

**Orthopaedic Outreach Program in Uganda: A Strategy to Improve Inequality in Service Delivery between Rural and Urban Communities**

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**Background:** Musculoskeletal diseases are on the increase worldwide. Greater than 80% of Ugandans live in rural areas, facing formidable barriers to specialized care. In 1991 the Orthopedics Outreach Program (OOP) was initiated as a plausible solution to the inequity of orthopedic care between the urban and rural disadvantaged populations. This investigation was conducted to evaluate the output, effectiveness, and barriers to access, of the OOP over 13 years.

**Methods:** This was a retrospective analysis to quantify surgical output and effectiveness of the OOP using the outreach record and a cross-sectional analysis to assess access and efficacy of the program. Semi-structured and key informant interviews targeted to key actors involved in the OOP were conducted to provide a qualitative assessment of the program.

**Results:** Sixty seven outreach visits were completed, 6,653 patients seen, and 1,071 surgeries performed, at a total cost of US\$12,701.00. The cost per patient seen was US\$1.91 and US\$11.86 per surgery performed. Poverty was uniformly cited as barrier to access, others were, transportation, and lack of awareness. There was unanimous opinion on the worthiness and effectiveness of the OOP, but many operational issues and constraints were cited.

**Conclusion:** The OOP may provide a short and medium term solution to equity and access for orthopedic care in Uganda. There is need to quantify the burden of specific orthopedics conditions. A follow-up analysis assessing operational efficacy and output from 2004 to date, under the African Medical and Research Foundation (AMREF) and Ministry of Health funding is recommended.

## **Introduction**

There is an increasing awareness within the global health community as to the impact of traumatic and non-traumatic musculoskeletal conditions. The burden of non-traumatic musculoskeletal conditions along with an increase in road traffic injuries has shifted the disease burden to musculoskeletal and other non-communicable disease conditions<sup>1</sup>. With an increase in life expectancy and dramatic increase in road traffic accidents, developing countries face serious challenges to cope within systems already devastated by infectious disease, poor nutrition, and inadequate water and sanitation<sup>2</sup>.

Uganda has prioritized decentralization and primary health care to tackle the enormous demand within the setting of scarce resources and inadequate funding in the health sector<sup>3</sup>. Despite optimal primary prevention and health promotion, surgical conditions will remain and surgical services will be necessary. Surgery may be seen as an essential element of a good basic clinical package with its capacity for secondary and tertiary preventive impact<sup>4</sup>.

Most developing countries suffer from inadequate human resource provision in the specialties of healthcare<sup>5</sup> leading to overall less health care both in terms of access and availability, with resultant less "health". The estimated population of Uganda is approximately 28 million people, 87.7% being rural and 12.3% urban<sup>6,7</sup>. Twenty-three orthopedic surgeons (one for every 1,300,000 people) provide

specialist services that are available only at three regional hospitals and the National Referral Hospital in Kampala<sup>8</sup>. These limited resources are further aggravated by issues of poverty, long distances to health facilities, poor means of transport, and cultural/language barriers. Specialist outreach has been an established method to improve access to specialized care, enhance primary-specialist care relationship, reduce pressure on national and regional referral hospitals, shift the balance of care to community-based services, reduce costs and improve overall health<sup>9</sup>.

In recognition of the significant inequality of service delivery to much of the rural and disadvantaged population in the country, the Department of Orthopedics at Mulago National Referral Hospital instituted the Orthopedic Outreach Program (OOP) in 1991 as a possible solution. The mission of this intervention was to provide quality orthopedic service to upcountry patients in their community. Though the OOP was established with this mission in mind, its effectiveness has never been evaluated. There is a scarcity of published literature on specialist outreach clinics in the developing world. A recent published Cochrane review, "Specialist Outreach Clinics in Primary and Rural Hospital Settings", has concluded the need for further studies in rural and disadvantaged setting where outreach interventions may offer the most benefit to access, better health outcomes and greater impact<sup>10</sup>. The aim of this study is to establish the effectiveness of the OOP through measures of output, barriers to access, and harms/benefits of the program in Uganda.

### Methods

Evaluation of the initial 13 year period of the OOP's operation was made. The analysis was divided into 3 component parts.

1) *A retrospective quantitative analysis of the output of the OOP.* Data spanned the 13 year period from the initiation of the OOP in 1991 to the year 2004. Data from available records were obtained from the Department of Orthopedics at Mulago National Referral Hospital (MNRH). Location and number of trips, patients seen, number of surgeries performed and funding information were compiled for analysis.

2.) *A cross sectional descriptive analysis of 2 representative OOP sites.* A descriptive analysis was conducted to characterize the outreach patient population served. The visits were an outreach in June 2004 from Mbale, a regional hospital, to the district/sub-district facilities compared with an outreach conducted in July 2004 to the regional hospital of Fort Portal. Age and diagnosis, in regards to degenerative conditions, back pain, and need for surgical referral were quantified.

3) *A cross sectional qualitative analysis pertaining to issues of access and effectiveness* was conducted using semi-structured and key informant interviews. Key informant interviews were conducted in Kampala at the Ministry of Health (MOH), various NGOs, mulago national referral hospital, and the Institute of Public Health (IPH). Semi-structured interviews were conducted at 4 regional referral hospital sites of previous outreach, i.e. Arua, Masaka, Mbale, and Fort Portal, representing each of the northern, southern, eastern, and western regions respectively. A template question list was used to guide interviews. Key persons with varying levels of involvement in the OOP were targeted as interviewees (*Table 1*). All interviews were conducted by a single orthopedic surgeon; detailed notes were taken and later coded.

Qualitative data was analyzed and is presented in regards to the issues of access to care (availability, accessibility, accommodation, affordability and acceptability), effectiveness, and operational constraints. Results for effectiveness of the OOP are listed in 2 separate categories, harms/benefits and operational issues/constraints. Major and minor themes were gleaned using thematic analysis of the written interview records according to previously validated qualitative data analysis methodology<sup>11</sup>. Major themes were defined as those cited by more than half of respondents. Minor themes were cited by less than half of respondents.

## Results

Over the 13 year period from 1991-2004, the OOP accomplished 67 outreach visits. In total, 18 hospitals were visited over this period, primarily regional referral centers. The overall output of performance demonstrates 6,653 patients seen, and 1,071 patients having surgery. Yearly output totals in terms of number of patients screened and number of patients receiving operative care are displayed in Figure 1. Associated costs to send an orthopedic team (orthopedic surgeon, clinical officer and theatre nurse) for each of the 67 outreach visits, over the period of 13 years, totaled US\$12,701.

<b>Key Persons Interviewed for Qualitative Survey (by region and occupational position)</b>						
	Mulago/Kampala	Mbale	Arua	Masaka	Fort Portal	Total
Orthopaedic Surgeons	3	2	0	1	0	6
Orthopaedic Officers	2	0	0	0	1	3
Orthopaedic Techs	0	1	0	0	0	1
Nurses	2	0	0	0	1	3
District Dir. of Health Services	0	1	1	1	1	4
Medical Supervisor	0	1	1	1	1	4
Medical Officer	1	0	1	1	0	3
NGO Representative	4	1	2	1	0	8
Ministry of Health	4	0	0	0	0	4
PT/OT	0	0	2	1	2	5
<b>Total</b>	<b>16</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>41</b>

**Table 1.** Interviewees for purposes of qualitative analysis of access to, and effectiveness of, the OOP.

<b>Barriers to Access</b>	
1. Unavailability of services	7. Cultural priorities/language
2. Poverty /lack of money	8. Fear of Mulago/Kampala
3. Distance to facility	9. Poor support services
4. Poor Roads/transportation	10. Gender issues
5. Lack of awareness	11. War/security **
6. Sensitization	12. Stigma

**Table 2.** Barriers to access derived from qualitative data analysis

\*\* At time of interviews in 2004 war and security were seen as one of the major barriers to access in the north

<b>Benefits of the OOP to the System</b>	
Major Themes	Minor Themes
1. Support/Supervision of medical officers	5. Solidarity/Commitment to regional/district hospital
2. Increase in Communication	6. Improved status of health system
3. Support of PHC with musculoskeletal conditions	7. Advocacy of burden/risks/preventive measures
4. Medical education and skills improvement	8. Stimulus to upgrade infrastructure

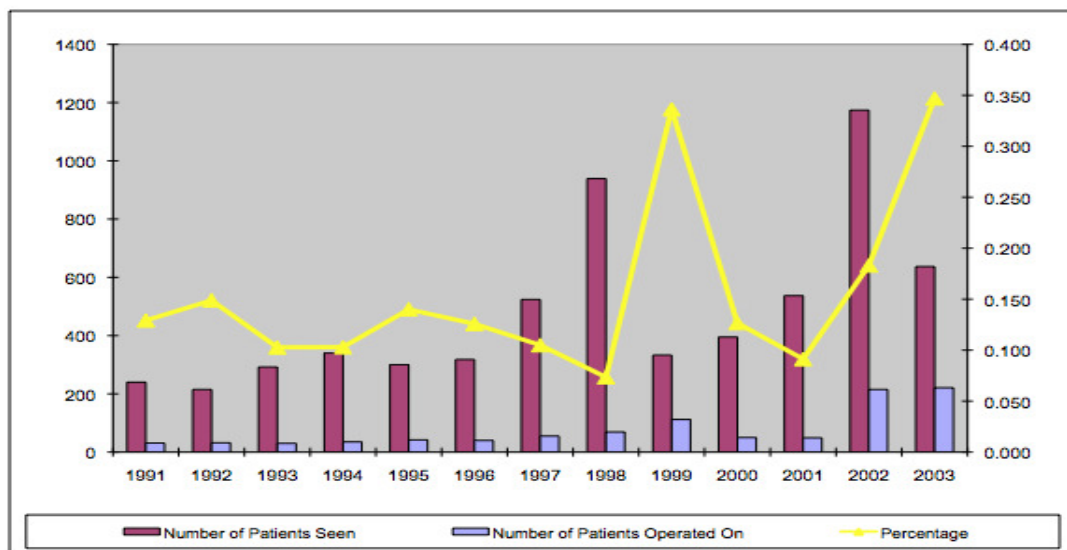
**Table 3.** Major and minor themes derived from qualitative data analysis regarding benefits of the OOP to the system.

Benefits of the OOP to the Patient/Family	
Major Themes	Minor Themes
1. Higher standard of care	6. Decreased stigma of disability
2. Lessening of economic burden	7. Decreased reliance on traditional healers
3. Improved patient satisfaction	8. Empowerment for self improvement
4. Increased awareness of service	9. Cultural and needs awareness
5. Decreased time to service provision	10. Improved communication

**Table 4.** Major and minor themes derived from qualitative data analysis regarding benefits of the OOP to the patient/family.

Harms of the Orthopaedics Outreach Programme	
To the Outreach Site:	To the Department/Surgeon:
1. Opportunity costs away from PHC	7. Time away from service/education
2. Increased local workload	8. Financial loss from private practice
3. Depletion of supplies	9. Demanding work schedule
4. Increased local costs	10. Ethics of post-operative care
5. Potential worse outcomes from poor follow-up/non-adherence	11. Loss of outcome information for clinical lessons learned
6. Professional Jealousy	

**Table 5.** Perceived harms of the OOP to 1) the outreach site, and 2) the department/surgeon, revealed on qualitative data analysis.



Analysis of the patient populations seen at the district/sub-district facilities compared to that at the regional referral hospital are outlined in Table 2. 110 patients were screened at the district/sub-district level with an average age of 20.5 years compared to 39.8 years at the regional outreach. The ratio of patients requiring surgery was 16% compared to 9% at the regional hospital. Back pain was observed in 2%, compared to 10%. While 14% of patients presented with osteoarthritis (OA) and degenerative spine conditions at the regional hospital, there was a 7% prevalence rate seen in patients presenting to the district/sub-district site.



### ***Barriers to Access***

With regards to the barriers to access, interview data revealed apart from unavailability of services, the overwhelming reason for poor access was poverty and/or no money. A complete list of barriers to access from greatest prevalence within interview responses to least prevalent is provided in Table 2. Distances from available services, along with poor road conditions/transportation were uniformly cited. Lack of awareness and sensitization of the community to service offered were also frequently reported problems.

### ***Issues of Effectiveness***

Major and minor themes revealed on qualitative analysis in regards to benefits of the OOP to the system are reported in Table 3. Major and minor themes revealed on qualitative analysis in regards to benefits of the OOP system to the patient/family are reported in Table 4.

A summary of the harms of the OOP to the outreach site and to the department/surgeon are tabulated in Table 5.

### **Discussion**

The challenge of prioritization to successfully allocate scarce resources in the face of overwhelming need is formidable. With the push towards decentralization of Uganda's healthcare system, the OOP was initiated by Mulago Hospital Department of Orthopedics in 1991. This paper has attempted to assess the output and effectiveness of the OOP over its initial 13 years in operation and hence draw conclusions about its perceived "success". The findings seem to highlight the essential nature of the outreach strategy to penetrate the great need that exists in the rural and disadvantaged population.

In order to move towards evidence-based interventions and appropriate prioritization, there is an essential need for an appreciation of the baseline. As in most of the developing world, Uganda has scant information and data regarding musculoskeletal conditions and therefore, a pressing need for surveys and quantification. There was overwhelming consensus amongst study participants of the importance for baseline surveys of need. With the connections established in rural outlying communities, the OOP can facilitate more comprehensive data gathering to begin to assess the needs of the communities served.

Prior to discussing the results of this study, specific limitations in design must be recognized. All interviews were conducted, coded, and analyzed by one individual, an orthopedic surgeon. While this permits familiarity and insight to the intervention, it presents the possibility of researcher bias for favorable analysis and conclusions. Beneficiary interviews, which may have permitted more valuable insight into barriers of access, were not conducted. Lastly, whilst the overwhelming need and obvious ability to benefit from surgery is apparent, the assumption of clinical and functional improvement is fallacious without adequate and reliable outcome measures.

Comparing the demographics and diagnoses of patients from the district/sub-district level to regional outreach, significant differences were demonstrated in neglected, treatable conditions as seen in the former, with the degenerative and chronic age-related conditions seen in the latter. This likely suggests that the regional level is not peripheral enough as an outreach to achieve more impact through improved access. Further, the implication is that not until specialist services are available at all regional "referral" levels will more peripheral outreach achieve the coverage, impact and equity that have been articulated by the mission statement. Total costs to provide an outreach team (1 orthopedic surgeon, 1 clinical officer, and one theater nurse) for each of 67 outreach visits totaled US\$12,701 at time of calculation in 2004. This included transportation, accommodation and all surgical service provided by the team. With 6,653 patients seen and 1,071 surgeries performed over this same period, the total costs amounted to US\$1.91 per patient seen and US\$11.86 per surgery performed. If the same number of patients had to travel to the capital city of Kampala (where 2/3 of

the orthopedic surgeons practice), where they would likely have to receive treatment from private hospitals, the cost of treatment would be exceedingly high.

When looking at barriers to access, uniform mention was made of the distance from available services, along with poor roads and transportation costs, were also uniformly mentioned. Gender issues were mentioned often; as women are the caregivers and frequently the breadwinners, time away from family, farms, or home care becomes a major burden. Language and cultural priorities were felt to limit many of the poorly educated rural villagers. Because of cultural beliefs and deficient services, traditional healers were seen as important in changing health-seeking behavior. War and security issues were seen as one of the major barriers in the north at time of interviews. Fear of Kampala, with its lack of support services, housing and food, was frequently cited as a barrier to national referral. The stigma of treatment was less frequently discussed by the respondents.

In terms of benefit to patients, the major themes included higher standard orthopedic care, both conservative and surgical, to the underserved along with substantial lessening of the economic burden to the patient and family. Further noted were improved patient satisfaction, increased awareness of service availability, and decreased time commitment to care. The benefits to the system were seen as support and supervision to the regional medical officers, increase in communication, and support to the primary care service to musculoskeletal issues. Medical education and skills improvement were especially valued.

In discussing the harms to the site of delivery it was felt that scheduling was intense and demanding, with the added issue of the questionable ethics of relying on others for follow-up duties. Although it was agreed that the quality and standard of care and surgery were high, the potential for worse outcomes from poor follow-up or non-adherence was noted. Also frequently noted were the adverse affects of increased local workload, and depletion of local supplies. An interesting theme that emerged several times was the professional jealousy of the Outreach team that was being subsidized by the government and seen as “from another planet.” This perception of outreach as “outsiders” may suggest the need for more transparency and communication. In summarizing the harms, many respondents cited the opportunity costs away from primary care.

Recognizing an overwhelming need, the Mulago Hospital Orthopedic Department has responded through not only service delivery by the OOP, but through training of residents and establishing a culture of outreach. With the recent landslides in the Bududa region, the department sent a third year resident to offer orthopedic care to those in need in the aftermath of the devastation. The importance and significance of academics and the educational system should be mentioned as an essential partner. Outreach as an opportunity to teach and train should be emphasized and not considered as an afterthought. Medical students and residents should be incorporated in the visiting teams, being given both clinical and educational responsibilities. This early involvement and experience should reinforce the culture of community involvement, altruism and academic mission.

### Conclusion

A follow up study to assess operational effectiveness, output, and challenges from 2004 to present is strongly recommended. Especially since during this time period, increased number of road traffic injuries has changed the pattern of disease burden in this country. Not only will a follow up report contribute greatly to the paucity of published literature on the outreach strategy in Uganda but may help guide national policy decisions on healthcare funding.

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