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Executive Summary

In 2019/20, Kids Operating Room developed a strategy to increase capacity for essential and emergency surgery for children in Sub-Saharan Africa. The strategy was developed with partners including the College of Surgeons of East, Central and Southern Africa and the West African College of Surgeons.

Expected to allow an estimated 750,000 children to access lifesaving or life-changing care that would otherwise have not been available to them, the strategy will:

- Invest in the installation of 132 dedicated Paediatric Operating Rooms
- Provide training scholarships to develop 86 new Paediatric Surgeons.
- Provide training scholarships to develop new Paediatric Anaesthesia Providers
- Develop an e-learning platform for everyone training in Paediatric Surgery and Paediatric Anaesthesia in the Africa region
- Use that e-learning platforms as a resource for practicing Surgeons and Anaesthesia providers to help improve quality of care across the continent.

This document analyses the planned activity across 40 countries in the region. Following detailed consultation with partners including Ministries of Health, Surgical Colleges, and front-line doctors, it sets out where each of these investments will be made to maximise their impact and achieve the greatest return on investment in terms of lives saved.

This plan will help increase co-operation across all teams and partners, ensure every activity ties back to our strategic plan and allows nations to plan for development knowing where infrastructure and people will be placed.

Our model, ethos, and approach here is to ensure that the local teams are equipped with the tools and skills required to provide sustainable local solutions. Our vision is for every child to have access to safe surgery when they need it. This action plan details how that vision will become a reality for children across the continent.
It is the product of intensive and extensive discussions and consultation by the constituent country paediatric surgery health workforce that helped us identify the gaps and opportunities to respond to each countries’ needs as much as possible. Focus was given to strengthening the paediatric surgical capacity through training and surgical equipment. The countries that were consulted are all the ECSA countries and the West African Countries, as listed below. The report also includes a brief situation analysis of each country to aid with an understanding of the existing internal factors that influence the development and implementation of a comprehensive paediatric surgery program such as: the percentage of the population who are children; where most of the population lives; the mortality rate of those under 5; the surgical health workforce; etc. The analysis guides our choice of hospitals where installation of dedicated paediatric Operating Rooms is most needed. Focus on public hospitals for us is also key. This is where we believe surgical costs are highly subsidized and where many children in low- and middle-income countries can access urgent help when needed. Investing in the public health service of a country is the action most likely to help bring care to the poorest children of that nation.

In addition, the report provides details on an additional investment of an e-learning platform for Paediatric Surgeons and Paediatric Anaesthesia providers to complement the existing training programs and for the continuous professional development of the Paediatric surgery workforce.

The completion of this strategy will save many thousands of lives. Sadly, every day delayed in completing the program of works costs innocent lives. This is especially so given the global pandemic that has emerged since the strategy was first drafted. With the program detailed for development, every effort must be made to secure the funds needed to allow implementation.
Background

There exists a global inequity in the burden of surgical conditions and the comparative access to surgical and anaesthetic care between high-income countries and low-income countries. The overall burden associated with surgical conditions is est. at 38% disability adjusted life years lost per 1000 population.

6.5% of the global burden of disease is amenable to surgery and today, 1.7 billion children globally do not have access to surgical care.

Africa has approximately 25% of the burden of the world’s diseases and only 1.3% of the world’s health workforce. According to the World Bank, sub-Saharan Africa has a population of 1.078 billion. It is estimated that 93% of people in Sub-Saharan Africa do not have access to safe, affordable surgical and anaesthesia care when needed. It is also estimated that 45-50% of the total population falls in the paediatric age range and 85% are expected to require a surgical intervention by age 15.

Access to surgical care is limited by many factors such as transportation, hospital infrastructure, limited surgical supplies, affordability, and inadequate number of surgical workforces in the region.

The challenge is even more prominent in providing paediatric surgery because in the region there exists a minimal number of specialists, lack of paediatric surgical equipment and dedicated operating rooms for children. The number of Paediatric Surgeons is limited with several countries not having one of them. Those that do exist persistently indicate that a major bottleneck for them to reach out to as many children as possible has been a lack of trained paediatric anaesthesia providers.

We know surgery is an effective and necessary response to a wide range of disease and health issues in children as varied as congenital abnormalities, trauma, infectious conditions, and childhood cancer, to name just a few. However, in this region children’s surgical needs have been neglected.

Lack of access to quality surgical services and care remains a major cause of mortality and morbidity among children, of which the majority are easily preventable.
When a country invests in surgery, then the outputs from healthcare programs are more successful and the best way is to take into consideration is children who are more than 50% of its population. We envision a region that makes surgery children centred healthy service delivery.

Kids Operating Room is committed to supporting countries scale up their paediatric surgical capacity to increase access to surgery as well as improve patient outcome. This is a crucial initiative in health systems strengthening that we envision will prevent 10 million years of disability from ever happening.

**Installation of Operating Rooms**

Installation of 132 Operating Rooms with the state-of-the-art equipment. The hospitals where the installation will be completed are listed under each country.

These country-by-country reports have been completed with the support of local surgeons and representatives of ministries of health of each nation. It is possible that, in a small number of cases, the specific hospital mentioned may change after physical surveys have been completed. However, the hospitals listed are the preference of the host nation and every effort will be made to carry out installations in these locations.

It should be noted that the choice of hospital is the sole responsibility of the MOH and the surgeons in each country through their respective paediatric societies or surgical association where none exists.

We shall continue to use our engineers to support hospitals after installation for general maintenance and will forge collaborations with hospitals through the Ministries of health to support training for maintenance of equipment through training local engineers. This will ensure sustainability.

**Education Grants**

During our assessment we noted that the surgical specialist gap is in each country. There isn’t a single country with sufficient paediatric surgical health work force and sadly the training programs are also limited. No country in Africa can
boast of the basic minimum number of specialists required, however, KidsOR will provide education grants to countries where none exists and in countries with barely a handful of paediatric surgeons. These are countries that are most fragile and without a strong paediatric surgery program. They are countries with serious need of help and are incredibly fragile. The priority of countries analysed in 6 categories as follows:

1. Those without a single paediatric surgeon. These are Burundi, Liberia, Guinea Bissau, Cape Verde, Botswana, Lesotho, Eswatini, Seychelles, Comoros, South Sudan, and Gambia.

2. Those with between 1-5 paediatric surgeons. These are: Tanzania, Malawi, Mozambique, Niger, Sierra Leon, Zimbabwe, Rwanda, and Namibia.

3. Those with between 6-10 paediatric surgeons. These are: Burkina Faso, Guinea Conakry, Mauritania, Zambia, Uganda, and DRC.

4. Those with between 11-20 paediatric surgeons. These are: Benin, Mali, Ghana, Senegal, Cameroon, Kenya, and Ethiopia.

5. Those with between 20- 99 paediatric surgeons – Sudan (23) and Cote d’Ivoire (40)

6. Those with over 100 paediatric surgeons- Nigeria

Our concerted effort will concentrate on countries in Category 1, 2 and 3 for this phase of the project. This is where we feel we will be most impactful.

A well-trained paediatric surgeon is a lifetime investment for us and for each country. We will ensure each very needy country benefits from this program. The average operations one paediatric surgeon in Africa can provide is about 400 each year. Two surgeons will provide an average of about 800 operations per year. This will have a huge impact in many years to come and is a permanent investment. Knowledge cannot be taken away. Our support will prioritize training through the collegiate system of learning offered by the regional colleges- COSECSA and WACS. For countries in the southern region for example Lesotho, Botswana and Eswatini it will make logical and economic sense to train through the College of Medicine of Southern Africa where applicable.

We will work with governments to sensitize them on the economic impact of investing in training more paediatric surgeons
at their own costs from the national budget. We will also attract partners that prioritize children’s health including surgery to invest in training local surgeons locally which will also enhance the retention rates for the countries.

We also did an analysis of the gap and need of specialised paediatric anaesthesia providers. The gap is humongous, the in the 34 countries we collected data from, there are only 34 specialised paediatric anaesthesia providers.

1. 23 Countries without any paediatric anaesthesia provider

2. 10 Countries with less than five - Nigeria 4, Mauritania 4, Zambia 2, Zimbabwe 3, Uganda 3, Ghana 1, Guinea Conakry 1, Senegal 2, Malawi 1, Tanzania 1

3. 1 country with more than 10 - Kenya (14)

The situation is severe, at the moment this is work in progress and we are exploring the best way we can make the most impactful intervention. We will continue to work on it.

Ultimately a collaborative approach with government, stakeholders and donors will produce maximum impact by exponentially creating and or increasing the number of specialists for each country.

**E-learning Platform**

Kids Operating Room will invest in a collaborative e-learning project with the Royal College of Surgeons of Ireland. It is recognised that e-learning resources work best when they support a particular training program, and the primary objective of this project is to produce an e-learning platform to support both colleges i.e., COSECSA and WACS training programs through a curriculum mapped on-line teaching resource.

The platform will also support existing Surgical and Anaesthetic teams who care for children; providing them with a resource to refresh knowledge and revise detailed procedures ahead of any operation.

We envision this platform will be used for continuous professional development in the future.
Individual Country Plans

This part analyses each country’s demographics, situation analysis of its paediatric surgical capacity and the proposed activities that KidsOR will undertake to support the creation where it does not exist or expansion of paediatric surgical capacity with the aim of ensuring that all children have equal access to surgery when they need it.

1. Angola

The Republic of Angola is a country on the west coast of Southern Africa. It is the seventh-largest country in Africa, bordered by Namibia to the south, the Democratic Republic of the Congo to the north, Zambia to the east, and the Atlantic Ocean to the west. The current population of Angola is 32,757,041 of which 48% is the paediatric age. Angola population is equivalent to 0.42% of the total world population. 66.7% of the population is urban (21,936,953 people).

Angola (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 53.4 and the under 5 mortality rates is at 70.3/1000.

Angola’s healthcare system is organized in three levels, corresponding to the administrative division of the country. While treatment at state hospitals and clinics comes at no cost, most of the population still has extremely limited access to medical care. Despite wealth derived from oil, gas, and diamonds, it is one of the poorest countries in the world. The country’s best hospitals are found in the capital city of Luanda.

The situation analysis of Paediatric surgery capacity is ongoing.
**what's the current situation in**


## Activities

### Installation of equipment

- 1 OR at the Lubango Hospital in Angola

### Education grants

- 3 paediatric surgeons trained.

## 2. Benin

Benin officially the Republic of Benin and formerly Dahomey, is a West African country bordered by Niger, Burkina Faso, Nigeria, and Togo. Despite its small size, Benin has an estimated 2020 population of 12.12 million. This makes it the 77th most populous country in the world. 48.4% of the population is urban (5,869,303 people in 2020). The most populous city is Cotonou, followed by Abomey Calavi.

The graph shows the population distribution by age.

### Benin (2020 population distribution by age group)

- **0-14 years**: 41.9%
- **15-24 years**: 19.9%
- **25-54 years**: 30.7%
- **55-64 years**: 4.2%
- **65 years and older**: 3.3%

The population of children is estimated at 5 million which is 41.94% of the population. The infant Mortality rate is 54.1/1000 live births. Deaths under the age of 5 are at 84.7/1000 live births.

Benin has one of the world’s highest death rates for children under five with little access to healthcare.
The public healthcare system in Benin consists of two pillars, the public and the private health care sector, both system parts are under the responsibility of the Ministry of Health (MoH). The medical infrastructure in Benin consists of a pyramid-shaped structure with five layers as illustrated below:

The country has 3 national referral hospitals, two are in Cotonou and one in Parakou. The whole country has 3 paediatric operating rooms; 1 in the general Teaching hospital Cotonou and 2 in The Mother and Children hospital Cotonou.

With regards to paediatric surgical capacity Benin has an estimated 10 paediatric surgeons. There is a specialty degree (DES) training for paediatric surgery which means that they do not need to move out of the country to train. The country has 30 physician anaesthetists and 200 non-physician anaesthetists.

**Activities**

**Installation of equipment**

- 1 Operating room at the Centre National Hospitalier Universitaire de Cotonou – CNHU
- 1 operating room General Teaching hospital Cotonou.
- 1 operating room in Parakou teaching and referral hospital.
- 2 Operating room Chumel in Centre Hospitalier Universitaire de la Mère
et de l’Enfant Lagune de Cotonou.

3. Botswana

Botswana is one of Africa’s landlocked countries, located in the south-west part of the continent. It is surrounded by four countries - Namibia to the west and north, South Africa to the south, Zimbabwe to the east, and shares a tiny section of its borders with Zambia in the northeast. Botswana population is estimated at 2,351,627 which is equivalent to 0.03% of the total world population. Botswana ranks number 145 in the list of countries (and dependencies). 72.8% of the population is urban. The population of children between 0-14 years is 32%.

Botswana (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 26.7 and the under 5 mortality rates is at 33.7 /1000.

Botswana has 26 hospitals spread across the country that are part of a three-tiered system overseen by the Ministry of Health. The first tier has 16 hospitals located in rural areas that each serve a maximum of 10,000 people. Each hospital has between 20 and 70 beds. The second tier is made up of seven district hospitals located in larger villages and cities. They have between 71 and 250 beds. The third tier has three referral-based hospitals.

There is consultant paediatric Surgeon at a private hospital it is estimated that he possibly has one more year to support and will go back to his country. There is no local paediatric surgeon in Botswana but two known to be in South Africa in training.

The country has few specialists; for all specialities not more than five in total for the
whole country. There are two residents in training in South-Africa who would possibly return if we would support them.

There are 13 theatres in the Teaching Hospital which sadly have not been operational. The Ministry and children of Botswana could benefit from our support and other partners to have the theatres functional.

**Activities**

**Installation of equipment**

- 1 OR at the Nyangabwe Hospital/ Sir Ketumile Teaching Hospital.
- 1 OR at the Princess Marina Hospital

**Education grants**

- 2 paediatric surgeons trained.

4. Burkina Faso

A landlocked sub-Saharan country, Burkina Faso is among the poorest countries in the world—44 percent of its population lives below the international poverty line of US$1.90 per day (UNICEF 2017). The current population of Burkina Faso is 20,664,051 with the highest population residing in Ouagadougou. The population of children is estimated at 44.4% of the country’s population. The graph below shows the population distribution.

**Burkina Faso (2020 population distribution by age group)**

The country has 9 paediatric surgeons in the country. 50 anaesthetists including clinician and nurse Anaesthetists. The whole country has no dedicated paediatric operating room, children share the theatre with adults.
and more often than not adults take preference. There is a functional paediatric association. Private practice has minimal paediatric cases.

Activities

Installation of equipment

- 3 Paediatric operating rooms at the Charles De Gaulle- Centre Hospitalier Universitaire in Ouagadougou
- 1 operating room at the CHU SOURO SANOU
- 1 operating room at the CHU de Tengadogo in the capital
- 1 OR Centre hospitalier regional de Ouahigouya

5. Burundi

Burundi is a small landlocked country in the African Great Lakes region in central Eastern Africa bordering Lake Tanganyika in southwest. The country shares borders with the Democratic Republic of the Congo, Rwanda, and Tanzania. The population is estimated at 11,890,784. Burundi population is equivalent to 0.15% of the total world population. She ranks number 78 in the list of countries (and dependencies) by population. 13.8% of the population is urban. The population of children between 0-14 years is 46%.

Burundi (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 36.7 and the under 5 mortality rates is at 54.1/1000.
There are 8 referral hospitals in Burundi, the busiest being Kamenge Military Hospital: University Teaching Hospital and Prince Regent Charles hospital. There is not a single paediatric surgeon for the whole country, the paediatric cases are seen by general surgeons and for complicated cases they are referred out of the country for those that can afford. There are about 10 anaesthetists and about 20 clinician and nurse anaesthetists.

**Activities**

**Installation of equipment**

- 1 operating room at the University Teaching Hospital
- 1 operating room at the Kamenge Military hospital.

These 2 facilities are the ones that handle specialized matters and that is where the specialists are.

*Note: The installation of the operating rooms will be dependent on the completion of studies and graduation of a paediatric surgeon for Burundi.*

**Education grants**

- 4 paediatric surgeons trained.

6. **Cameroon**

The Republic of Cameroon is a country in Central Africa. It is bordered by Nigeria to the west and north; Chad to the northeast; the Central African Republic to the east; and Equatorial Guinea, Gabon, and the Republic of the Congo to the south. The current population of Cameroon is 26,477,611 of which 42% is of the paediatric age. Cameroon population is equivalent to 0.34% of the total world population. 56.3% of the population is urban (14,941,523 people).

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**Cameroon (2020 population distribution by age group)**

- **42%** 0-14 years
- **20%** 15-24 years
- **31%**
The infant mortality rate per 1000 live births is 54 and the under 5 mortality rates is at 78.

The structure of the health system is in three levels - the university teaching hospitals, the regional hospitals and district hospitals. That is - the Central, intermediate, and peripheral level. However, there are two gynaeco-obstetric and paediatric hospitals (one in Douala and one in Yaoundé) with a paediatric surgery service. In the public sector hospitals, there is no operating room dedicated to children, all operating rooms are shared with adult and children. Cameroon has 12 paediatric surgeons currently. In Yaoundé, we have about 20 anaesthesiologists, No trained paediatric anaesthetists.

The Cameroon Paediatric Surgeons Association was created in 2019.

**Activities**

**Installation of equipment**

- 1 operating room at the Hospital Bethesda, Cameroon - March 2021
- 1 operating room at the Yaoundé Gynaeco-Obstetrics and paediatric hospital
- 1 operating room at the Bingo Baptist Hospital, mpingo.

**7. Cape Verde**

Cape Verde an island nation on an archipelago of volcanic origin in the Atlantic Ocean off the north western coast of Africa, about 600 km west of Senegal. Cape Verde has about 10 islands in it. The current population of Cabo Verde is 554,288. Cabo Verde population is equivalent to 0.01% of the total world population.

68.0 % of the population is urban. Of the total population in the country 31% is between 0-14 years.
The infant mortality rate per 1000 live births is 14.2 and the under 5 mortality rates is at 17.2.

Cape Verde has one of the best health status indicators for African Countries. The first experience of undergraduate medical education started in 2015 and there is been an evolution on medical education. The country lacks post-graduate medical training hence the absence of paediatric surgeons.

The public healthcare system in Cape Verde provides free access to hospital and medical clinics. Cape Verde does not have a single paediatric surgeon and no paediatric anaesthesia provider.

**Activities**

**Installation of equipment's**

- 1 OR at the Agostinho Neto hospital in Praia / Mandell hospital

**Education grants**

- 3 paediatric surgeons trained.

**Comoros**

The Comoros is a volcanic archipelago off Africa's east coast, in the warm Indian Ocean waters of the Mozambique Channel. The current population of Comoros is 869,500. Comoros population is equivalent to 0.01% of the total world population. 29.4 % of the population is urban (255,487 people in 2020). 39% of the total population is of children.
The infant mortality rate per 1000 live births is 48.7 and the under 5 mortality rates is at 63.2/1000.

A situation analysis of its paediatric surgical capacity is underway.

2022???

8. Côte d’Ivoire

The Ivory Coast and formally Côte d’Ivoire, officially the Republic of Côte d’Ivoire, is a country located on the south coast of West Africa. Ivory Coast’s political capital is Yamoussoukro in the centre of the country, while its economic capital and largest city is the port city of Abidjan. The current population of Côte d’Ivoire is 26.181 million. Côte d’Ivoire ranks number 53 in the list of countries (and dependencies) by population. 51.3 % of the population is urban. The population of children is about 12.9 million in Cote d’ivoire which is about 40% of the population.

Côte d’Ivoire (2020 population distribution by age group)
The infant mortality rate is 53.7 per 1000 live births and the mortality under five is 77.5 per 1000 live births.

The provision of health care in Côte d'Ivoire is dominated by the public sector, which is divided into three levels. The primary level is composed of sanitary institutions of first contact. The secondary level is composed of health facilities used for first referrals, which include general regional and specialized hospitals. The tertiary level is composed of health facilities used for the second referrals, such as teaching hospitals and specialized national institutes.

The country has 40 Paediatric surgeons, 140 anaesthesiologists with 0 anaesthesiologists specialised for paediatric surgery. There exists a paediatric surgery association. There are 3 teaching hospitals in Abidjan where more than half of the population resides. A newly established Children and Women Hospital by the First Lady has 3 paediatric dedicated operating rooms.

Activities

Installation of equipment

- 1 operating room at the Centre Hospitalier Et Universitaire De Treichville (oldest hospital that serves the large population of children)
- 1 operating room at the Central hospital of Bouaké.
- 1 operating room CHU de Cocody
- 1 operating room at CHU Yopougon

9. Democratic Republic of Congo (DRC)

The Democratic Republic of the Congo, also known as Congo-Kinshasa, DR Congo, DRC (the official acronym) is a country located in Central Africa. It was formerly called Zaire (1971–1997). It is, by area, the largest country in sub-Saharan Africa, the second largest in all of Africa and the 11th-largest in the world. The current population of the DR Congo is 89,518,210. The DR Congo population is equivalent to 1.15% of the total world population. The population density in the DR Congo is 40 per Km2 (102 people per mi2). 45.6 % of the population is urban. Of the total population, 41% is of 0-14 years of age.
Democratic Republic of Congo (2020 population distribution by age group)

<table>
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<th>Age Group</th>
<th>Percentage</th>
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<tr>
<td>0-14 years</td>
<td>41%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>21%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>31%</td>
</tr>
<tr>
<td>55-64 years</td>
<td>4%</td>
</tr>
<tr>
<td>65 years and older</td>
<td>3%</td>
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The infant mortality rate per 1000 live births is 58 and the under 5 mortality rates is at 91/1000.

The health system of the DRC is organized in three levels. Tertiary, Secondary and Primary. Population is huge with very poor facilities. DRC has an estimated 10 paediatric surgeons for 41% of its population and about 12 physician anaesthesiologists'. The number of anaesthesia providers is unknown.

Activities

Installation of equipment

- 1 OR at the Bethesda hospital, Goma
- 1 OR Cliniques Universitaires de Kinshasa/ Lubumbashi

Education grants

- 4 paediatric surgeons trained.

10. Eswatini (Swaziland)

Eswatini is a country in Southern Africa, lying between Mozambique and South Africa. The country is located at the geographic coordinates 26°30′S 31°30′E. The current population of the Kingdom of Eswatini is 1,160,167. Eswatini population is equivalent to 0.01% of the total world population. The population density in Eswatini is 67 per Km2 (175 people per mi2). The total land area is 17,200 Km2 (6,641 sq. miles). 30.0 % of the population is urban.
The infant mortality rate per 1000 live births is 35 and the under 5 mortality rates is at 46.1/1000.

The total number of hospitals in Swaziland is 8 (6 Government Hospitals and 2 Mission Hospitals), 3 of which are referral hospitals namely, Mbabane Government Hospital, Psychiatric Government Hospital and TB Hospital. There is only one referral hospital that offers general paediatric surgery to its greatest extent.

The country does not have a paediatric surgeon, nor paediatric anaesthesia provider which basically means that, and I quote ‘the children of Eswatini have to transported to South Africa for specialist service and care. Sometimes by the time they get there, which is a five-hour journey, by the time they are presented in hospital the prognosis is too poor to save the child from lifetime morbidity, sadly mortality also may occur’.

The best intervention will be to provide support training on paediatric surgery. After successful completion of training, equipping an Operating room once they have completed training.

Activities

Installation of equipment

- 1 operating Room at the Mbabane Government Hospital

Education grant

- 2 paediatric surgeons trained.
11. Ethiopia

Ethiopia is a landlocked country in the Horn of Africa. It shares borders with Eritrea to the north, Djibouti to the northeast, Somalia to the east, Kenya to the south, South Sudan to the west and Sudan to the northwest. The current population of Ethiopia is 114,138,982 which is equivalent to 1.47% of the total world population. 21.3% of the population is urban. Of the total population 43% is between the age of 0-14 years.

![Ethiopia (2020 population distribution by age group)](image)

The infant mortality rate per 1000 live births is 29.5 and the under 5 mortality rates is at 44/1000.

The health care levels are from the primary level to the tertiary level. Like all countries, tertiary-level hospital has highly specialized staff and technical equipment. However, as observed there is no focus on Children. Ethiopia has about 16 paediatric surgeons and an unknown number (2022??) of Anaesthesia providers.

Activities

Installation of equipment

- 1 operating room at the Menelik II Hospital
- 1 operating room at the Alert Hospital
- 1 operating rooms at the Bahirdar University Hospital- (this is because 2 of the KidsOR sponsored trainees will be deployed there at the end of the year. It is also the 2nd largest city after Addis.
- 1 operating room at the Yekatit 12, Ethiopia-Dec 2020
• 2 operating room at the Black Lion hospital.
• 1 operating room at the Jimma Hospital

**Education grants**

• 11 Paediatric surgeons trained.

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### 12. The Gambia

The Gambia is in western Africa. The Gambia is bordered by the Atlantic Ocean and Senegal to the north, east, and south. The current population of Gambia is 2,396,869. Gambia population is equivalent to 0.03% of the total world population. Gambia ranks number 144 in the list of countries (and dependencies) by population. 59.4% of the population is urban. The population of children is 37%.

**Gambia (2020 population distribution by age group)**

- 37% 0-14 years
- 20% 15-24 years
- 35% 25-54 years
- 4% 55-64 years
- 4% 65 years and older

The infant mortality rate per 1000 live births is 38.3 and the under 5 mortality rates is at 57.8.

Gambia has one referral hospital known as Edward Francis Small Teaching Hospital which has no single paediatric surgeon. However, there is a paediatric trainee who completes his training this September (Did he/she complete?) and possibility of installing an OR would be dependent to that.

As for Anaesthesia, there is a Cuban general anaesthetist supported by Gambian medical officers interested in anaesthesia and a couple of locally trained nurse anaesthetists. There are Two Gambian Doctor anaesthetists in training. Children’s Emergencies are done by general surgeons and medical
Activities

Installation of equipment

- 1 OR at the Edward Francis Small Teaching Hospital – Serves a population of 500K.

Education grants

- 2 paediatric surgeons trained.

13. Ghana

The republic of Ghana is a West African country. It is bordered by Cote d’Ivoire in the west, Burkina Faso in the north, Togo in the East and Gulf of Guinea in the south. It the eighty second largest country of the world. The current population of Ghana is 31 Million, which is equivalent to 0.4% of the total world population. 56.7 % of the population is urban.

Children aged between 0 and 14 years are estimated to be 38% of the total population.

The Graph below shows the population distribution by age.

Ghana (2020 population distribution by age group)
The infant mortality rate per 1000 live births is 30.8 and the under 5 mortality rates is at 44.7/1000

The estimated growth rate of Ghana’s population is 2.2% annually and is projected to reach 33 million in the next 10 years.

There are 5 Teaching Hospitals and 10 Regional Hospitals in the Country. In addition, there is a Military Hospital, Police Hospital and a Children’s Hospital. There are other smaller hospitals in the country. It is expected that the number of Regional Hospitals in Ghana will be increased to 16 over time since there has been a recent increase in the number of Regions in Ghana from 10 to 16.

Paediatric surgical services are provided in the Teaching Hospitals the Regional Hospitals and the Children’s hospital. Other hospitals provide limited services.

Ghana has 12 Paediatric Surgeons in Accra - 5 at the Korle-bu Teaching Hospital, 1 at the Accra Regional Hospital, 3 in Kumasi (Komfo-Anoye Teaching Hospital) and 3 in Tamale (Tamale Teaching Hospital).

There are 2 Paediatric Surgery Training centres that are projected to be able to train at least 9 trainees (3 at Komfo-Anoye Teaching Hospital, Kumasi and 6 at Korle-bu Teaching Hospital, Accra) at any point in time. Training interval is estimated at an average of 3 years after Membership.

There are however 3 theatre rooms at the Korle-bu Teaching Hospital, Accra and one at the Children’s Hospital, Accra which are used mainly for children. The suffer insufficient equipment’s for children’s surgery.

In other Teaching Hospitals, all Regional hospitals, and other hospitals, the children share theatres with adults.

There are about 130 trained Anaesthetists in the country. 1(one) has been trained as a Paediatric Anaesthetist.

**Activities**

**Installation of equipment**

- 2 operating rooms at Komfo-Anoye Teaching Hospital.
- 1 operating room at Tamale teaching Hospital.
- 1 operating room at the Korle-bu Teaching Hospital.
- 1 operating room at the Accra regional Hospital.
14. Guinea-Bissau

Guinea-Bissau is bordered by Senegal to the north and Guinea to the south and east, with the Atlantic Ocean to its west. The current population of Guinea-Bissau is 1,954,564. Guinea-Bissau population is equivalent to 0.03% of the total world population. Guinea-Bissau ranks number 150 in the list of countries (and dependencies) by population. 44.9 % of the population is urban. The population of 0-14 years is 44%

**Guinea-Bissau (2020 population distribution by age group)**

The infant mortality rate per 1000 live births is 50.3 and the under 5 mortality rates is at 72.8.

Guinea Bissau is one of the poorest countries in the world with the one of the highest maternal and child mortalities. here is no option for paediatric specialisation at university, this poses a great challenge. A lack of resources and qualified personnel, and the practical nonexistence of a referral system, limits children’s access to good quality healthcare services. The country does not have a single paediatric surgeon.

**Activities**

**Installation of equipment**

- 1 operating room operating rooms at the Simão Mendes National Hospital (HNSM)
- 1 operating room Bafata Regional Hospital

**Education grants**
• 2 paediatric surgeons trained.

15. Guinea Conakry

Guinea is a state in West Africa, lying on the coast of the Atlantic Ocean. The country is bordered by Guinea-Bissau, Senegal and Mali on the North, Ivory Coast on the east, Liberia, and Sierra Leone on the south. Guinea has the tenth shortest coastline in Africa.

The current population of Guinea is 13,028,150, which is equivalent to 0.17% of the total world population. 38.6% of the population is urban. The population of 0–14 years is 42% of the total population.

Guinea Conakry (2020 population distribution by age group)

Guinea currently has 8 Paediatric Surgeons all working in the capital Conakry, 10 Anaesthesiologists. Only 1 qualified technician in paediatric anaesthesia works full time in the department. Health care in Guinea follows a pyramid structure whose top is the university hospital centre (CHU). Two national public teaching hospitals (Donka and Ignace-Deen) form the CHU. On the national territory, there is only one paediatric surgery department (at Donka Hospital) and one unit within the general surgery department at Ignace-Deen Hospital. The only operating theatre dedicated to children is the one at Donka Hospital. This hospital has been under renovation since 2015. Currently, children are operated on in a simple operating room with basic equipment. Ignace Deen hospital is described as having dilapidated infrastructure, shortage of water, electricity etc.

Activities

Installation of equipment
• 1 Operating Room at the Donka University Teaching Hospitals/ Ignace Deen Hospital
• 1 Operating Room at CHU de Conakry

**Education grants**

2 paediatric surgeons trained.

### 16. Kenya

Kenya, a country in East Africa bordering the Indian Ocean in south east, neighbouring countries are Ethiopia, Somalia, South Sudan, Tanzania, and Uganda. Kenya population is estimated at 53,771,296, which is equivalent to 0.69% of the total world population. Kenya ranks number 27 in the list of countries (and dependencies) by population. 27.8% of the population is urban. 39% of the population of children.

**Kenya (2020 population distribution by age group)**

- **0-14 years**: 39%
- **15-24 years**: 20%
- **25-54 years**: 34%
- **55-64 years**: 4%
- **65 years and older**: 3%

*The infant mortality rate per 1000 live births is 30.6 and the under 5 mortality rates is at 40/1000.*

The public health system consists of the following levels of health facilities: national referral hospitals, provincial general hospitals, district hospitals, health centres, and dispensaries.

National referral hospitals are at the apex of the health care system. The two national referral hospitals are Kenyatta National Hospital in Nairobi and Moi Referral and Teaching Hospital in Eldoret.

Provincial hospitals act as referral hospitals to their district hospitals. They also provide very specialized care. The provincial level acts as an intermediary between the national central level and the districts. There are several private paediatric hospitals in the country.

There are 17 Paediatric surgeons in Kenya, 14 paediatric anaesthetists and
202 anaesthetists.

It should be noted that since KidsOR Africa Office is based in Kenya, presence should be highly felt and acknowledged in the country.

**Activities**

**Installation of equipment**

- 1 OR at Tenwek hospital
- 1 OR Kakuma Refugee Camp
- 1 OR with NOREB (Samburu, Turkana, Baringo West Pokot)
- 1 OR Meru Referral hospital
- 1 OR at Moi teaching and referral hospital- Eldoret
- 1 OR at the COAST general Hospital/ Nakuru Hospital
- 1 Operating Jaramongi Odinga referral hospital/ 
- 1 OR at the Kijabe Childrens Hospital
- 1 OR Makueni Referral hospital

**Education grants**

2 paediatric surgeons trained.

17. Lesotho

Lesotho, a high-altitude, landlocked kingdom encircled by South Africa, is crisscrossed by a network of rivers and mountain ranges. The current population of Lesotho is 2,142,274. 31.5 % of the population is urban (674,092 people in 2020).

**Lesotho (2020 population distribution by age group)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>0-14 years</td>
<td>32%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>19%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>38%</td>
</tr>
<tr>
<td>55+ years</td>
<td>5%</td>
</tr>
</tbody>
</table>
The infant mortality rate per 1000 live births is 50.5 and the under 5 mortality rates is at 71.2/1000.

The delivery of health services in Lesotho is done at three levels namely primary, secondary, and tertiary levels. There are 372 health facilities in Lesotho consisting of 1 referral hospital, 2 specialised hospitals, 18 district hospitals, 3 filter clinics, 188 health centres, 48 private surgeries, 66 nurse clinics and 46 pharmacies. Health centres are the first point of care and this is aimed at making the patient load at district and referral hospitals lighter.

Lesotho does not have a paediatric surgeon or a paediatric anaesthesia provider.

Activities

Installation of equipment

- 1 operating room at the Queen mamohato memorial hospital
- 1 operating room at the Scott hospital

Education grant

- 4 paediatric surgeons trained.

18. Liberia

Liberia is situated in West Africa, bordering the North Atlantic Ocean to the country’s southwest. The current population of Liberia is 5,023,350. Liberia population is equivalent to 0.06% of the total world population. 52.6 % of the population is urban. The population of children is 44%.
The infant mortality rate per 1000 live births is 46.9 and the under 5 mortality rates is at 64.3.

Liberia has 17 public referral hospitals in the country (3 located in Monrovia including the JFK MEDICAL CENTER, the teaching hospital. There is not a single general paediatric surgeon nor a paediatric anaesthesia provider in the whole country. None of the hospital has a dedicated operating room for children.

Activities

Installation of equipment

Most expedient, we send Liberian doctors to an established paediatric surgical specialist teaching institution in Africa preferably Nigeria to train and eventually return to form a faculty of paediatric surgery in the postgraduate college in Liberia and provide paediatric specialist services to Children.

Operating room

- 1 operating room in Monrovia - one of the teaching hospitals to be determined.

Education grant

- 4 paediatric surgeons trained.

19. Madagascar

The republic of Madagascar and previously known as the Malagasy Republic, is an island country in the Indian Ocean, approximately 400 kilometres (250 miles) off the coast of East Africa. The nation comprises the island of Madagascar (the fourth-largest island in the world) and numerous smaller peripheral islands. The current population of Madagascar is 27,617,161 of which 40% is the paediatric age. 38.5% of the population is urban (10,670,252 people)
The infant mortality rate per 1000 live births is 23 and the under 5 mortality rates is at 34.1/1000.

Madagascar had 3 levels of care- Tertiary, Secondary and Primary. The situation analysis of paediatric capacity in Madagascar is ongoing.

Activities

Installation of equipment

- 1 OR at Antisirabe Hospital
- 1 OR at CHU-JRA

Education grants

- 2 paediatric surgeons trained.

20. Malawi

Malawi is a landlocked country in south eastern Africa. It is bordered by Zambia to the west, Tanzania to the north and northeast, and Mozambique surrounding on the east, south and southwest. Malawi population is estimated at 19 M people Malawi population is equivalent to 0.25% of the total world population. Malawi ranks number 62 in the list of countries (and dependencies) by population. 18.5 % of the population is urban. Population of 0-14 years of age is 46%.
The infant mortality rate per 1000 live births is 32.6 and the under 5 mortality rates is at 43.7 /1000.

Malawi’s health system is organized at four levels namely: community, primary, secondary, and tertiary. These different levels are linked to each other through an established referral system. The tertiary level consists of central hospitals. They ideally provide specialist health services at regional level and provide referral services to district hospitals within their region. There are 4 referral hospitals in Malawi which serve a large population of children.

Malawi has 5 paediatric Surgeons, 6 general anaesthetists and 1 paediatric anaesthesia provider.

Activities

Installation of equipment

- 2 operating room at Queen Elizabeth Central Hospital in Blantyre – One at the main hospital and the other at the affiliated Mercy James Institute for paediatric surgery & intensive care
- 1 operating room Kamuzu Central Hospital in Lilongwe
- 1 operating room in Mzuzu Central Hospital – At the present moment the hospital has no paediatric surgeon. General surgeons attend to most of the cases. We will support training of 4 paediatric surgeons and seek commitment by the government to deploy at least 2 in this hospital.

Education grants

- 5 paediatric surgeons trained.

21. Mali

Mali is in western Africa. Mali is bordered by Senegal and Mauritania to the west, Algeria to the north, Niger to the east, and Burkina Faso, Guinea, and Cote D’Ivoire (Ivory Coast) to the south. The current population of Mali is 20,078,877.
Mali population is equivalent to 0.26% of the total world population.

44.0 % of the population is urban. Mali ranks number 60 in the list of countries (and dependencies) by population. The population of children is about 10.2 million which is about 50% of the population. Mali is one of the world’s poorest nations, is greatly affected by poverty, malnutrition, epidemics, and inadequate hygiene and sanitation. Mali’s health and development indicators rank among the worst in the world.

Mali (2020 population distribution by age group)

![Pie chart showing population distribution by age group.]

- 50% 0-14 years
- 18% 15-24 years
- 25% 25-54 years
- 4% 55-64 years
- 3% 65 years and older

The infant mortality rate is 57.2/ per 1000 live births and the mortality under five is 91.9/ per 1000 live births.

The Malian health care system is organized into a four-tier system. At the top are the three national hospitals, University hospital Point G, Gabriel Touré, and Kati who offer specialised care. However, even at these hospitals, there are many issues with overcrowding, a lack of up-to-date equipment, and insufficient medical supplies. At the second tier are the 7 regional hospitals. The regional hospitals also may have some advanced facilities, but generally, still lack equipment, supplies, and medicine.

Third tier is the regional hospitals supervise the Centre de Santé de Centre de Santé de Référence (CSREF, Referral Health Center), which can be found in each district. The fourth tier- The CSREF then look over the Centre de Santé Communautaire (CSCOM, Community Health Center), which acts as health care facilities at the community level. These centres only have basic medical care and are specialized in maternity and paediatric care.

Mali has 20 public hospitals that serve the whole population. 15 paediatric surgeons and 40 anaesthesiologists. The country has 2 operating Rooms dedicated for paediatric surgery.
Activities

Installation of equipment

- 1 operating rooms at the Hospital Gabriel Toure
- 1 OR at the Point G University Teaching Hospital, Bamako
- 1 OR at the University Teaching Hospitals in Kati
- 1 OR at the Mopti Hospital located in the Central of Mali.

22. Mauritius

Mauritius, island country in the Indian Ocean, located off the eastern coast of Africa. Physiographical, it is part of the Mascarene Islands. The capital is Port Louis. The current population of Mauritius is 1,271. Mauritius population is equivalent to 0.02% of the total world population. 40.8 % of the population is urban (519,330 people in 2020).

Mauritius (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 9.7 and the under 5 mortality rates is at 11.5 /1000.
Mauritius health care system is one of the best in Africa. The country records very few infant and under five deaths. It has increased its medical tourism in the region with specialist’s workforce as well infrastructure.

This would not be priority Installation since it is not a country in need, however there may be an opportunity to collaborate in advancing the paediatric centre of excellence. This option will be explored.

23. Mauritania
Mauritania is in Northern Africa. Mauritania is bordered by the Atlantic Ocean, Western Sahara and Algeria to the north, Mali to the east and south, and Senegal to the south.

The current population of Mauritania is 4,614,154. Mauritania population is equivalent to 0.06% of the total world population. 56.9% of the population is urban. The population of children is 38%.

### Mauritania (2020 population distribution by age group)

- **38%** 0-14 years
- **20%** 15-24 years
- **34%** 25-54 years
- **5%** 55-64 years
- **3%** 65 years and older

The infant mortality rate per 1000 live births is 48.2 and the under 5 mortality rates is at 71.2.

Health care consists of a central hospital in Nouakchott (The only teaching hospital), twelve regional hospitals, several health clinics, maternal and childcare centres, dispensaries, and mobile medical units to serve the countryside. All facilities have a shortage of equipment, supplies, and trained personnel.

There are 7 paediatric surgeons in Mauritania and approximately 20 anaesthesia providers and on 4 of them are experienced in paediatric anaesthesia. There is a Pédiatrique Surgery association (Société Mauritanienne de Chirurgie Pédiatrique SOMACP).

There is one teaching hospital but 3 other hospitals like Mother and Child Hospital receive medical students for training. There are 3 operating rooms (1 at my hospital and 2 at the Mother and Child Hospital) dedicated for paediatric age however they lack sufficient equipment.

The surgeons emphasized that a comprehensive paediatric surgery program for Mauritania should be structured around two components: - Continuous training: for paediatric surgeons, young anaesthesiologists, and equipment for operating rooms and paediatric resuscitation, particularly in paediatric endoscopy and laparoscopy equipment and anaesthesia machines, monitors
and oximeters suitable for new-borns.

Activities

Installation of equipment

- 1 operating room at the Nouakchott hospital
- 2 operating room at the women and children’s hospital.

Education grants

- 2 paediatric surgeons trained.

24. Mozambique

Mozambique officially the Republic of Mozambique, is a country located in Southern Africa bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west, Swaziland and South Africa to the southwest. The population is estimated at 31,255,435 people at mid-year which is equivalent to 0.4% of the total world population. Mozambique ranks number 46 in the list of countries (and dependencies) by population. 38.3% of the population lives in the urban areas (about 11,978,439). The population of 0-14 years is 45%.

Mozambique (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 44.9 and the under 5 mortality rates is at 61.1/1000.

There are 3 teaching hospitals in Mozambique and 11 referral hospitals in each province. There are 5 Paediatric Surgeons for the whole country and 31 anaesthesia providers. None of the hospitals has a dedicated paediatric
operating room, not in the public or private sector. The choice of the hospitals is based on the presence of paediatric surgeons as well as the population of children they serve.

Activities

Installation of equipment

- 1 OR at the Maputo Central Hospital
- 1 OR at the Beira Central Hospital
- 1 OR at the Nampula Central Hospital
- 1 OR Quelimane Central Hospital
- 1 OR Jose Macamo General Hospital

Education grant

- 4 Paediatric education grants

25. Namibia

Namibia is in southern Africa. The Atlantic Ocean, Angola to the north, Zambia, and Botswana to the east, and South Africa to the south, borders Namibia. Namibia population is equivalent to 0.03% of the total world population. Namibia ranks number 143 in the list of countries (and dependencies) by population. Population is estimated at 2,540,905 people. 55.2 % of the population is urban. Of the total population 37% is of between 0-14 years of age.

![Namibia population distribution by age group](image)

The infant mortality rate per 1000 live births is 32.6 and the under 5 mortality rates is at 43.7/1000.
Namibia has four tiers in the public health system: 1150 outreach points, 309 health centres, 34 district hospitals, and four intermediate and referral hospitals. The growing health care demands are complicated by a workforce shortage, as well as gaps in management capacity. Namibia currently two paediatric surgeons in the country, one solely in private practice, and the other under the state sector. Namibia has 26 registered Anaesthetic consultants. Only three solely in the state sector and the remaining 23 are all in private practice. There is no paediatric surgical society. The country does not have a single operating room dedicated for children. In public and private sectors have OR theatres built for adults primarily and children are accommodated in them.

Namibia is still in the rudimentary stages of trying to establish a paediatric surgical facility in the state sector. A primary concern is trying to get basic instruments for operating as well as building a surgical workforce team.

**Activities**

**Installation of equipment**

- 1 operating room at the Windhoek Central hospital to serve city.
- 1 operating room in Oshakati state hospital based in the northern region.

**Education grant**

- 2 paediatric surgeons trained.

**26. Niger**

Niger is a landlocked country in West Africa bordered by Libya to the northeast, Chad to the east, Nigeria to the south, Benin to the southwest, Burkina Faso and Mali to the north-west, Burkina Faso to the south-west, and Algeria to the northwest. The current population of Niger is 23,944,211. Niger population is equivalent to 0.31% of the total world population. Niger ranks number 56 in the list of countries (and dependencies) by population. 16.5% of the population is urban. 0-14 years take up 48% of the entire population.

**Niger (2020 population distribution by age group)**

![Population Distribution Chart]

- **48%** 0-14 years
- **19%** 15-24 years
The infant mortality rate per 1000 live births is 39.3 and under 5 mortality rates per 1000 is at 72.

The health system is organized in three levels, corresponding to the administrative division of the country. The health system is under-resourced. More than 50% of the population does not have access to health services. The quality of available health services and their coverage are both severely limited. Public health programmes are overstretched). The country has 6 national hospitals which are teaching hospitals. We have 2 paediatric surgery departments in the country, one in Niamey and the second recently created in Zinder (about 900 km east of Niamey. Only one operating room is dedicated to children in Niamey. In Zinder, the ORs is shared by both adults and children. There is a Paediatric Training program in Niamey.

Niger has 4 paediatric surgeons in the country - 3 in Niamey and 1 in Zinder. It has 15 anaesthesiologists, all of them do both adult and child anaesthesia. None of them are exclusively dedicated to paediatric anaesthesia. Niger has a paediatric association “Société Nigerienne de Chirurgie Pédiatrique (SONICHIR)”, created in 2019.

Activities

Installation of equipment

- 1 Operating Room at the National Lamorde Hospital, Niamey (make it a centre of excellence for paediatric surgery - this is the only training hospital for Paediatric surgery in the country.)
- 1 Operating Room at the CURE Hospital des Enfants au Niger
- 1 Operating Room at the Zinder National Hospital

Education grant
27. Nigeria

The Federal Republic of Nigeria is situated in the Western part of Africa. Its coastal boundary is delimited by the Gulf of Guinea in the south and the land boundary is shared by Cameroon and Chad in the east, Niger in the north and Benin in the west. Nigeria covers a total area of 923,768 sq. km. making it the thirty-second largest country of the world.

Abuja is Nigeria’s capital city and Lagos is its largest city. 52.0 % of the population lives in the urban areas. The population of children is 43% of the total population.

The infant mortality rate per 1000 live births is 54.7 and the under 5 mortality rates is at 90.2 which is alarming.

Nigeria is the most populated country in Africa. There are 6 geopolitical zones and the capital in the country and institutions are spread across this. They include the southwest (SW), southeast (SE), South (SS), North central (NC), northeast (NE) and north west (NW).

To fully understand the situation, 23 institutions filled the survey we administered- 16 teaching hospitals and 7 Federal medical centres that have the highest population. Each institution serves a population of between 3 to 40 million people. There 1-6 Paediatric Surgeons in each institution, each having between 1 to 4 residents. The paediatric surgery clinics receive 25 to 80
patients per week. Only 4 centres have a dedicated paediatric theatre. Only ten of these institutions have full accreditation for residency training in paediatric surgery others are partial. Only four institutions have a certified paediatric anaesthetists and training programs. A major surgery procedure to be done, takes 28 – 700 days from diagnosis to operative treatment. It takes about 7 to 200 days to get Herniotomy done depending on the institution. Herniotomy is the most common minor and day case surgery done for children. The centres each treat about 46 - 2,035 congenital anomalies, 20 – 300 surgical infective conditions, 9 - 365 patients from trauma and 3 – 50 tumours in a year. Other diseases that do not fall into these categories constitute about 10 – 1143 cases per year.

**Activities**

**Installation of equipment:**
- 2 ORs for Abuja National Hospital.
- 1 OR at the University of Abuja Teaching Hospital
- 1 OR Lagos University Teaching Hospital
- 1 OR Armed Forces Specialist Hospital, Kano/Aminu Kano University TH-
- 1 OR Federal Medical Center, Owerri.
- 1 OR at the National Orthopaedic Hospital, Enugu
- 1 OR University Teaching Hospital Ibadan - Serves a population of about 7M from Oyo, Osun, Ondo, Ekiti. Has 4 Ped surgeons.

**28. Rwanda**

Rwanda is in Central/Eastern Africa and is bordered by the Democratic Republic of the Congo to the west, Uganda to the north, Tanzania to the east, and Burundi to the south. It lies a few degrees south of the equator and is landlocked. Population is estimated at 12,952,218. Rwanda population is equivalent to 0.17% of the total world population. Rwanda ranks number 76 in the list of countries (and dependencies) by population. 17.6 % of the population is urban. Children between 0-14 years hold 41% of the country population.

**Rwanda (2020 population distribution by age group)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>41%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>19%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>33%</td>
</tr>
</tbody>
</table>
The infant mortality rate per 1000 live births is 22.6 and the under 5 mortality rates is at 29.8 /1000.

Rwanda’s health care system has National/tertiary referral hospitals, Provincial (referral and intermediary) and at the Peripheral level we have district hospitals, health care centres, health posts and community-based workers. The national referral and teaching hospitals provide tertiary care to the population and have specialist care. These are the King Faisal Hospital, Rwanda Military Hospital, Kigali University Teaching Hospital, Butare University Teaching Hospital and Ndera Neuropsychiatric Hospital. Intermediary level. Rwanda has 1 paediatric Surgeon, 28 anaesthesia providers of whom 3 are paediatric anaesthesia providers.

Activities

Installation of equipment

- 1 operating rooms at the CHUK hospitals- create a centre of excellence for paediatric surgery.
- 1 operating room at the Rwanda Military Hospital
- 1 operating room at the Butare University teaching hospital- dependent on deployment of more surgeons in the hospital
- I operating room at King Faisal Hospital

Education grant

- 4 Paediatric trainees

29. Senegal

Senegal is in western Africa. Senegal is bordered by the Atlantic Ocean, The Gambia to the north, west, and south, Mauritania to the north, Mali to the east, and Guinea and Guinea-Bissau to the south. The current population of Senegal is 16,614,517. This is equivalent to 0.21% of the total world population. 49.4% of the population is urban. The population of 0-14 years is 41%.
Senegal (2020 population distribution by age group)

- 41% 0-14 years
- 20% 15-24 years
- 32% 25-54 years
- 4% 55-64 years
- 3% 65 years and older

The infant mortality rate per 1000 live births is 26.4 and the under 5 mortality rates is at 36.1.

Senegal’s health system is pyramidal, with three main parts: a central level, a regional level, and a peripheral level. The central level contains the minister’s office, branches, and related services. The regional level is known as the “medical region”, an administrative region that addresses healthcare services within a given region. The peripheral level is known as the “health district”, with each district having at least one health centre and a network of smaller centres.

Overall, the country records 17 paediatric surgeons, 13 are based in Dakar. 107 anaesthesiologists are listed in the country and only 2 are specialized in paediatrics. Senegal has a paediatric surgery society called SOSECHIP (Société Senegalese de Chirurgie Pédiatrique/Senegalese Society of Paediatric Surgery) since 2016. Considering the functional settings, Senegal accounts 31 hospitals, including 9 teaching hospitals and 76 referral health posts. The country has two public children’s hospitals. Each of them contains an operating theatre with 5 and 4 rooms, respectively. The major problem with paediatric surgery in this country is the lack of sub-specialization and suitable equipment for children.

Activities

Installation of equipment

- 1 operating room Hôpital Général de Grand Yoff
- 1 Operating room at Aristide Le Dante Hospital.
- 1 Operating room at Saint Louise Hospital
- 1 Operating room at the Ziginchor hospital

30. Seychelles

Seychelles, officially the Republic of, is an archipelagic island country in the Indian Ocean at the eastern edge of the Somali Sea. It consists of 115 islands. Its capital and largest city is Victoria. The current population of Seychelles is 98,348. 56.2% of the population is urban (55,308 people in 2020). The children’s population is 13% of the total population.

![Seychelles (2020 population distribution by age group)](image)

The infant mortality rate per 1000 live births is 9.9 and the under 5 mortality rates is at 12.6 /1000.

Health care is mainly provided by the Seychelles Government. The country has a three-tier health care system. A youth health centre and 16 district health centres located throughout the country provide primary-level care (2009). There is one central referral hospital at the tertiary level, Seychelles Hospital, and five hospitals (including a mental and a rehabilitative hospital) at the secondary level. Highly specialised treatment takes place overseas, with the government providing most of the funding. The Government of Seychelles provides free primary health service to the entire population, from cradle to grave, and has very strong policies and programmes for early childhood, children, youth and the elderly. The Seychelles children’s population is small the infant and under five mortality is minimal. The three most prominent known causes of death for children below the age of five years were prematurity, congenital anomalies many of which require surgery and birth asphyxia. A situation analysis of the of paediatric surgical capacity is underway.

Activities
Installation of equipment

- 1 operating room at the Victoria hospital/Mont fleuri Hospital/ Seychelles Family Hospital

Education grant

- 1 paediatric surgeon trained.

31. Sierra Leone

Sierra Leone is a country on the southwest coast of West Africa. It is bordered by Liberia to the southeast and Guinea to the northeast. The current population of Sierra Leone is 7,930,001. Sierra Leone population is equivalent to 0.1% of the total world population. Sierra Leone ranks number 103 in the list of countries (and dependencies) by population. 43.3 % of the population is urban. 0-14 years population is 42%.

Sierra Leone (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 70.1 and the under 5 mortality rates is at 96.3 which is alarming.

The health care structure is in 3 levels- Tertiary, Secondary and Primary. There are also mission and private hospitals like other Western African Countries. There are six primary teaching hospitals in the University of Sierra Leone Teaching Hospitals Complex (USLTHC), and five hospitals affiliated to the USLTHC. Sierra Leone has 1 Paediatric Surgeon who is clearly overwhelmed. There are two anaesthesiologists and several non-physician anaesthetists. Most of the paediatric anaesthesia is provided by non-Physician Anaesthetists backed up by the Anaesthesiologists Makeni, Kenema, Bo and Port Loko
Regional Hospitals because they are the secondary hospitals serving the North, East, South and North-West regions respectively outside Freetown which is found in the Western area. Makeni is almost in the centre of the country and more easily accessible to most of the regions- Both Hospitals a strategic choice to support paediatric surgery.

Activities
Installation of equipment
- 1 Operating room at the Connaught Hospital
- 1 Operating Room at the Makeni, Kenema regional Hospital
- 1 Operating room at the Bo and Port Loko

Education grants
- 3 paediatric surgeons trained.

32. Somalia

Somalia, officially the Federal Republic of Somalia is a sovereign country in the Horn of Africa. It is bordered by Ethiopia to the west, Djibouti to the northwest, the Gulf of Aden to the north, the Indian Ocean to the east, and Kenya to the southwest. The current population of Somalia is 16,078,950. The capital city is Mogadishu. Somalia population is equivalent to 0.2% of the total world population. The population density in Somalia is 25 per Km² (66 people per mi²). The total land area is 627,340 Km² (242,217 sq. miles) 46.8 % of the population is urban. The median age in Somalia is 16.7 years. 42% of the population is of the pediatric age(0-14 years).

Somalia (2020 population distribution by age group)
The infant mortality rate per 1000 live births is 89.5 and the under 5 mortality rates is at 117/1000

Somalia does not have a pediatric surgeon and no trained pediatric anesthesia provider for its children.
There is a Turkish run hospital that brings Pediatric Surgeons from overseas as consultants for short period.
The country has no pediatric surgery training program,

Installation of Operating Room
- Banadir Hospital which is a mother and child hospital public hospital.

Education Grants
- 2 Pediatric surgeons trained.

33. Somaliland

Officially the Republic of Somaliland, is a self-declared country, internationally considered to be part of Somalia. Somaliland lies in northwestern Somalia, on the southern coast of the Gulf of Aden. The remainder of Somalia to the east, Djibouti to the northwest, and Ethiopia to the south and west borders it.

The capital and largest city is Hargeisa. Its territory has an area of 176,120 square kilometers (68,000 sq. mi). Population of Somaliland is estimated 4.5 million - 5 million people. The population is demographically very young, nearly two-thirds (61 percent) of Somaliland population is aged less than 20 years and around three-quarters (74 percent) aged below 30 years. 48% of the population is below the age of 15. 7% of children aged less than 2 years have their birth registered. The ideal number of children in every household is 8.

Somaliland (2020 population distribution by age group)
The infant mortality rate per 1000 live births is 89.5 and the under 5 mortality rates is at 117 /1000.

The country has 1 Syrian Surgeon who just got contracted in 2020. There is no local pediatric Surgeon for the whole country. There is no Pediatric ICU in the whole country either.

There are 5 anesthesiologists in Somaliland - 2 foreigners who work in the private hospitals. The remaining 3 locals are not in practice. They serve as deans.

However, there are about 50 anesthesia providers in the cadre of registered nurses. 10 of them anesthetize pediatric patients through observation and practice and not training.

The country does not have a pediatric surgery training program. In fact, they have only one postgraduate general surgery training program which is just a year old.

The training program is with Hargeisa University collaborating with Turkish Medinet.

Installation of Operating Rooms

- 1 OR at the National Referral teaching Hospital

Education Grant

- 2 Paediatric Surgeons trained

34. South Sudan

South Sudan is in north-eastern Africa. South Sudan is bordered by Sudan to the north, Central African Republic to the west, Democratic Republic of the Congo, Uganda, and Kenya to the south, and Ethiopia to the east. Population is estimated at 11,193,725, which is equivalent to 0.14% of the total world population. The country ranks number 84 in the list of countries (and
dependencies) by population. 24.6% of the population is urban. This means most of the population is in remote areas, where access to facilities, infrastructure may be a challenge. The population of children is 42% of the entire population.

South Sudan (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 58.6 and the under 5 mortality rates is at 89.8/1000 which is alarming.

South Sudan does not have a paediatric surgeon, however though there are some doctors undergoing training in Khartoum. Paediatric surgical cases are managed by general surgeons. There is one children’s hospital for the whole country.

Activities

Installation of equipment

1 operating room at the Juba Central hospital OR Alsaba Children’s hospital

Dependent on completion of studies of those in Khartoum training as well as the location of their deployment however if installed earlier it will be the paediatric centre of excellence/hub for visiting fellows who would build capacity of those general surgeons that do paediatric cases.

Education grants

- 4 paediatric surgeons trained.

35. Sudan

Sudan is in East Central Africa. It is bordered by Egypt to the north, the Red Sea to the northeast, Eritrea and Ethiopia to the east, South Sudan to the
south, the Central African Republic to the southwest, and Chad to the west and Libya to the northwest. The population is estimated at 43,849,260 which is equivalent to 0.56% of the total world population and ranks number 34 in the list of countries (and dependencies) by population. 35.0% of the population is urban. The population of children takes up 42%.

**Sudan (2020 population distribution by age group)**

![Population Distribution Chart]

The infant mortality rate per 1000 live births is 38 and the under 5 mortality rates is at 56.9 /1000.

The country has well established healthcare system with many drawbacks mainly due to economic and managerial reasons followed by prolonged political instability and sanctions. The health services provided in Sudan follow the classical three basic arrangements, primary, secondary, tertiary health care.

Sudan has an estimated 23 paediatric surgeons and many anaesthesia providers. We would make the most impact by supporting the system with equipment for children’s surgery. The Khartoum North teaching hospital is known for its paediatric surgery training excellence.

**Activities**

**Installation of equipment's**

- 1 operating room at the National Centre for Paediatric Surgery in Wadmedani
- 1 operating room at the Gazera State Omdrman Teaching Hospital

36. Tanzania
Situated in East Africa just south of the equator, mainland Tanzania lies between the area of the great lakes—Victoria, Tanganyika, and Malawi. The current population of the United Republic of Tanzania is 59,237,629 which is equivalent 0.77% of the total world population. 37.0 % of the population is urban and 43% of its total population is of children between 0-14 years.

### Tanzania (2020 population distribution by age group)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>43%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>20%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>30%</td>
</tr>
<tr>
<td>55-64 years</td>
<td>4%</td>
</tr>
<tr>
<td>65 years and older</td>
<td>3%</td>
</tr>
</tbody>
</table>

The infant mortality rate per 1000 live births is 34.2 and the under 5 mortality rates is at 47/1000.

Tanzania has a hierarchical health system which is in tandem with the political-every village where the village leaders have a direct influence on its running. The health centres are found at ward level and the health centre in charge is answerable to the ward leaders. At the district, there is a district hospital and at the regional level a regional referral hospital. The tertiary level is usually the zone hospitals and at a national level, there is the national hospital. There are also some specialized hospitals that do not fit directly into this hierarchy and therefore are directly linked to the ministry of health. Tanzania has 5 Paediatric surgeons, 1 paediatric anaesthesia and 56 anaesthesia providers.

### Activities

#### Installation of equipment

- 1 operating rooms at the Muhimbili National Hospital
- 1 operating room at the Bugando Hospital
- 1 Operating room at the Mbeya referral Hospital
- 1 Operating room at the Huruma mission hospital in Rombo/ Kilimanjaro
Christian Medical Center

- 2 Operating rooms ECSA- CHS tertiary care teaching hospital (dependent on the construction and completion of hospital)

**Education grants**

- 4 paediatric surgeons trained.

### 37. Togo

Togo is a country in West Africa bordered by Ghana to the west, Benin to the east and Burkina Faso to the north. The country extends south to the Gulf of Guinea, where its capital Lomé is located. The current population of Togo is 8,222,165. Togo population is equivalent to 0.11% of the total world population. Togo ranks number 102 in the list of countries (and dependencies) by population. 43.3 % of the population is urban. 0-14 years population is 40%.

**Togo (2020 population distribution by age group)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>40%</td>
</tr>
<tr>
<td>15-24 years</td>
<td>19%</td>
</tr>
<tr>
<td>25-54 years</td>
<td>33%</td>
</tr>
<tr>
<td>55-64 years</td>
<td>4%</td>
</tr>
<tr>
<td>65 years and older</td>
<td>4%</td>
</tr>
</tbody>
</table>

The infant mortality rate per 1000 live births is 43.2 and under 5 mortality rates is 65.6/1000

Togo has 5 regions (Maritime, Plateaux, Centrale, Kara and Savane) and approximately the half of the population lives in Maritime Region. Togo has 6 paediatric surgeons (1) one has retired. 5 are active. 5 of the 6 paediatric surgeons are in Maritime Region. One paediatric surgeon is in Region of Kara. The three other regions have no paediatric surgeons.

There are 10 anaesthesiologists in Togo (in official and private centres) and none specialised in paediatric anaesthesia. The establishment of a Paediatric Surgery Association is in the making.

The CHU Sylvanus Olympio and the CHU Campus have paediatric surgery
departments. These two departments are the most significant in Togo for children. Each of them receives in duty, 20 to 40 patients in a week. In ordinary consultations, each of them receives 40 to 60 patients in a week. These two departments have accreditation for residency training in paediatric surgery.

Only, CHU Campus had two dedicated theatres for paediatric surgery created in 2016, one equipped with basic equipment and the other still waiting to be equipped for key equipment’s be operational. The only functional dedicated theatre is now shared with adult traumatology since 2018. The University of Lomé is the only one who has residency training program in paediatric surgery. Currently, 10 residents are in training and among them, 4 are Togolese. The rest come from other francophone countries of Africa (Cameroun, RD Congo)

**Activities**

**Installation of equipment**
- 1 operating room at the Lomé Teaching hospital
- 1 Operating room at the Opera University Hospital Sylvanus Olimpio (largest hospital in Togo)

**Education grant**
- 2 paediatric surgeons trained.

**38. Uganda**

Uganda is a landlocked country in East-Central Africa. It is bordered to the east by Kenya, to the north by South Sudan, to the west by the Democratic Republic of the Congo, to the south-west by Rwanda, and to the south by Tanzania.

The current population of Uganda is 45,316,592. Uganda population is equivalent to 0.59% of the total world population. Uganda ranks number 31 in the list of countries (and dependencies) by population. 25.7 % of the population is urban. 47% of the population is of children between 0-14 years of age.
Uganda (2020 population distribution by age group)

- 47% 0-14 years
- 21% 15-24 years
- 26% 25-54 years
- 3% 55-64 years
- 3% 65 years and older

The infant mortality rate per 1000 live births is 39.2 and the under 5 mortality rates is at 53.3/1000.

Uganda runs a decentralized health system with national and district levels. At the national level are the national referral hospitals, regional referral hospitals, and semi-autonomous institutions including the Uganda Blood Transfusion Services. National referral hospitals are at the apex of the health care system similar to all the other countries. These are Mulago and Butabika (mental) national referral hospitals. Regional referral hospitals are 14 representing different regions.

Uganda has 8 paediatric Surgeons. 90 physician anaesthesiologists, 2 paediatric aesthesia providers.

Activities

Installation of equipment

- 3 ORs at the Mulago hospital- in Kampala. It is a National referral hospital for all complex cases.
- 1 OR at the Naguru hospital- in Kampala
- 1 OR at the Mbarara Hospital- Western region serves 6 districts and is the teaching hospital for Mbarara University.
- 1 OR at the CORSU Hospital

Education grants

- 2 paediatric surgeons trained.
39. Zambia

Zambia lies in a central position in southern Africa surrounded by several countries. It is a landlocked country between Angola in the west, Namibia, Botswana, and Zimbabwe in the south, Mozambique, Malawi and Tanzania in the east, and the Democratic Republic of Congo in the north. Zambia’s population is estimated at 18,383,955 which is equivalent to 0.24% of the total world population. Zambia ranks number 65 in the list of countries (and dependencies) by population. 45.3% of the population is urban. The country has a relatively huge number of children with 45% of its population falling between 0-14 years.

Zambia (2020 population distribution by age group)

- 45% 0-14 years
- 20% 15-24 years
- 28% 25-54 years
- 3% 55-64 years
- 4% 65 years and older

The infant mortality rate per 1000 live births is 39.4 and the under 5 mortality rates are at 52.4/1000.

Health systems in Zambia are classified into three major categories: First Level comprising of Health Posts, Rural Health Centre, and District Hospitals, where primary health care and preventive health services are provided. Second Level comprising the provincial and general hospitals, which provide the curative care. Tertiary level comprising Central hospital and the National University teaching Hospital that provide specialized care. Zambia has 6 paediatric surgeons and 42 anaesthesia providers of which 4 are paediatric anaesthetists.

Activities

Installation of equipment

- 3 operating rooms at the University teaching hospital in Lusaka
- 3 operating rooms at the Arthur Children’s Hospital in Ndola
• 1 operating room at Kitwe Central Hospital - The only government run hospital in the second largest city in Zambia, cares for mostly poor people from the compounds/townships.

• 1 OR at Chipata Hospital/1 Operating room at the Livingstone hospital

Education grants

• 2 paediatric surgeons trained.

40. Zimbabwe

Zimbabwe, officially the Republic of Zimbabwe, formerly Rhodesia, island locked country located in Southern Africa, between the Zambezi and Limpopo Rivers, bordered by South Africa, Botswana, Zambia, and Mozambique. Population is estimated at 14,862,924 people at mid-year according to UN data. Zimbabwe population is equivalent to 0.19% of the total world population. And ranks number 74 in the list of countries (and dependencies) by population. 38.4 % of the population is urban. 0-14 years of age take up 39% of the total population of the country.

Zimbabwe (2020 population distribution by age group)

The infant mortality rate per 1000 live births is 34.1 and the under 5 mortality rates is at 45.1 /1000.

The health system structure is divided into 4 levels of Care - (National level), Tertiary (provincial level), Secondary (district level) and Primary (village/ ward level). The referral/Central hospitals are 6 that offer specialists care. The major cities that serve a huge population of children cases are Harare, Bulawayo, Mutare and Gweru. Zimbabwe has 5 paediatric surgeons, 73 physician anaesthetists, 3 paediatric anaesthetists, 4 Diploma anaesthetists, 300 nurse anaesthetists.
Activities

Installation of equipment

- 1 operating room at the Mpilo Central hospital in Bulawayo
- 1 operating room at the Bulawayo Orthopaedic Hospital
- 1 operating room at the United Bulawayo hospital
- 1 Operating room at the Parirenyatwa hospital/Harare Central hospital

Education grants

- 3 paediatric surgeons trained.

Other Activities

- We will develop a partner’s framework to define our levels of engagement that will be most impactful to our work. This will include regional blocs, MOH, academic institutions, surgery and anaesthesia associations, hospitals, local surgeons and anaesthesia providers and champions for our cause.
- Establish a regional group of advisors from the sub-Saharan region to provide strategic advice on projects.
- Increase collaboration with the paediatric fraternity—All paediatric surgery/anaesthesia associations/societies through which the selection of the education grants will be done and where they do not exist through the local paediatric surgeons/anaesthesia providers in the country.
- We plan to provide a platform for Continuous professional development for the paediatric surgical workforce. This will support the administration of the e-learning platform.
- We shall explore ways of having a group of local bio-medical engineers trained to serve the region when and as need arises.
- We shall develop a communication strategy to keep our partners engaged and to maintain our visibility in the region.

Requests from Countries

- Majority of the countries asked for an equipped paediatric intensive care unit to accompany the OR.
• Assumptions and Risks

• A full risk assessment of the strategy has been developed and remains a live document as the project progresses.