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# Anaesthesia, surgery, obstetrics, and emergency care in Guyana

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**Abstract** The surgical and anaesthesia needs of low-income countries are mostly unknown due to the lack of data on surgical infrastructure and human resources. The goal of this study is to assess the surgical and anaesthesia capacity in Guyana.

A survey tool adapted from the WHO Tool for Situational Analysis to Assess Emergency and Essential Surgical Care was used to survey nine regional and district hospitals within the Ministry of Health system in Guyana.

In nine hospitals across Guyana, there were an average of 0.7 obstetricians/gynaecologists, 3.5 non-OB surgeons, and 1 anaesthesiologist per hospital. District and regional hospitals performed an annual total of 1520 and 10,340 surgical cases, respectively. All but 2 district hospitals reported the ability to perform surgery. An average hospital has two operating rooms; 6 out of 9 hospitals reported routine medication shortages, and 4 out of 9 hospitals reported routine water or electricity shortages. Amongst the three regional hospitals, 16.1% of pregnancies resulted in Caesarean section.

Surgical capacity varies by hospital type, with district hospitals having the least surgical capacity and surgical volume. District level hospitals routinely do not perform surgery due to lack of basic infrastructure and human resources.


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## 1. Introduction

Recent estimates propose that as much as 28% of the global burden of disease comprise conditions that are potentially amenable to surgical intervention [1]. With this in mind, the role of surgery in public health can no longer be denied and emergency and essential surgical care must be included in basic healthcare in low- and middle-income countries (LMICs) [2].

This surgical and anaesthesia infrastructure survey was previously completed in Guatemala [3], Nicaragua [4], Bolivia [5], and Guyana. Guyana serves as the headquarters for the Caribbean Community (CARICOM). Therefore, this study in Guyana serves not only to elucidate the surgical capacity of a second South American country (after Bolivia), but also of the Caribbean, which is relatively less studied. This article aims to increase the knowledge base of surgical care in Latin America and enables initial comparisons to be drawn between nations in this region.

## 2. Background

Guyana is a low-middle-income country (LMIC) with a small population of approximately 750,000. Consistent with The World Bank description, 35% of the population of Guyana fall below the poverty line and has a GDP per capita of $8000 USD. Amongst those Guyanese with a tertiary level education, more than 80% have emigrated. Despite housing the headquarters for CARICOM, which is the largest and most powerful economic union in the Caribbean, there are economic and healthcare disparities. Overall WHO health indicators/statistics rank Guyana 128th in the world, with its total expenditure on health as a percentage of GDP as 5.9%. Statistics suggest an overall shortage of healthcare workers and access to medical services. Notably there are too few physician anaesthesiologists, obstetricians, and surgeons. The life expectancy at birth for both sexes in Guyana is 63 years, compared with a global average of 70 years [6]. The mortality rate under 5 years for both sexes is 36/1000, which is less than the global average of 51/1000. The birth rate (fertility rate) is 2.2/woman as compared with 2.4/woman globally. The Guyana Ministry of Health Maternal Morbidity and Mortality reduction campaign to investigate the root cause of the contributors to the high rate of maternal mortality started since the global average maternal mortality ratio is 210/100,000 live births as compared with Guyana's maternal mortality ratio of 280/100,000 live births. Maternal Mortality is noteworthy as a Millennium Development Goal since 2000 [7]. The percentage of C-sections in Guyana — 16.5% — is higher than the recommended WHO rates of 5—10% [8] (Table 1).

### 2.1. Medical education

Guyana is home to three major centres for medical education: University of Guyana, American International School of Medicine, and Texila American University. Post-graduate education is limited; therefore, Guyanese physicians utilize options for medical training in countries such as Cuba and China. The pathway for Guyanese doctors into Cuban medical training is part of a Guyana government-funded programme to send medical students to Cuba. In addition, there is a sizable representation from the Cuban medical community working in Guyana on the Ministry of Health contracts. Cuban nationals working in Guyana are found in hospitals and health centres throughout the country. Government scholarships support this training and result in an obligatory government service in medical fields for a five-year period. Thereafter, trained physicians choose their site of practice with most practicing in urban areas.

External partnerships for post-graduate education and training in anaesthesia, surgery, obstetrics and emergency medicine are substantial and sustained within Guyana. The Canadian Association of General Surgeons assisted in developing a Diploma in Surgery to promote safe surgical practice [9]. Long-term academic relationships in Guyana have promoted the healthcare system and advancement of specialties, including Emergency Medicine, Surgery, and Obstetrics. Participating universities include McMaster University (Surgery and Paediatrics), Case Western University (Obstetrics) and Vanderbilt University (Emergency Medicine) [9—11]. Future goals include promoting Anaesthesiology from Vanderbilt University.

### 2.2. National hospital system

Guyana is divided into ten regions with the vast majority of the population density concentrated along the eastern two-thirds of the coast [12]. There are 30 Ministry of Health Hospitals, subdivided as 6 regional hospitals and 24 district hospitals. Despite the small land area, Guyana comprises coastal plains, rainforest, and savannahs. The three most populous areas are Georgetown with a population of 235,017 (Georgetown Public Hospital Corporation), Linden with a population of 44,690 (Linden Hospital), and New Amsterdam with a population of 35,039 (New Amsterdam Hospital).