Emergency Medicine: Providing Emergency Care in the “Land of Many Waters”
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Background
- Guyana is an English-speaking country of ~735,000 on the northern coast of South America.
- Cultural melting pot originally colonized by the Dutch and British and now made up of 14% ethnic, East Indians, 30% ethnic Africans, 10% local Amerindians, and 17% of mixed descent.
- 90% of population lives along the coast.
- 80% rainforest, but agricultural coastal plains along the Atlantic seaboard and large desert savannahs in the south.
- Guyana means “Land of Many Waters,” and major rivers provide much of the transportation between the coast and the interior.
- Developing country with an economy focused on agriculture, timber, and mining.

Healthcare
- Underdeveloped healthcare system, with 2.1 physicians/10,000 population vs. 24.5 physicians/10,000 population in the United States.1
- Physicians complete a British-style 5 year undergraduate MBBS degree followed by internship year, then may work as a General Medical Officer.
- No Graduate Medical Education programs in the country before 2006.
- Predominantly free public healthcare provided by the Ministry of Health through the main tertiary referral center Georgetown Public Hospital Corporation (GPHC) in the capital of Georgetown, 30 regional hospitals, and smaller local health centers.
- High burden of communicable diseases but increasing rates of non-communicable diseases and trauma.
- Leading causes of death are ischaemic heart disease (14.2%), stroke (12%), and injuries (11.7%).2

Resources at GPHC
- Specialist care: general surgical, orthopedic, neurosurgical, obstetric, pediatric, and ICU beds are available but variable training.
- Critical care: 7 ventilators for the ICU, with an additional ventilator and bedside ultrasound in the emergency department (ED). 2 defibrillators in the hospital (only ED and ICU).
- Imaging: main modality in ED is a Sonosite Titan ultrasound with curved abdominal probe. Plain x-rays available but must be developed and brought back to the ED. CT available at nearby cancer hospital for a fee which patients or family members must pay prior to study.
- Lab: ED has a laboratory with ability to run CBCs, malaria smears, torporin, and electrolytes.
- Medications: medications can be limited. There is streptokinase to give to ST elevation myocardial infarctions.
- Physical space: 600 bed hospital. ED divided into 4 sections: minor medical clinics, general trauma beds, general medical beds (some with telemetry), and a major resuscitation area.

Development of EM
- Partnership developed between Vanderbilt Emergency Medicine and GPHC in 2002, initially focused on teaching life support courses.
- Program expanded in 2009 to develop an emergency medicine (EM) residency training program at GPHC based on a US residency curriculum and leading to a Masters in Medicine (MMed) degree on completion. Prior to this there were no specialized emergency providers in the country.
- Curriculum based on Vanderbilt’s residency program but focused to meet the needs of Guyana: more emphasis on tropical disease, development of EM systems, and providing care in resource-limited settings.
- First class in 2010 and to date has had 15 residents participate in the program.
- Full time Vanderbilt faculty member lives on-site in Georgetown in addition to visiting faculty, residents, and fellows from across the US.
- Goal of the residency to develop not only competent emergency physicians (EP), but EPs who will continue to expand professional emergency care in Guyana and the Caribbean.3

Prehospital Systems
- No national EMS system in Guyana, so most people come to the ED by private means. Many patients arrive after extended journeys from the interior jungle that could encompass walking to a canoe to take a jeep to a plane to be flown to the ED.
- GPHC is currently developing a local EMS system with trained EMTs.

Resident Elective at GPHC
- In cooperation with Vanderbilt Emergency Medicine, GPHC offers international EM rotations which it did in February-March 2015.
- Visiting resident rotation goals to provide instruction and supervision to local residents, develop skills in tropical disease and managing illness in resource-poor settings based on the resident’s understanding of international emergency care and emergency systems development.

Clinical Care
- High acuity mix of adult and pediatric patients and an annual ED volume of 70,000 visits.
- Department run mostly by faculty with variable availability for consultation.
- Tropical diseases such as malaria, dengue, chikungunya still common.
- Many patients suffered from poorly controlled chronic disease which resulted in typical complications: MI, CVA, DKA, and COPD flares.
- Large trauma volume, especially road accidents and violence.
- Some unusual diseases from a U.S. standpoint: Labaria snakebites and the occasional jaguar attack.

Future Directions
- Professional development: currently working to establish the Guyanese College of Emergency Physicians to advocate for emergency medicine in Guyana.
- Local ownership: 3 years of graduates of the program and are becoming the faculty and leaders of the residency. Overall goal is for the residency to become increasingly self-sufficient.
- Expanding emergency care: desired need for quality emergency care to be available in outlying regions. Current plan is to have GPHC graduates split time between GPHC and regional hospitals to increase access to trained emergency medicine organizations and to push smaller hospitals to provide a higher level of care. EMS system currently being expanded in Georgetown with the ideal that a national high-quality EMS system could be established.

Looking Ahead
On-going Challenges for EM in Guyana
- Resource allocation: how much should go towards developing emergency care vs. other health priorities in a low income country?
- Recognition: current graduates are not paid consultant-level salaries.
- Sustainability: success of the residency program and expanding emergency care in Guyana dependent on physicians staying and working there. Currently 75% of graduates of the local medical school seek work abroad after their internship.

Bibliography