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Rural Medical and Surgical Outreach Mission: Experience of International College of Surgeons (The Nigerian National Section)

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Nigeria lacks an equitable healthcare system. Low earnings characterize the income in rural areas where 55% of Nigerians who cannot afford basic medical care live. An organized rural medical and surgical outreach program can augment the formal healthcare system.

Objective: To key into the International College of Surgeons Humanitarian Surgery Program by providing surgical specialists through collaboration to a sustainable free medical and surgical program.

Methodology: International College of Surgeons (The Nigerian National Section), Imo State zone collaborated with Mbano National Assembly Inc. USA to do a Free Medical and Rural Surgical Outreach Mission at Mbano Joint Hospital March 14–18, 2016. Personnel to cover the clinical and nonclinical areas were recruited by the zonal branch of International College of Surgeons. Mbano National Assembly funded the project with $22,963.83.

Results: Some 5028 patients attended. Of these, 2900 received attention, 800 medical, 512 surgical and urology, 262 obstetrics and gynecology, 270 pediatrics, 800 ophthalmic, and 500 received counseling, while 1500 received health education and 25, physiotherapy. Screening for prostate cancer was done for 146, 200 for human immunodeficiency virus and 110 for Hepatitis B virus. Surgical procedures on 88 patients, 1193 outpatient pharmacy dispensing, and 31 in-patients were recorded.

Conclusion: Collaboration between sections of International College of Surgeons and non-governmental organizations already involved in rural free medical missions is feasible.

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Nigeria lacks standard uniform healthcare.[1,2] The population of Nigeria has been projected to about 152.2 million in 2010[3] and 185.9 million in 2016,[4] respectively. About 51.7% reside in the rural areas[4] where the predominant occupations of subsistence farming, livestock activities, and low-level civil service characterized by low earnings are the sources of income. More than 55% of Nigerians who live in poverty[3] dwell in rural areas where healthcare facility are deficient.[1,2,5] Mbano, comprised of 2 local government areas (Isiala-Mbano and Ehime-Mbano) is rural.

The National Health Insurance Scheme (NHIS) in Nigeria is yet to satisfy its objective of providing comprehensive and accessible healthcare for all. The matter is complicated by incessant strike actions, corruption, ineffective clinical leadership, irregular power and water supply, and "brain drain." It is believed that the formal health sector has almost collapsed in Nigeria.[6]

Free medical missions have been used over the years to extend quality healthcare services to underserved communities.[7,8] Non-governmental organizations (NGOs) undertaking free medical missions rely on volunteers for specialists. Collaboration with a professional organization as International College of Surgeons will assure availability of surgical specialists. Vanderwielen *et al* working in the United States of America (USA) and Honduras have discussed the benefits of such collaboration.[8,9]

This report aims to share experience in the role of International College of Surgeons (ICS; the Nigerian National Section) working in collaboration with a non-governmental organization (NGO) in a medical and rural surgical outreach mission.

Materials and Method

The Imo State Zone of the ICS (the Nigerian National Section) collaborated with Mbano National Assembly Inc. USA (MNA USA INC.), a NGO to carry out a 5-day free medical and rural surgical outreach mission in Mbano, Imo State, Nigeria, March 14–18, 2016. The NGO funded the mission.

A centrally located Mbano Joint Hospital (MJH) in the area was selected for ease of administration and accessibility. MJH has space for triage, outpatient department, 128 beds, laboratory with blood transfusion service, X-ray, ultrasound, pharmacy, operating theater, trained staff nurses/midwives, and 2 resident medical officers.

An organizing team led by a fellow of ICS was formed to articulate requirements and organize implementation. The team included local and USA-based participants. Meetings were held regularly. An organogram was drawn (Fig. 1), and human and material resource requirements were determined. Detailed cash-backed budget (Table 1) and a program of a timetable specifying day-to-day activities were prepared. The mission's basic targets were:

- Work starts by 7 AM and ends by 4 PM.
- Minimum of 10 surgeries per day
- Resource persons were to board the bus by 6.30 am for going to the hospital and 4.30 pm for departure from MJH.

Publicity and sensitization were carried out through the churches, traditional rulers, and town unions.

Table 2 shows the volunteer participants enlisted 4 months to the commencement of the mission. The base hospital provided furniture and water. Custom-made consultation cards containing a consent statement for investigation and treatment were provided. Investigations and treatment were explained to all patients and their relations in vernacular and English language before obtaining informed consents for interventions and this study. Writing materials, office accessories, and 2 laptop computers were provided for a functional secretariat. Crowd control was maintained from 7 AM to 4 PM.

Arrangements were made with Federal Medical Center Owerri in Nigeria and Six-C Specialist Clinic, Owerri to accept referrals from the mission.

Standard of practice was planned to be comparable to any standard specialist care. The principle of first come, first served was ensured at every service point. Clinical subspecialty clinics and health-related initiatives posts were created with screens.

Patients were triaged and sent to respective clinical and disease screening sections in line with their complaints and objectives of coming. Patients for screening received counseling. Physiotherapy was performed according to doctors' recommenda-

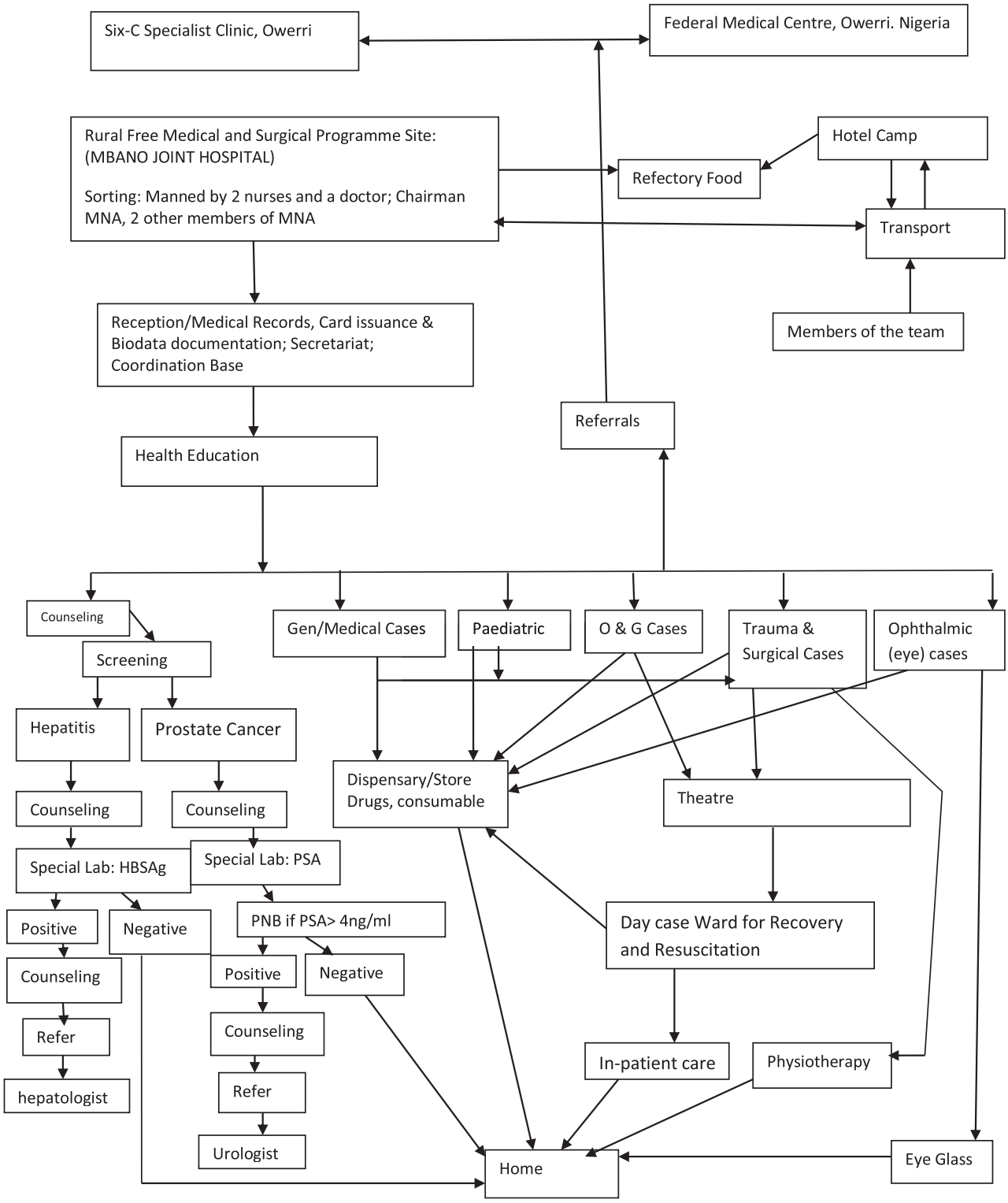

Fig. 1 The organogram.

Table 1 Budget in Naira currency with equivalent in US dollars, March 2016

SNO	Item description	Naira value (N)	Dollar equivalent $	Percent (%)
1	Accommodation	743,285	2,437.00	10.6
2	Secretarial: stationary, communications, clinical illustration	98,300	322.3	1.4
3	Standby electric-generating plant	150,000	491.80	2.0
4	Theater needs: Anesthesia, scrubs, laundry, equipment hire	370,000	1,213.13	5.3
5	Feeding	769,000	2,521.31	11.0
6	Transportation: crew, freight	351,000.1	1,150.82	5.0
7	Medications and consumables	2,505,382.05	8,214.37	35.8
8	Eye glasses: grafting/production	450,000	1,475.41	6.4
9	Motivational allowance to volunteers	905,000	2,967.21	13.0
10	Security: State police, community vigilante	412,000	1,350.82	5.9
11	Support to base hospital	250,000	819.67	3.6
	Total	7,003,968.15	22,963.83	100

tions. Surgical operations were performed in the theater.

Electric generator, patient monitors, anesthetic machines, and diathermy were leased. Head lights providing 100 lumens of brilliant beam were used to augment illumination from the locally fabricated overhead operating lamp.

This program is anticipated to be carried out yearly.

Results

The clinical performance is summarized in Table 3. Some 5028 who attended were given numbers systematically. Only 2900 were issued cards and received consultation or a form of health-related initiative intervention. Among the cases were 800 medical, 800 ophthalmic, 512 surgical and urologic, 262 obstetrics and gynecologic, and 270 pediatrics. Counseling was given to 500 patients, while 25 patients received physiotherapy. Screening of 146 men for prostate cancer, 200 persons for human immunodeficiency virus (HIV), and 110 persons for Hepatitis B virus infection was done. Surgical procedures were performed on 88 patients (Table 4), while 1193 outpatient pharmacy dispensing, 39 referrals, and 31 inpatient care were recorded. The total number of these clinical activities made up the 2900 patients seen. The remaining 2128 patients were advised to seek medical attention elsewhere or wait for the next medical mission in 2017.

The age range was 2.5 to 80 years. The number of procedures recorded was 91, including 3 children who underwent bilateral herniotomies. Digital guided Tru-cut needle prostate biopsy topped the list with 25 cases (27.5%), followed by 22 (24.2%) herniotomies. Pediatric surgical problems were given priority and congenital inguinal hernias were common. An experienced senior registrar in pediatric surgery among the 3 senior registrars (Table 2) worked with the general surgeons and urologist in these pediatric surgical cases. Conscious sedation analgesia was used in 25 cases, comprising 28.4% of the 88 anesthesia/analgesia given (Table 5). Intravenous ketamine general anesthesia was used in 14 cases (15.9%), local and spinal anesthesia were used in 21.6% each, while endotracheal intubation for general anesthesia was used in 1 instance (1.1%) for

Table 2 Enlisted volunteers

SNO	Professional/ subspecialty group	Number
1	General practice	2 practitioners (family physician)
2	Consultant physicians	2
3	Pediatricians	2
4	General surgeons	2
5	Consultant urologist	1
6	Anesthetists	2
7	Obstetrician and gynecologists	2
8	Ophthalmologist	1
9	Opticians	2
10	Nurses	18 (6 periop, 6 wards and 6 GOPD)
11	Laboratory scientists	2
12	Resident doctors	6 (3 senior registrars)
13	Resident medical officers	2 (at the base hospitals)
14	Drivers	2
15	Electricians	1
16	Public relations officers	2
17	Physiotherapist	1
18	Health educators/ counselors	3
19	Secretary	1
20	Messengers	3
21	Community facilitators	8
22	Security (mobile policemen)	6

GOPD, general outpatient department; periop, perioperative.

Table 3 Clinical performances at the mission

SNO	Clinical activity	No. of patients	Remarks
1	Attendance	5028	Not all were seen
2	Sorting/Triage: issued card	2900	Consultation or screening
3	Medical cases	800	
4	Surgical and urological	512	
5	Obstetrics and gynecology	262	
6	Pediatrics	270	
7	Ophthalmic	800	450 eyeglasses were dispensed
8	Screening for prostate cancer	146	
9	Hepatitis B virus screening	110	
10	Screening for HIV	200	Attended other consultations before coming
11	Health education	1500	Effective for 3 days
12	Counseling	500	Group; not all went for screening
13	Surgical operations	91	
14	Anesthesia	88	Effective
15	Physiotherapy	25	
16	Outpatient pharmacy dispensing	1193	
17	In-patient care	31	Postoperative patients
18	Referrals	39	17 for further treatment and 22 for diagnostic evaluation.
19	Complications	2	Reactionary hemorrhage and wound infection

excision of thyroglossal cyst (SISTRUNK operation) in a child. Twelve pints of blood were used for the major gynecologic procedures. The lone ophthalmologist and 2 opticians (Table 2) attended to the ophthalmic cases. Thirty-nine cases were referred out: 17 for further treatment and 22 for diagnostic evaluation.

The leased diathermy, patient monitors, electric generator, and head light gear facilitated operating surgical procedures.

The satisfactory outcome of the surgical procedures in all the 91 instances was 100%. One case of reactionary hemorrhage with resultant hemoglobin level of 5.0 g/dL following total abdominal hysterectomy (TAH) was treated with transfusion of 2 pints of blood. One case of wound infection on the left leg was recorded in an elderly lady who could not come for removal of stitches until 2 weeks after the medical mission, giving a morbidity rate of 2.2%. Postoperative follow-up was maintained at MJH. Late presentation as large myomas, procidentia, and giant inguinoscrotal hernias were operated on by experienced fellows of ICS.

Table 4 Surgical procedures performed; age range: 2.5 to 80 years

S/N	Operation/ procedure	Frequency	Percent (%)
1	Tru-cut prostate needle biopsy	25	27.4
2	Herniotomy	22	24.2
3	Inguinal herniorrhaphy	16	17.6
4	Excisions: lipomas, cysts, ganglion, etc.	6	6.6
5	Hydrocelectomy: adult	4	4.4
6	Hydrocelectomy: children	3	3.3
7	Myomectomy	3	3.3
8	Total abdominal hysterectomy	3	3.3
9	Femoral herniorrhaphy: bilateral	2	2.2
10	Epigastric herniorrhaphy	2	2.2
11	Incisional herniorrhaphy	2	2.2
12	Umbilical herniorrhaphy in a child	1	1.1
13	Appendicectomy	1	1.1
14	Sistrunk operation in a child	1	1.1
	Total	91	100

Discussion

Free medical mission is a recognized strategy for extending quality healthcare to underserved communities and developing countries.[7–9] In the case

Table 5 Types of anesthesia used

S/N	Type	Frequency	Percent (%)
1	Conscious sedation analgesia	25	28.4
2	Local Anaesthesia	19	21.6
3	Spinal Anaesthesia	19	21.6
4	Ketamine general anaesthesia	14	15.9
5	Face mask general Anaesthesia	4	4.6
6	Spinal Anaesthesia supplemented with Ketamine	3	3.4
7	Local Anaesthesia supplemented with Ketamine	2	2.3
8	Local Anaesthesia supplemented with conscious sedation	1	1.1
9	Endotracheal intubation general anaesthesia	1	1.1
	Total	88	100

under review, an interprofessional team was formed for the effective administration of the program. This was the experience of other workers in Honduras.[9] The nonclinical participants carrying out nonclinical assignments removed a lot of distress and distraction from the clinicians.

Accommodation close to the base hospital for resource persons enhanced discipline and team spirit.

Clinicians in the team were encouraged to fulfill clinical leadership roles at their points of service for the purpose of achieving optimal clinical outcomes and safety as recommended elsewhere.[10] Cooperation as applied in this mission helped to sustain team work. This enabled the achievement of set targets.

Good accommodation and food, dependable transportation, reliable electric power, and effective security were additional enabling factors.

The poor is the target in this mission, and refers to people whose average daily income is less than $1.90 U.S. dollars and may not be able to afford basic medical service.[11] Equity for opportunity of access was ensured through "first come, first served" basis. The surgeons and anesthetists appreciated the limits of cases that can be done under the prevailing conditions.

This program also created opportunity for health-related initiatives such as screening for Hepatitis B, prostate cancer, and HIV disease. In a similar program in the USA, cardiovascular disease prevention was done.[8] In a society where the health sector is distressed, a well-funded and organized rural medical and surgical outreach mission is expected to augment the healthcare system.

The benefits of skills transfer, training, community collaboration, and appropriate referrals were noteworthy and similar to previous reports.[8,9,12] The role of pathologists and relevant laboratory scientists in this mission is complementary. Other workers have emphasized this relevance in the practice of medicine.[13]Data from this study could be used to plan more focused future missions. The high turnout of ophthalmic and pediatric cases (Tables 3 and 4) may be due to the availability of relevant specialists during the mission or high prevalence of these conditions in the community. Studies to determine the prevalence of ophthalmic and pediatric conditions common in Mbano will be worthwhile.

Funding is strategic to the success of free medical missions. A cash-backed budget must be confirmed before embarking on the project. Table 1 shows the budget with a total cost implication of $22,963.80 in U.S. dollars, which was the equivalent of N7,003,968.20 in Nigeria currency at the time when the exchange rate was N305 to $1.0. Major cost centers included medicines and surgical consumables, motivational allowance, feeding, and accommodation (Table 1).

The presence of an NGO financier facilitated the mission. Hence the strong point of collaboration with viable NGOs who are already involved in this type of charity.

In Nigeria, a token allowance for participation in rural medical outreach mission is motivational.

Only 2900 (57.7%) out of the 5028 patients that attended could be seen. Crowd management was a problem as patients struggled for limited opportunity. The unattended 2128 will be seen at the next mission. Those that could not wait were directed to see appropriate medical professionals at Federal Medical Center Owerri.

The overhead operating light was an improvised locally fabricated illumination which was enhanced by the head light gears. Improvisation is a known feature to overcome challenges in medical practice in resource poor countries.[14,15]

Steady electric power supply was assured by standby 40 KVA diesel engine electric generator as the Public Power Provider Company is inefficient, irregular and undependable. However, electricity from Solar Energy powered batteries will be more dependable in rural medical mission.

Late presentations as large myomas, procidentia, and giant inguinoscrotal and incisional hernias that could present technical and perioperative challenges were handled by more experienced surgeons.

The output (Table 4) with 91 surgical procedures in 5 days, a morbidity rate of 2.2%, and no mortality is gratifying in addition to good performance in other 15 clinical areas of service. Sustainability of the program, however, may be ascertained upon evaluation after 5 or more years of regular missions.

Conclusion

Collaboration between sections of International College of Surgeons and non-governmental charitable organizations already involved in free rural medical and surgical outreach mission is feasible.

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