
SURGERY IN DEVELOPING COUNTRIES - MANAGEMENT OF A CLINICAL AND SURGICAL CENTRE IN RURAL CAMBODIA (2006-2011)

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The International Association for Humanitarian Medicine and the International Federation of Surgical Colleges are genuinely concerned about the availability of essential surgery in developing countries, and have several programmes to strengthen this much-needed sector. The article below is one example of current efforts.

Introduction

Cambodia has made significant progress in social development over the last five years. Between 2000 and 2005, the infant and under-5 mortality rates were reduced from 96 to 66 and from 124 to 83 deaths per 1,000 live births respectively, and the country is likely to meet the four targets of the Cambodian Millennium Development Goals (CMDGs). This is mainly due to increases in exclusive breast feeding from 11% in 2000 to 66% in 2008 and to improvements in immunization coverage and social determinants of health including poverty reduction, improved education, and better infrastructure.

Nonetheless, Cambodia still faces major challenges in several areas in order to achieve the CMDGs. These include the urgent need to reduce the high maternal mortality rate, which stands at 461 deaths per 100,000 live births and is among the highest in the region. Findings from the Cambodia Anthropometric Survey (CAS 2008) reveal that the percentage of children classified as acutely malnourished (wasted) and underweight remains largely unchanged from 2005. The survey also found that wasting among underprivileged urban children increased from 9.6 per cent in 2005 to 15.9 per cent in 2008. Cambodia remains one of the 33 “alarming or extremely alarming” countries in terms of hunger and undernutrition.

Life expectancy at birth increased from 52 to 60 years for men and from 56 to 65 years for women, mainly due to rapidly declining infant and child mortality. Living conditions differences are large between urban and rural ar-

reas. The standard of living is better in urban areas, especially Phnom Penh.

Nutritional programmes targeting pregnant/nursing women and young children will need to be strengthened if the gains made since the late 1990s are to be maintained. Significant inequities also persist between rural and urban areas, across provinces and between people with different educational levels and economic status. There is a need to strengthen national capacities for health stewardship in particular human resource management, service delivery, financing, and governance.

According to the Cambodia Socio-Economic Survey (CSES 2004), monthly about 18% of the population experience some episode of illness, injuries or other health related symptom. Illness rates are highest among children under age 5 (25%) and are lowest among teenagers. From age 20 the rates rise steadily to over 40 per cent among the oldest (age 65+), with women's rates slightly higher than men's.

The economic health of Cambodia is alarming: the per capita income is less than \$300/year and, as for infantile diseases, 20% of children under 5 years present symptoms of acute infection of the respiratory tract, the primary causes of morbidity and mortality, followed by 19% of children below 5 years with diarrhoea and by dengue fever. Recent years have recorded various epidemics of dengue fever in Cambodia¹ and, although no vaccine or specific drug treatment exists, intravenous fluids are given to maintain fluid volume. Dengue fever itself rarely causes death but can lead to dengue haemorrhagic fever, which can be fatal (0.8%).

The purpose of this paper is to overview the activities

from August 2006 to April 2011 of the Bambino Gesù Paediatric Clinical and Surgical Centre Takeo, now recognized as a leading best-practice example serving a rural Cambodian province and to illustrate its current and future projects.

Strategy and commitment

The activities of the Centre started after the signature of a formal agreement between the Royal Government of Cambodia and the Paediatric Hospital Bambino Gesù of Rome in May 2006.

After the first activities of upgrading existing infrastructures in Takeo Province (including the Paediatric Ward in Takeo Referral Hospital) through a series of continuous implementation missions from the main Hospital in Italy (OPBG), all the necessary medical equipment,

medicines, linen, furniture, and medical supplies were provided that were for the incept of the clinical and surgical practice; all technology required in the paediatric sub-intensive care unit (PICU), in the theatre (OT) and consultation rooms was provided.

After expanding its receptive capacity, the paediatric centre is currently composed of an out patients department (OPD) with diagnostic ultrasound and an Obstetrics and Gynaecology, 3 consultation rooms, 20 beds for clinical activities, 13 beds for Surgery, 7 beds in the Paediatric Intensive Care Unit, 2 dressing rooms, 1 operating block (OT, sterilization), 1 library for off- and on-line consultation, a playroom, laundry facilities, and an administration office.

The financial resources committed and disbursed between 2006 until the first four months of 2011 amounted to 1,867,534.29 USD allocated between medical equipment (723,498.40 USD), running costs (271,208.22 USD), renovations and maintenance costs (253,028.70 USD), clinical and surgical activities (207,837.44 USD), mission for expat doctors from Italy (81,901.69 USD), Staff Training (8,806.94 USD), and Communication and Visibility (4,154.00 USD).

Clinical and surgical achievements

Clinical and surgical work involved more than 6,840 children under 3 years. The actual work was distributed as follows among the different diseases (see list).

During the same period, 2006-Apr. 2011, 6,860 patients were treated for clinical problems as shown in *Table III*.

Table I - Causes of death among children under 5 in Cambodia

Neonatal causes (%)	29.8 (WHS 2007)*
HIV/AIDS (%)	2.0 (WHS 2007)*
Diarrhoeal diseases (%)	16.6 (WHS 2007)*
Measles (%)	2.3 (WHS 2007)*
Malaria (%)	0.9 (WHS 2007)*
Pneumonia (%)	20.6 (WHS 2007)*
Injuries (%)	1.7 (WHS 2007)*
Other causes (%)	26.1 (WHS 2007)*

Source: World Health Survey 2007

Table II - Budget Takeo Centre

Budget 2006 - April 2011	US\$
Medical equipment	723,498.40
Running costs	271,208.22
Renovations and maintenance costs	253,028.57
Clinical and surgical costs for indigent patients	207,837.44
Expenses of visting doctors from Italy	81,901.69
Staff training	8,806.94
Communication and visibility	4,154.00
Total	1,867,534.29

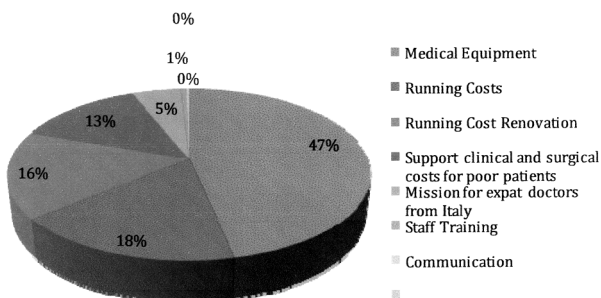
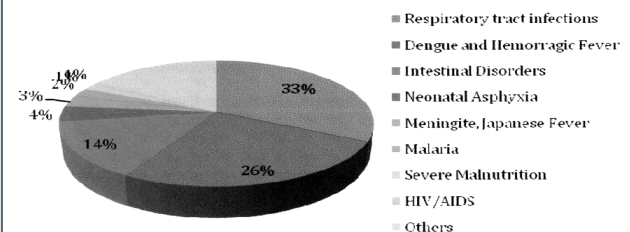


Table III - Distribution of diseases

Pathologies	Number of cases
Respiratory tract infections	2231
Dengue, haemorrhagic fever, dengue, shock syndrome	1759
Intestinal disorders	994
Neonatal asphyxia	264
Meningitis, Japanese fever	209
Malaria	141
Severe malnutrition	101
HIV/AIDS	69
Others (e.g. typhoid fever, tetanus, nephrotoxic syndrome)	1092
Total	6860



Number of deaths since March 2009: 116

Since the construction of the operating room in August 2006, 2164 surgical operations have been performed in our Centre with an average of 500 operations per year (Table IV).

However, while this first sort are moderate in their complexity, interventions having anatomical and functional improvement as their purpose are often complex and time consuming.²⁻⁷

Surgical reconstructive action concerns the treatment of congenital malformations of head and neck (cleft lip and palate, burns, release of severe contracture scarring,

acid victims), urological aspects (hypospadias, reflux, urinary tract malformations), hand surgery (syndactyly, campodactyly, burn contractures), and trauma surgery.

Over the years, the centre has performed an increasing number of operations undertaken by orthopaedic surgeons and ophthalmologists that increased to about 16% cumulatively over the period 2006-2011.

ENT surgery is also a substantial part of the *Bambino Gesù Paediatric Hospital* commitment in treating disadvantaged children; orthopaedic and eye surgery services have been increasing during the years.

In addition there was also a greater commitment to providing specialized surgery, including urology surgery that accounts for about 2% of the total.

The results recorded during the period 2006-2011 show an increasing and steady trend as regards both surgical interventions that clinical care.

Hand in hand with the surgical activities, OPBG's commitment to treating pathological cases has been constant, with increasing efficiency and effectiveness.

Finally, as a result of the successful implementation of the Pilot Project, OPBG is expanding its coverage and area of intervention and is currently committed to offering a broader set of complementary health related activities including:

- *Providing maternal health services to vulnerable pregnant women.* Recent studies show that up to 80% of Cambodian women have deliveries outside of health care facilities⁸ and only 37% of pregnant women delivered with the assistance of a skilled birth attendant.¹⁰ Together with an alarming decrease in the number of midwives in remote areas (Dewdney 2004), this obviously raises the rate of maternal mortality and reduces the chances of survival during early childhood of the children whose mothers do not survive delivery.^{11,12} We expect that in a period of two years almost 240 vulnerable pregnant women will receive psychological counselling and free access to high quality medical care.
- *Improving the capacity of existing health centres in remote areas.* Through mobile clinic, mobile pharmacy and community training on hygiene practices as despite the fact that over 85% of the population lives in rural areas, most hospitals and health personnel are concentrated in urban areas, resulting in an unequal distribution of health care for Cambodians.

In one year (2010-2011) over 5,500 children received free clinical and surgical consultation, 350 were admitted to the Centre for medical and surgical assistance, and 60 rural communities had training and seminars in basic health.

702 patients were treated free of charge by the Mobile Clinic Project:

Table IV - Distribution of surgical cases

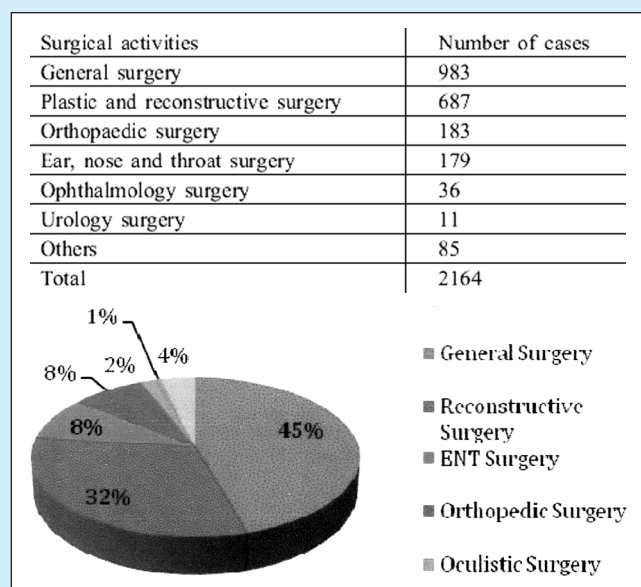


Table V - Increasing of surgical procedures in Takeo Centre (2011: Jan-Apr)

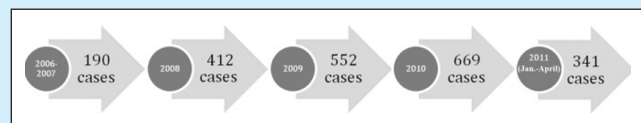
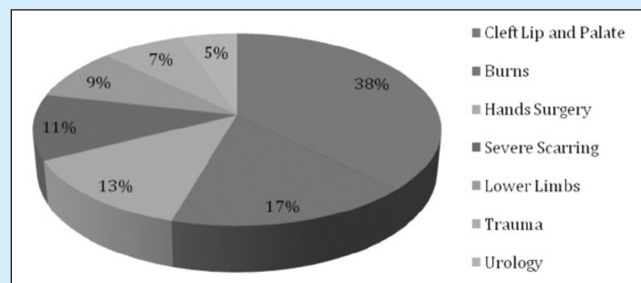
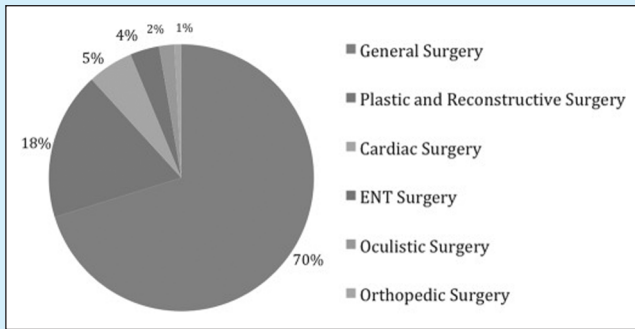


Table VI - Total number plastic surgery operations



- 201 patients > 5 years old
- 369 patients 5-13 years old
- 132 patients > 14 years old



Discussion

In our retrospective analysis of 200 severe post-burn cases treated during a mission in rural Cambodia, published in 2005,¹² we proved how even in underdeveloped patients it was possible to obtain results equivalent to those obtained in modern and well equipped structures.

Such missions provided over the years countless tips on methodologies, skills and capacity needed to effectively help both in the therapeutic and diagnostic time, vulnerable and poor populations in need.

The positive feedback received thus far laid the foundations for the creation in 2006, through major support from the OPBG Rome, of the Paediatric Clinical and Surgical Centre, now recognized now as a leading best practice example serving Takeo Province.

The work of all staff employed at the Centre has always sought inspiration from a patient-centred approach,

with humanization a crucial aspect of its actions.

Obviously, one of the main goals is always to promote the improvement of the skills and expertise of the local staff, in order to create a structure that can function autonomously and ensure long-term sustainability and ownership.

In fact the highest costs that our Hospital has to face are surely the ones connected with expatriate staff involved in the programs, such as travel, accommodation expenses and all expenses tied to logistics.

To achieve this it is also crucial to provide e-learning opportunities through conventional and electronic libraries.

As already said, OPBG's commitment to the treatment of pathological cases been constant, showing increasing efficiency and effectiveness.

Conclusion

This paper testifies to the continued growth of structures operating in the Developing Countries (Takeo Province in the rural Cambodia) and stresses the importance of providing high quality medical care to paediatric patients, and even more of those who are experiencing dramatic socio-economic conditions and pediatric ones, solutions that comply with and adapt perfectly to the needs of the patient, following a "patient centered approach".

The importance of humanitarian action is not only centered in the health sector, but contributes to the socio-economic development of the beneficiary country. Many thousands of patients will live without malformations, well accepted by society, able to work, and able to produce a family.

In addition to economic resources and to political and institutional support, humanization represents the real engine of these activities that through cooperation, new projects and the generosity of donors specifically aimed at helping who are most in need.

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