems that can:

- determine the severity of illness of patients and the quality of care that is delivered to them and
- ensure destitute patients receive prompt life-saving treatment regardless of their ability to pay.

Low Risk versus High Risk Patients

Even in Africa most patients who are acutely ill will get better whether they are treated or not. It could be argued that insisting on payment prior to treatment is only unacceptable for those patients who have a life threatening illness, and for whom any delay in delivering care risks death or severe disability. Indeed, why should patients at no risk of death or severe morbidity get treated for free, especially if they can afford to pay? If they could be quickly, reliably and cheaply identified, low risk patients could be charged in such a way that their fees would subsidise the immediate free treatment of high risk patients.

Vital Clinical Signs on Admission

Vital signs measured on admission to hospital are strongly associated with mortality, and patients with normal or near normal vital signs have the lowest mortality. Yet these patients with normal vital signs make up the majority of those admitted to hospital in the western world: vital signs identify 65% of patients as "low risk" with only a 0.02% and 0.8% chance of dying within 48 h and 30 days of admission, respectively.[8] In 2016 we started collecting bedside data from medical patients admitted to Kitovu Hospital, Masaka, Uganda using the Rapid Electronic Assessment Data System (READS), a novel electronic patient care and decision support system available from Tapa Healthcare DAC, Dundalk – figure 1. We found that on admission approximately one third of patients have normal or near normal vital signs, and that only 1% of these patients died in hospital. In contrast around 20% of patients had severely deranged vital signs, and around 20% of these patients died.[9]

Therefore, vital signs alone could be used to quickly distinguish between the sickest of the sick who should be treated immediately at no charge, and those who are less sick who would first have to pay before treatment was given.

By using the additional "non-traditional" vital signs collected by READS, such as changes in mental status, symptoms like fatigue and breathlessness, mobility, nutritional status[10], ECG findings[11], and the patient's subjective feelings[10], it is possible to identify more precisely those patients most likely to die.[10] Currently we are introducing this risk adjustment process to select patients for immediate treatment at no charge.

Figure 1. Teopista Namujwiga entering vital signs at the bedside at Kitovu Hospital (credit John Kellett)

A WAY FORWARD

Clearly this initiative is not the answer to all the funding problems facing healthcare in sub-Saharan Africa. However, in addition to providing more accurate risk stratification at a local level, it also provides information on the ongoing clinical activity in the hospital, and measures the quality of care delivered. Most healthcare information currently collected includes the number of admissions, their length of stay, their in-hospital mortality rates and their discharge diagnoses. Worldwide there is almost no easily extractable information recorded on what patients complained of and how sick they were on admission, or their complaints and condition at discharge. The discharge diagnoses recorded are nearly always a matter of whatever expert opinion is locally available and prone to distortion, especially in sub-Saharan Africa where the Global Fund supports the treatment of malaria, tuberculosis and HIV.[12]

The clinical information collected by READS is easily and cheaply available at the bedside, requires little training to collect and enter, and is automatically manipulated to recommend and prompt appropriate clinical actions. The system is password protected and all the information collected is encrypted, attributable, time and date

stamped, and cannot be changed after entry. Therefore, fraudulent entries are difficult to make and easily detected. The system can generate reports of the clinical activity in the hospital, which allow the prompt detection of any unusual change or aberration, such as might be seen in an epidemic illness.

Although it is true that Africa's healthcare problems can only be solved at a local level by national governments, the recent Ebola outbreaks eloquently demonstrated that the rest of the world should not be completely disinterested. In order for any epidemic (not just Ebola) to be contained expertise and other resources must be available to quickly recognise the illness, quarantine it and treat it. Therefore, it is in everyone's interest to ensure that a basic level of clinical expertise and skill is as widely available as possible, and a communication infrastructure is in place so that everyone knows what is going on, clinical findings can be quickly shared, and instructions given on the best actions to take. None of this can be achieved without information technology that is appropriate and available.

The Potential Advantages for Information Technology

The other advantages information technology can provide to hospitals in low resource settings are in financial accounting and the maintenance of viable and fair insurance schemes. COU Kisiizi Hospital and Innovation Streams Limited have developed an electronic medical record called Stre@mline that has been specifically designed for use by hospitals in resource poor settings, and supports the highly successful health insurance scheme at Kisiizi Hospital, Uganda.[13] The Ugandan Catholic Medical Bureau (UCMB) is also deploying an open source electronic medical record systems in its health facilities. The UCMB has been interested in electronic health records since the development of the Uganda Health Management Information Systems (HMIS) in the 1990's and their 1999 Mission and Policy on Catholic Health Services document.[14] The motivation for UCMB is to promote effective delivery of health services through fast access to information that supports patient management, planning, monitoring and evaluation of healthcare programmes while minimising operational costs.[15]

All these initiatives are a good start, but Africa needs a lot more. Funding agencies need to recognise the importance of applying information technology to health care in Africa. Firstly it is relatively cheap, and becoming cheaper as electronic communication and IT expertise is now widely available throughout the continent. Secondly, without it there is no way of knowing what healthcare outcomes are, to what extent interventions are being implemented, what interventions improve outcomes and, most importantly, there can be no evidence that donations are spent wisely or appropriately.

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The Evidence for Contraceptive Options and HIV Outcomes (ECHO) study: Does hormonal contraception increase the risk of acquiring HIV?

THE ECHO Consortium

More than 150 million women worldwide use modern methods of contraception for family planning. By enabling women to avoid high-risk pregnancies, these contraceptive methods help prevent hundreds of thousands of maternal and infant deaths every year.

As the HIV epidemic spread, it became important to explore risk factors for HIV, including whether there was an association between use of specific contraceptives and HIV acquisition. There is evidence from observational studies that use of progestogen-only injectable methods — particularly depo-medroxyprogesterone acetate (DMPA) — is associated with an increased risk of acquiring HIV infection, but uncertainty remains about whether DMPA use actually causes increased risk.

Given the widespread use of DMPA in areas of high HIV incidence, the question of whether DMPA increases women's risk of HIV is a critical public health issue requiring the strongest evidence possible. Women need to know whether using DMPA or other methods affects their risk of acquiring HIV so they can make informed choices about contraception.

The Evidence for Contraceptive Options and HIV Outcomes (ECHO) Study is designed to fill this critical knowledge gap. An open-label randomised clinical trial among 7 800 women in four countries, the ECHO Study will compare three highly effective, reversible methods of contraception (including a non-hormonal method) to evaluate whether there is any difference in the risk of acquiring HIV infection among users of these methods. The trial also provides an opportunity to compare pregnancy rates and women's patterns of use across the study contraceptives. ECHO will deliver high-quality information about contraceptive risks and benefits that women can use in making contraceptive decisions, healthcare providers will use for contraceptive counselling, and policy-makers will use to inform their decisions about contraceptive procurement and guidance.

The results will come out in mid-July 2019.

How can we bridge the gap between literacy and health in South Sudan?

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INTRODUCTION

Addressing the low literacy rates in South Sudan has been a longstanding priority for primary health care providers as a way to improve the country's poor overall health status. Improving the literacy rate by "ensuring that all girls and boys complete primary and secondary education" by 2030 is ambitious but achievable for optimum health and socio-economic development.[1] While general literacy is an important determinant of health, it is not sufficient to address the major health challenges facing the South Sudanese population. Effective health education at primary health care points can help ensure healthy lives while other sectors are improving literacy.

Literacy, defined as the ability to read and write, facilitates Health Literacy. Health Literacy simply means "being able to apply literacy skills to health-related materials such as prescriptions, appointment cards, medicine labels, and directions for home health care".[2] In a broader sense, it is "the degree to which people are able to access, understand, appraise and communicate information to engage with the demands of different health contexts in order to promote and maintain good health across the life-course"[2] or "the degree to which people have the capacity to obtain, process, and understand basic health information and services needed to make acceptable health decisions."[2]

The adult literacy rate is defined as the percentage of the population aged 15 years and above who can, with understanding, read and write a short, simple statement on their everyday life.[3] In South Sudan, the adult literacy rate was 32 % in 2015[3], up by 19.18 % from 2008(27%)[3,4] but is still one of the lowest rates in the world today. Hence, there are generally low health literacy skills among the population.

Literacy and health

People with low literacy skills have poorer overall health. They wait longer to seek medical help and as a result, health problems reach a crisis state. Low literacy is associated with poor disease prevention, misuse of medication, poor adherence to medication and poor follow-up.[4] Low education levels, poor physical and mental health exacerbate each other's impact on different factors including unemployment and other socio-economic parameters.[6] This leads to poor outcomes in common health indicators of the country, including core aspects of health status, control of risk factors, service coverage and the entire health system.[7]

The Government is making efforts to increase literacy rates in South Sudan. The Education sector was allocated 9.4% of the Fiscal Budget 2018/2019 (a 5.3% increase when compared with the previous year).[8] The budget for the Health sector, however, seems fixed. Despite this, we can still strive to maximise efforts and improve the health of communities within our capacity by doing our best through health education.

Health education is the alternative connection between literacy and health literacy. It is defined as "consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills, which are conducive to individual and community health".[5] As the key outcome from effective health education is health literacy to the literate, it can also improve knowledge and life skills conducive to individual and community health.

Table 1. Transtheoretical Model

Stage	Definition	Examples	Potential change strategies
Precontemplation	Has no intention of taking action within the next six months	"It isn't that I can't see the solution; I just can't see the problem"	Increase awareness of need for change; personalize information about risks and benefits
Contemplation	Intends to take action in the next six months	"I want to stop feeling so stuck"	Motivate; encourage making specific plans
Preparation	Intends to take action within the next 30 days and has taken some behavioural steps in this direction	"I just took out a membership to a fitness facility"	Assist with developing and implementing concrete action plans; help set gradual goals
Action	Has changed behaviour for less than six months	"I've started exercising and while I enjoy it, sometimes I find it a chore"	Assist with feedback, problem-solving, social support and reinforcement
Maintenance	Has changed behaviour for more than six months	"Exercising three times a week has become a part of my lifestyle"	Assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable)

The World Health Organization (WHO) describes health education as including communicating the social, economic and environmental conditions impacting on health as well as individual risk factors and risk behaviours and how to use the health care system.[5] During health education, we should also focus on fostering the motivation, skills and confidence necessary to take action to improve health.[5] Knowledge, while necessary, is not sufficient to change individual or collective behaviour.[9] Motivation usually must come from sources other than, or in addition to, factual knowledge. Most individuals know that it is best to prevent disease but fail to put in efforts to stop unhealthy lifestyles. A broad purpose of health education therefore is not only to increase knowledge about personal health behaviour but also to develop forms of action that are the politically feasible and organizationally possible to address individual, social, economic and environmental determinants of health."[5]

IMPROVING HEALTH LITERACY

Despite the challenges in effective health education in South Sudan, it is important to remember that community participation is the hallmark of primary health care, without which it will not succeed.[10] It may be practically difficult to educate the massive number of people who come to the health care centre daily, or to organise health-talk appointments with prisoners, refugees and students or even discuss health promotion strategies with community members and leaders. Even though most primary health care providers have limited time or inadequate resources, health education ideals can still be approached from the most basic level: interpersonal capacity level. This involves extending the consultation time to address individual characteristics that influence behaviour, such as awareness and knowledge, beliefs, opinions and attitudes, self-efficacy, intentions, and skills and personal power personality traits.[11] Motivational interviewing enables primary health care givers to identify cues to elicit change and promote healthy lifestyle while at the same time address a client's initial complaints.

Motivational interviewing

Motivational interviewing (history-taking) is a person-centred method to elicit and strengthen personal motivation for change.[12] Motivational interviewing was designed from the outset to be a brief intervention including the short-timed outpatient sessions. Motivational interviewing is effective across a variety of real-life clinical settings even within the context of larger health care delivery systems. It is also efficient in that even a single session can invoke behaviour change.[11] The core principles of motivational interviewing include respect for the autonomy and ambivalence. Motivational interviewing aims to elicit and explore discrepancy between current behaviour and broader life goals and values.[11]

The primary health care provider first stimulates a change talk and with reflective listening, understands, expresses empathy and encourages change talk. Then, he/she identifies the assertions for self-motivation and counter-motivation (resistance) correctly.[11] This is because motivation is a strong predictor of change.

He/she also gives adequate information and teaches skills for decision-making and problem solving but leave the actual choice and action - towards change - to the individual.[10]

A key challenge for many health care providers learning motivational interviewing is determining when and how to transit from building motivation to planning a course of action.[12] Different models have been proposed to address this problem. These include: the rational model, the health belief model, extended parallel process model (EPPM), the transtheoretical model, the theory of planned behaviour and the activated health education model.[14] No single theory dominates health education and promotion because the problems, behaviours, populations, cultures, and contexts of public health practice are broad and varied. One of the most extensively researched behavioural change models developed in recent years is the transtheoretical model of change.[5] Table 1 gives brief details of the transtheoretical model. [5,11,14]

Without Health Education or without motivation to be healthy, individuals may fall sick again from the same disease. The major reason for missed immunisations in the Republic of South Sudan was inadequate information. [13] Therefore, when treating an individual with a skin infection or malaria, clinicians should assess patients' ideas, concerns and expectations. It is also important to educate the patient about the cause of the illness, how to prevent it (if possible), alarm signs and symptoms to warrant return to the clinic, what to expect with the drugs, how and when to come for follow-up and other basic information.

For effective health education, we should develop health communication skills which involves the study and use of communication strategies to inform and influence individual decisions that enhance health.[10] Through health promotion we enable an individual to increase control over, and to improve, their health. Jonathan Izudi and his colleagues found that many mothers came for post-natal care when they receive health education after delivery in Mundri East County, South Sudan.[15] Therefore, it is possible to improve health-care delivery and lessen complications from common health issues affecting the immediate communities we are serving when they receive basic health information and are motivated towards better health. This also, is how to fulfil the goal for continuous medical education, and deliver practical, scientifically sound and socially acceptable essential health care.

This interpersonal approach creates ideal conditions for community participation in promoting lifestyles conducive to health which could involve change in an individual's personal characteristics/behaviour, social interactions, and socioeconomic and environmental living conditions or an interplay.[5] Community participation, in brief, involves assessing the prevailing health problems and encouraging people to choose the best solutions to their health problems.[10]

In primary health care, we can offer more than just enough to the communities by educating them about common health problems and practical methods to prevent and control them. We can bridge the literacy gap that undermines effective prevention of diseases, early seeking of health care, therapeutic follow up and adherence through effective health education strategies that best fit the immediate community. This is possible when we have intrinsic motivation and renew our commitment to primary health care.

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SAVE LIVES: Clean Your Hands - WHO 5 May 2019 campaign

https://www.who.int/infection-prevention/campaigns/clean-hands/5may2019/en/

Infection Prevention and Control, including hand hygiene, is critical to achieve UHC as it is a practical and evidence-based approach with demonstrated impact on quality of care and patient safety across all levels of the health system. WHO calls to:

- Health workers: “Champion clean care – it’s in your hands.”
- IPC leaders: “Monitor infection prevention and control standards – take action and improve practices.”
- Health facility leaders: “Is your facility up to WHO infection control and hand hygiene standards? Take part in the WHO survey 2019 and take action!”- Ministries of health: “Does your country meet infection prevention and control standards? Monitor and act to achieve quality universal health coverage.”
- Patient advocacy groups: “Ask for clean care – it’s your right.”

Guidance on Reproducing, adapting and translating WHO hand hygiene illustrations is here:

https://www.who.int/infection-prevention/tools/hand-hygiene/copyright/en/ and https://www.who.int/gpsc/5may/Your_5_Moments_For_Hand_Hygiene_Poster.pdf?ua=1

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Performance of low-literate community health workers treating severe acute malnutrition in South Sudan

Elburg Van Boetzelaer, Annie Zhou, Casie Tesfai, and Naoko Kozuki

This summary is from the journal of Maternal and Child Nutrition

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In 2017, the global acute malnutrition prevalence reached close to 20% in Aweil South County, Northern Bahr el Ghazal State, South Sudan. Previous data had suggested that less than half of the children in that region with severe acute malnutrition (SAM) were enrolled in treatment programmes. Recognizing this common issue of low treatment coverage in many rural, low-resource settings, the International Rescue Committee (IRC) began exploring the possibility of equipping community health workers (CHW), who are already delivering treatment services as a part of integrated community case management (iCCM) of childhood illness programmes, with treatment for SAM. One major consideration is literacy; previous pilots examining the feasibility of using CHWs to deliver acute malnutrition treatment had used literate cadres, meaning that this model had not been tested where there is overall lower socioeconomic status and educational attainment, which often has higher acute malnutrition rates.

The IRC engaged in a two-year process of using user-centred design to develop job aids and tools for CHWs that were adapted to low literacy. This resulted in the following tools (Figure 1):

1. an adapted mid-upper arm circumference (MUAC) tape with the standard green (≥ 12.5 cm) and yellow (≥ 11.5 cm to <12.5 cm) zones but with a red MUAC zone that was divided into three (dark red <9.0 cm, red 9.0 cm to < 10.25 cm, pink 10.25cm to < 11.5 cm) to allow CHWs with no numeracy to better assess progression and regression,
2. a weight scale decal that shows the daily ready-to-use therapeutic food (RUTF) dosage,
3. a dosage calculator to calculate the weekly RUTF dosage,
4. a patient register, and
5. a pictorial flipchart with RUTF feeding messages.

To formally test whether low-literate CHWs can use these job aids and tools to treat children accurately, the IRC conducted a pilot study in Aweil South County. Sixty existing iCCM Community-Based Distributors (CBD) with no formal education were initially recruited and trained over the course of six days to use the job aids and tools listed above, with 57 completing the training. They were then observed by supervisory staff as they independently conducted a treatment procedure on a child and were scored against a performance assessment checklist. The CBDs scored a median of 98.9 (range 67.5–100) out of 100, with 49% of CBDs receiving perfect scores.

Through the study implementation period, the CBDs received a supervision visit every 2-4 weeks, where the same performance checklist was completed. For each performance checklist completed, the last performance score of the CBD recorded by our project was higher by absolute 2.0% (95% CI: 0.3%–3.7%), showing that CBDs who received more supervision had better performance. The outcomes of the SAM children treated by the CBDs will be presented in a future article.

See Full Article:

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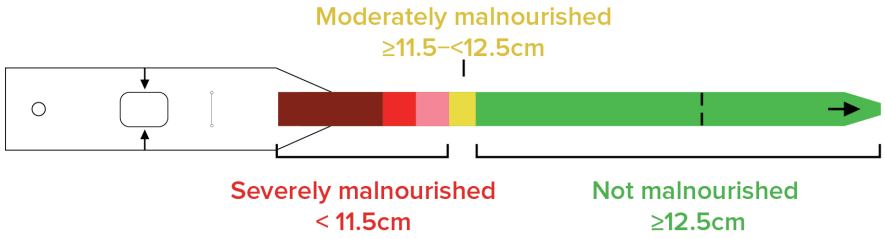
12 February 2019.
https://doi.org/10.1111/mcn.12716.

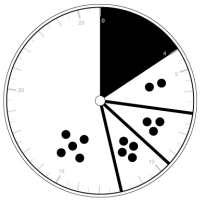
Our study showed that low-literate CBDs with no formal education, when equipped with properly adapted job aids and tools, can treat severe acute malnutrition in their communities. Our results show potential for using community health systems to reach severely malnourished children who otherwise would not have access to treatment.

Modified MUAC Tape



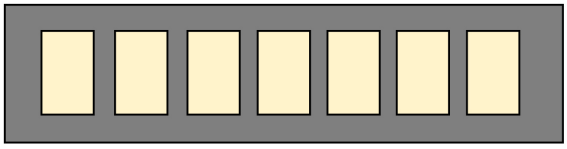
The tape is used to identify and monitor malnourished children.

Weight Scale Decal



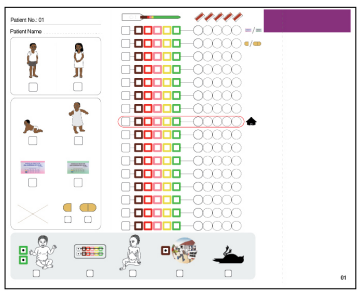
The dots represent the daily dosage of Ready-to-Use Therapeutic Food (RUTF) for malnourished children.

RUTF Dosage Calculator



Each rectangle on the calculator represents one day of the week. The CHW places the daily dosage onto each of the seven rectangles, and the total sachets equal the weekly dosage.

Patient Register



CHWs record treatment in a patient register designed with icons and colors to record sex, age category, systematic drugs, the amount of RUTF and the color of the MUAC each week.

RUTF feeding messages flipchart

At the end of the visit, the CHW gives advice to the caregiver using a flipchart on the five key messages for feeding a child RUTF.

Martha Primary Health Care Centre: how resilience and international collaboration is transforming a community

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Figure 1. Martha PHCC Children's Ward. Photograph courtesy of Poppy Spens, May 2015.

I worked in Yei from 2006 to 2011 with the Episcopal Church of South Sudan Diocese of Yei and visited again in June 2016 and November 2018. My role was to manage the expansion of the Martha Primary Care Unit (PCU) to a Primary Health Care Centre (PHCC). It was so encouraging to see the high-quality care the staff were giving to large numbers of patients as well as excellent ground and building maintenance, despite huge challenges.

Background

Martha PHCC developed thanks to a very generous grant from Irish Aid. The new building for outpatients was constructed by the building company set up by the International Hospital in Kampala and was built in 2007. The Irish Aid funds included equipment, medicines and training of several staff. A mobile clinic funded by Basic Services Fund (UK Department for International Development) visited 5 villages each week that had no PCU.

Patient numbers for Martha PHCC reached 50,000 per year for several years and over 40 health staff have received training. Many cadres have been trained since 2007 including clinical officers, ophthalmic clinical officers, nurses (certificate, diploma and degree) laboratory technicians, healthcare managers and one doctor. Some were funded by Irish Aid and more recently by a small UK charity, The Brickworks. The Martha PHCC is capably led by a graduate in Health Management and managed by The Diocese of Yei Health Committee.

In 2009, it was identified that there was no specialist eye clinic in Central Equatoria other than in Juba. As a result, a neighbouring disused building was adapted to house a specialist eye clinic including a theatre, and other rooms and a paediatric ward. The eye clinic was very popular and treated a variety of eye disorders. It was able to offer cataract camps every six months until 2016.

The children's ward was always overflowing so in 2012, a new, larger ward was constructed with funds from The Brickworks. This building is of a high standard and the care is well respected by the community.

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Figure 2. Bebe Godfrey, Laboratory technician internship student. (Credit Poppy Spens)

Progress and challenges

Unfortunately, when the insecurity happened in 2016, many staff fled to refugee camps meaning that the eye clinic and children's wards had to close. A few staff stayed in Yei so the main PHCC continued to offer outpatient, antenatal, immunisations, health education, postnatal, malnutrition, family planning, and HIV VCT and prevention of mother-to-child transmission (PMTCT) services. The PHCC includes a pharmacy and laboratory.

Currently, two student laboratory technicians and one clinical officer student from Kajo Keji Health Training institute are doing internships at Martha PHCC in conjunction with Yei State Hospital. Some non-governmental organisations have seconded a few staff and The Brickworks have agreed to pay several of the other staff salaries. County Health also kindly donated medicines, which has been very helpful. There are challenges purchasing many other medical supplies in Yei mainly due to insecurity on the roads. Martha PHCC is very grateful to County Health and the Yei State Health Department for all their support and has a good working relationship with them.

Since 2016, Martha PHCC has continued to be very popular, treating up to 200 patients a day. Staff numbers at Martha PHCC used to be over 40 and are now much less. The staff need congratulating for the hard work they do to offer a high-quality service.

In January 2019, one of the ophthalmic clinical officers agreed to return to Yei, but then funding had to be found to reopen it. We are grateful to a church near Bristol in the UK which has agreed to fund the basic needs of the eye clinic for two years. As a result of these two factors, the eye clinic has reopened. The list of patients needing cataract surgery is being developed rapidly and Martha PHCC is hoping that a cataract camp can be held in a few months' time. However, funding for this needs to be secured as the eye clinic running costs exclude this.

It is hoped the children's ward can open again soon but this depends on finances being found. Recently, it has been used by the midwives who are newly qualified and whose training was funded by The Brickworks. So far, twenty babies have been successfully delivered in the ward. The midwives are proving that they can identify high risk mothers in labour and are referring those to Yei State Hospital.

The main challenges for Martha PHCC include finding sufficient finances to keep running, to source all the medicines and supplies that are needed and to employ and retain competent staff who are willing to work on less than NGO salaries. The huge rate of inflation and the devaluation of the currency means patients cannot afford to pay much in cost sharing. The PHCC used to cover about 75% of its cost from patient contributions but this is now no longer possible. Having said that, the staff are committed and are doing well during these difficult times.

The Winchester (UK) Hospital has been developing a link with Yei State Hospital, Martha PHCC and Yei National Health Training Institute for several years. Since 2016 no visits have been possible. The link has been maintained however and offers occasional visits of clinical staff to teach at the Kajo Keji Health Training Institute, which is currently in Arua, Uganda. The next visit is planned for October and the Health Training Institute looks forward to welcoming the different health professionals that the link is able to send. We really hope it will not be long before the link can return to Yei.

Point Of Care Ultrasound (POCUS) is saving lives

Achai Bulabek, a South Sudanese doctor, describes her journey towards working with MSF and the many vital uses of point of care ultrasound (POCUS) in medicine.

Ultrasound is a valuable antenatal tool, but Médecins Sans Frontières / Doctors Without Borders (MSF) is using an innovative portable version of this machine to save lives in humanitarian crises.

For more information contact
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Innovation:
"We are able to save many lives using this tiny, portable machine"

I graduated from medical school at Ahfad University for Women in 2015, I did my internship for one year in Sudan and then came back to my homeland to serve my community. I first worked as a medical doctor at a teaching hospital in Abyei. There were many personal challenges during that eight-month period so in 2017, I applied for the position of clinical officer with MSF – working at their hospital in Agok, also in Abyei.

MSF's hospital in Agok is the biggest in the region and it is well equipped to provide health services to the community, especially in emergencies. Many patients are referred to us from different hospitals inside and outside Agok, including the towns of Mayom, Abyei and Abiemnum.

Before POCUS

We have simple laboratory investigations available, and before the point-of-care ultrasound – also known as POCUS – training began in February 2017, we had just one ultrasound machine in the maternity ward. This machine could only be used when a medical doctor who was a trained expert in ultrasound was present. So we had many challenges especially in the emergency room, surgical department and close monitoring unit (CMU), where many patients urgently need ultrasonography to reach a proper diagnosis and case management.

Ultrasound machines tend to be bulky and expensive. However, "point-of-care" means the new ultrasound machines are portable enough to be used wherever we are treating the patient. These patients include those with fractures, heart failure, pneumothorax and acute abdominal conditions.

We used to rely on clinical history and physical findings to decide on management. Sometimes, we would have to take the risk of a laparotomy to confirm and treat especially acute abdominal presentations (e.g. with the possibility of acute appendicitis or intestinal obstruction). At other times, we had to send some patients home when their case was beyond our capacity.

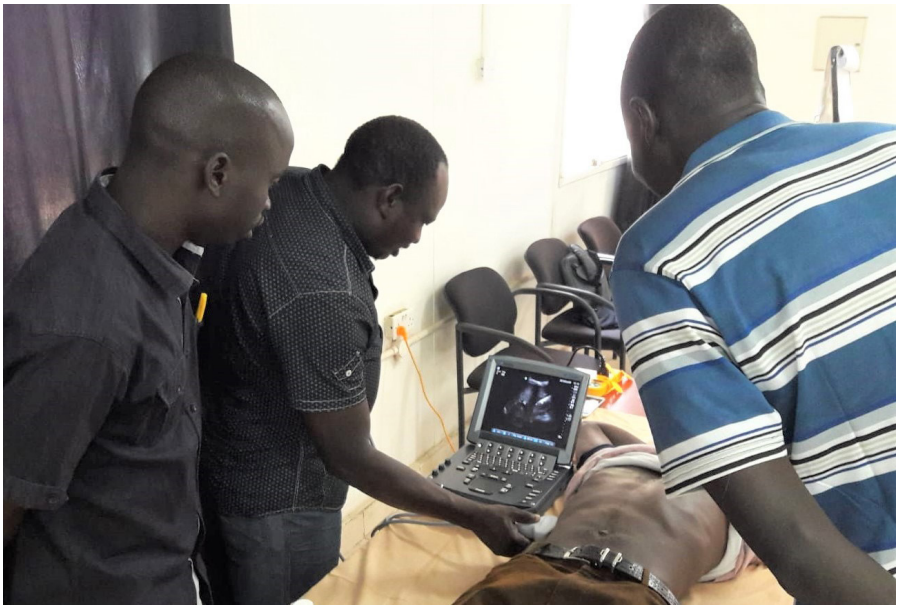

Figure 1. At the first international training ever to be held on POCUS, participants from MSF's projects in South Sudan are pictured carrying out a mock examination using the portable ultrasound machine. (MSF©)

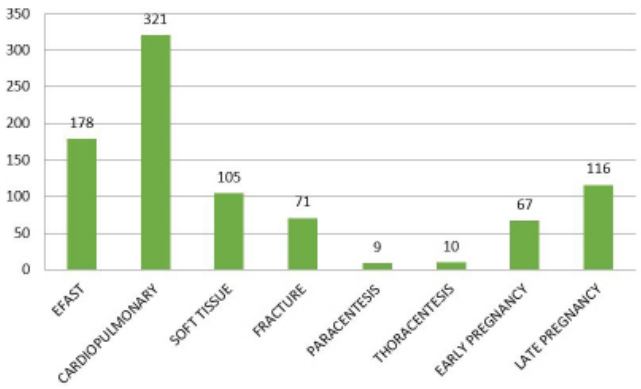

Figure 2. Distribution of 877 POCUS exams performed by South Sudanese MSF staff in 2018 (MSF ©)

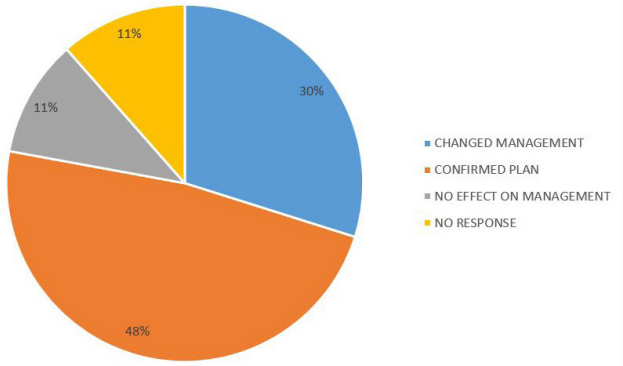

Figure 3. POCUS self-reported effect on management in 2018 – MSF projects Agok, Aweil, Malakal (n=877) (MSF ©)

First international POCUS "training of the trainers" held in Juba

In 2018, 887 examinations were completed using this portable diagnostic ultrasound tool in three of MSF's project locations; Aweil, Agok and Malakal. Last December, the first international training for POCUS was held in Juba. The purpose was to train local MSF colleagues to be leaders in using POCUS, with the objective of having these new leaders returning to their projects equipped with skills and knowledge to train additional staff.

Ultrasound, in addition to obstetric use, enhances the quality of care given to patients with a range of surgical and medical conditions by informing diagnosis and treatment plans. Perhaps most impressively, in countries with large-scale on-going humanitarian crises, non-medical staff can be trained to use POCUS, which limits the need for specialised international staff. See Figure 1.

Making immediate decisions

Since we have started using the new ultrasound equipment, something has changed for the better in the hospital and for the community; the staff have developed new skills and the quality of care has improved. I will share a few cases where ultrasound has already made a big difference:

Earlier this year, when we were still undergoing POCUS training, I was called to perform an ultrasound scan on a small boy of around nine years old. He presented with a history of trauma and abdominal pain for one day. The scan, which took only seven minutes, showed free fluid in his abdomen and a ruptured spleen. The decision to undergo a laparotomy and surgery to remove the spleen was made immediately, at his bedside, within fifteen minutes. .

During the same month, one of my colleagues was called to the Tuberculosis (TB) ward to scan a man aged 30-35 years. He was known to have pulmonary TB and had been taking medication for several weeks, but was showing no improvement. He was breathless and hypoxic. The ultrasound scanning showed that besides the patient's lungs being filled with fluid, there was a huge collection of fluid around his heart, suggesting "cardiac tamponade". Based on these findings, we urgently undertook a procedure to remove the fluid from the pericardium and the pleural cavity. In less than two hours the patient was stabilised.

Finally, this month, I was called into the emergency room to scan a young boy aged around seven years who had suspected pneumonia. He had a history of coughing and fever, plus pain in the right side of his chest for one week following a minor fall. On examination, the boy had reduced breath sounds and dullness on the lower right part of his chest. So, I did a quick cardiopulmonary ultrasound and it showed a pleural effusion. Using the ultrasound to guide us, we inserted a pleural drain in the operating theatre and aspirated pus which. Drained within less than 10 minutes.

A life-saving technique

These examples show how useful and effective POCUS is in the MSF hospital in Agok. It is a life-saving technique for the patients, quicker, and supports decision-making for the staff. In addition, it is less costly and is replacing x-ray and other imaging scans. See Figures 2 and 3.

Despite all the workload in Agok, with many complicated cases, my colleagues and I are able to save many lives using this tiny portable ultrasound machine. We are now easily diagnosing many conditions, which once needed more complex imaging techniques, especially in the surgical department.

Finally, this simple machine has changed my own future plan to now include an ultrasound specialisation to enrich my skills and knowledge. Hopefully, one day, I will be a great sonographer.

Juba College of Nursing and Midwifery milestones in 2018

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Juba College of Nursing and Midwifery (JCONAM) was established in May 2010 as the first institution of its kind in South Sudan. In less than a decade, the college has grown from an initial class of 40 students to training over 300 nurses and midwives. Students at JCONAM are well supported by a diverse team of managers, tutors and auxiliary staff whose commitment and wealth of experience has been invaluable to the growth of the college. The table below shows the number of students currently in the school. The courses are run by 13 tutors of whom three are clinical instructors, one is an expatriate and nine are South Sudanese nationals. In addition there is one Principal and one Program Manager plus other support staff.

Nursing and Midwifery students making the Florence Nightingale Pledge at their graduation ceremony on 11th December 2018 (JCONAM ©).

The school's achievements in 2018 and 2019 include:

- All the (last year) final year students sat their exams and all passed, thus the school was able to graduate 30 students: 15 Midwives and 15 Nurses.
- The school is supporting continuing professional development for the tutors; we have four tutors currently pursuing their bachelor's degrees.
- The school held a workshop on teaching methodology last August for the tutors.
- St Paul Coptic University from Egypt last year conducted training in the College of Physicians and some students from JCONAM were able to benefit and were trained on how to interpret ECGs.
- A team from UK last year visited the College of Physicians and conducted training on Emergency Obstetric and Neonatal Care; some JCONAM students and tutors were privileged to attend.
- JCONAM has developed a 2018-2020 strategic plan and sustainability strategies.

So far the school has graduated over 304 students who are serving the country and supporting the continued reduction of maternal and neonatal mortality - as well as trying their best to improve health care service delivery in order to attain the 'sustainable development goals' and 'universal health coverage'.

JCONAM in numbers: 2016 - 2019

Intake	Male	Female	Total
2016 Midwifery	12	20	32
2016 Nursing	17	8	25
2017 Midwifery	12	18	32
2017 Nursing	25	11	36
2019 Midwifery	3	11	14
Total	69	68	139

It is with a great pleasure to note that, among the 30 students who graduated last year, two were selected to publish their research in the South Sudan Medical Journal, which is a great achievement to the college. We are looking at producing competent nurses and midwives who will be researchers at both national and international level. Research is a core factor in improving the quality of care. Country context problem-solving research will contribute greatly to the improvement of health care services. Thus we need well educated nurses/midwives who can lift up the profession in South Sudan and stand up for their rights as well as advocating strongly for clients of all ages.

Our main challenges are inadequate and sustainability of funds.

Dr Joy Vero Pai Theophilus

Dr Joy was a young doctor full of untapped potential, described by many as passionate, outgoing and always happy to extend a helping hand.

She graduated from the Ahfad University for Women in 2003 with a Bachelor Degree in Medicine and Surgery (MBBS). Following her training she served as a medical officer at Malakia Health Center in Juba for one year. She worked for the United Nations Population Fund (UNFPA) as their Programme Associate for Monitoring and Evaluation from 2006 to 2009, before joining the South Sudan Aids Commission (SSAC) as the Director General for Programme Coordination. She was appointed the first Registrar of the South Sudan General Medical Council in 2015.

Dr Joy obtained her Master of Science degree in Public Health (MSc. PH), Reproductive Health Track, from the School of Health Sciences and School of Medicine at Ahfad University for Women in Khartoum in 2015. She attended other courses in Switzerland and Germany over the last years.

With a big heart for teaching others, Dr Joy was a tutor at the Juba College of Nursing and Midwifery as well as part-time tutor for undergraduate students at Ahfad University for Women, School of Medicine.

On top of her responsibilities as a doctor, Dr Joy was passionate about music and singing. She was an active member of the Catholic church youth groups since the days in Khartoum until the relocation to South Sudan, serving as the choir leader for the St Joseph's Catholic Church in the Archdiocese of Juba.

Dr Joy passed on in Juba on 20th April 2019 due to septicaemic shock. She will be greatly missed.

Dr Emmanuel Eliaba Kenyi

Dr. Emmanuel was a person of high integrity, jolly, friendly, straightforward and extraordinarily brave. His friendship appeal had no boundaries, and for this reason, he was given several remarkable nicknames. For example, his brothers, relatives, colleagues and friends called him Chua; and within the social circles and his soccer frenzy colleagues, he was called Bafana Bafana.

A graduate of the College of Medicine of Upper Nile University in 2004, Dr. Emmanuel always stood true to his calling as a medical doctor, to the extent that he put treating his patients first.

He worked in several positions in South Sudan, starting as the Executive Director of the National Health Insurance Fund, Central Equatoria State, Juba (Jan 2009 – 2012) and the Medical Director of Malakia PHCC, State Ministry of Health, CES/Juba (2012 – 2014). Until his death, Dr Emmanuel served as the Medical Director, Al Sabbah Children Hospital, Jubek State, Juba.

LETTER TO THE EDITOR

What South Sudan must do to reduce high maternal and infant deaths: increase health and social sector budgets by at least 30%

Janet Mugo and

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International Rescue Committee

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Years of conflict in South Sudan have destroyed infrastructure and led to death and displacement of millions of people. With an estimated population of 12 million, its health indicators are among the worst in the world.[1] The impact of failed health systems has increased morbidity and mortality; South Sudan has the highest maternal death rate (2,054 per 100,000 live births) and ranks 16th in infant mortality (68 per 1,000 live births).[2] Since 2005, the country has made little progress to provide basic social services to its impoverished citizens. This is because South Sudan prioritizes funding security (28% of the total budget in 2011) over other services. Consequently, social services such as education and health always get the lowest budgetary allocations (4% and 2% respectively in 2011, as shown in Figure 1 [3]).

This trend has been consistent over the years; in the 2012/2013 financial year, resources allocated to education, health and infrastructure averaged 7.6% whereas a whopping 28 % of the total budget was allocated to the armed services sector. In 2014/2015 financial year, the health sector received only 4% of the budget, compared to almost 50% of the security and rule of law sectors, as shown in Figure 2.[4] In 2016/2017 financial year, the health sector received only 1% of the health budget, compared to the military sector which was allocated 60% of the national budget. This uneven allocation between social sectors and security is a major barrier to the economic development of the country. In the 2018 financial year, the total budget approved by Parliament was 81 billion South Sudanese Pounds (SSP). Only 1.6 billion SSP went to the health sector.

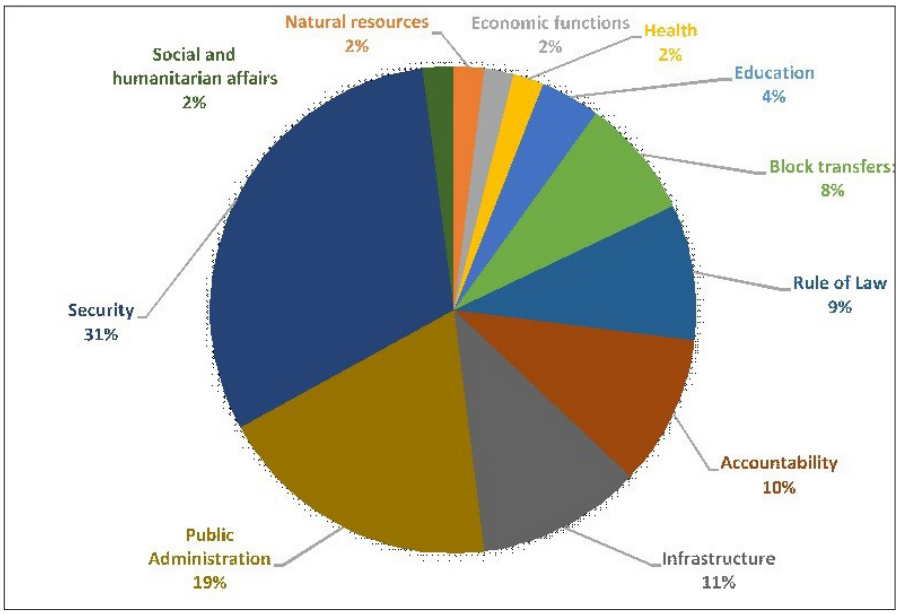

Figure 1. South Sudan 2011 budget allocation (World Bank [3])

Citation:
Mugo and Said. What South Sudan must do to reduce high maternal and infant deaths: increase health and social sector budgets by at least 30%. South Sudan Medical Journal 2019; 12(2)78-79

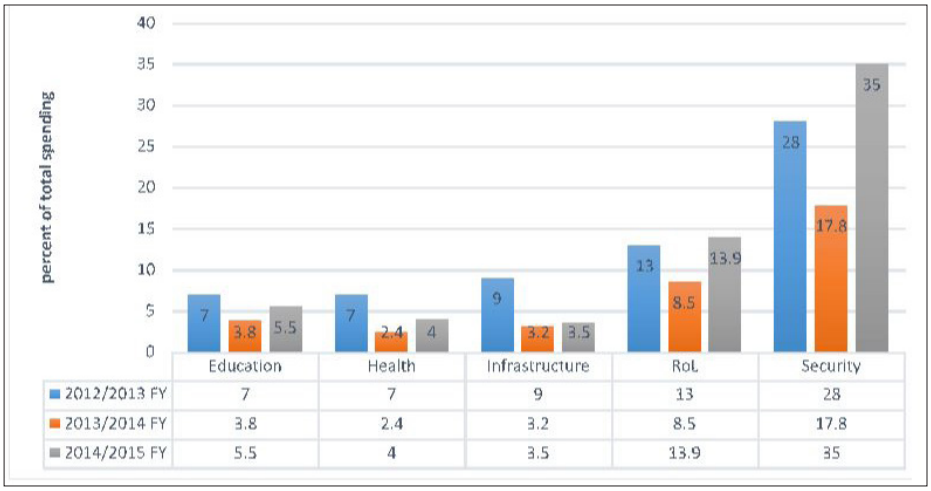

Figure 2. Budgetary allocation trends from 2012 to 2015 (UNDP [4])

Why invest more financial resources in health matters?

Inadequate obstetric care, lack of skilled workers, cultural barriers, poverty and lack of information are some of the reasons preventing women from accessing health services. Lack of roads and infrastructure, insecurity and long distances to health facilities are other reasons.

Most maternal deaths are preventable. Ensuring adequate antenatal care, ability to deliver under trained health workers and improving health infrastructure are keys to reducing maternal mortality. These require major investments and the current 2018 health budget allocation (1.6 billion SSP which is less than 1%) is simply not enough. Investing in training health workers, payment of salaries, purchasing and transporting of medical supplies to all parts of the country require at least an 8% increase in the health budget.

Girls' and women's education reduces maternal mortality

Research has shown that there is a positive correlation between education and health. Worldwide, as rates of schooling and literacy increase, rates of maternal deaths have fallen. Poor, uneducated women have poorer pregnancy outcomes compared to more educated women. A research study found that women with no education had 2.7 times and those with between one and six years of education had twice the risk of maternal mortality of women with more than 12 years of education.[5] There are a number reasons why women's education may reduce rates of maternal deaths. The main causes of maternal mortality are pregnancy-related: preeclampsia, bleeding, infections and unsafe abortion. The more the woman is educated, the higher the chances of her correctly identifying risk factors and/or adopting simple life-saving skills such as maintaining hygiene. They are also more likely to access sexual and reproductive health information, access safe abortion services, and may be more willing to go to health facilities for deliveries.

However, South Sudan's investment in the education sector is dismal. In the 2017/2018 fiscal year, the education sector received 1,863 million SSP of the 44,000 million SSP set aside (8% of the total budget). As with the health budget, this amount is insufficient to provide adequate and quality education. Furthermore, most of this money is channelled into recurrent expenditure such as teachers' salaries. South Sudan should increase the budget amount and target improving not only basic primary schools, but also focus on secondary schools and tertiary education. The government should also focus on creating favourable conditions which attract and keep girls in school, including addressing harmful cultural norms such as child marriage which keeps girls away from schools.

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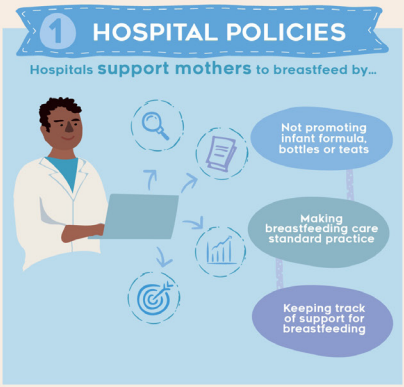
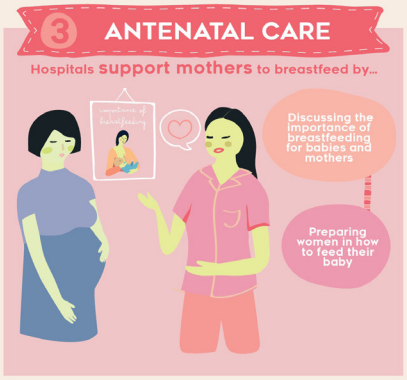
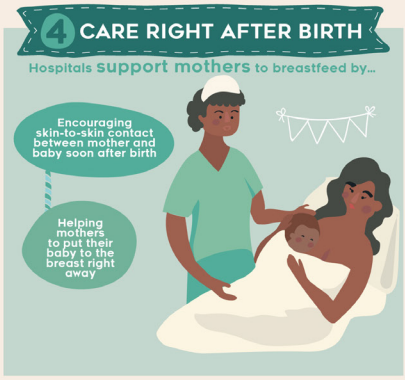
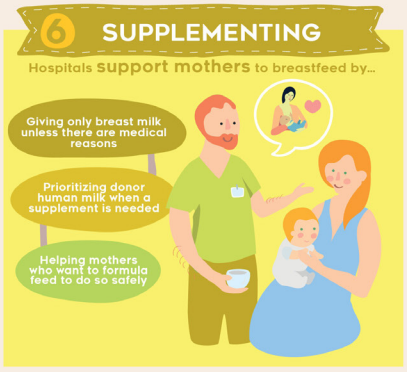
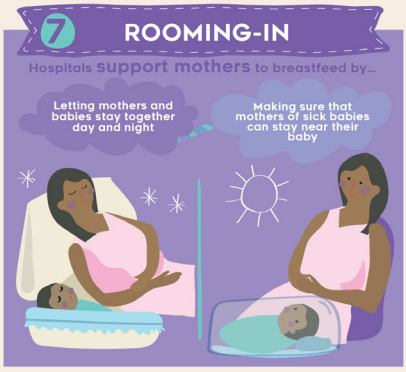
The TEN STEPS to Successful Breastfeeding

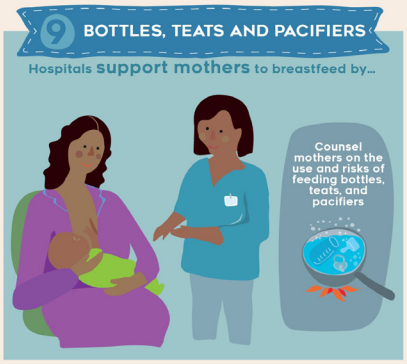


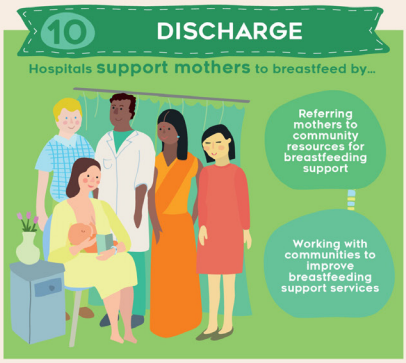












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