



HYDROCEPHALUS PROGRAM

- 85% of surgical care involves hydrocephalus
- Remaining 15% head trauma, tumor removal, spinal instrumentation.
- Developed minimally invasive shunt-less treatment of hydrocephalus.
- Endoscopic Third Ventriculostomy with Choroid Plexus Cauterization

~400,000 new cases of hydrocephalus will be diagnosed each year, roughly 80% will be located in developing countries. The vast majority will not receive treatment as surgical care is simply not accessible for these patients.

Neurosurgical Fellowship training

CURE STAFF

SURGICAL

- 2 Ugandan Neurosurgeons
- Currently there are a total of 4 neurosurgeons in all of Uganda for a population of ~38 million
- 1:90,000 → USA
- 1:1,000,000 → Uganda

ANESTHESIA

- 2 full-time Ugandan Anesthesiologists provide daily coverage of 2 ORs
- 1 visiting UK Anesthesia trainee
- 6 Anesthesia Officers
- ICU and Inpatient Wards
- **Since 2006 the number of anesthesiologists has grown from 14 to ~60.²



ETV WITH CPC

- Majority of hydrocephalus cases related to Post-infectious Hydrocephalus
- Endoscopic Third Ventriculostomy with Choroid plexus cauterization.
- Prevents need for shunt
 - Decreased failure rate vs shunt
 - Decreased morbidity and mortality associated with infection vs shunt
 - Decreased need for shunt maintenance





MBALE REGIONAL REFERRAL HOSPITAL

MRRH

- Mbale, Uganda
- Regional capital of Mbale District
- Population: 150,000
- Referral catchment: 3.5 million
- 6 hours from Kampala by car
- Health Center 4 (Only Level 5 is located in Kampala)
- Official bed capacity: 355 (in reality much higher)
- Annual inpatient visits: ~50,000



CASE PRESENTATION

- A 21 y/o female presents to MRRH with obstructed labor. She has been in active labor for the past 14 hours at home and has failed to progress. It is currently planting season so she did not want to deliver at hospital for fear of missing time in the fields. On arrival at MRRH she is found to be hypotensive, tachycardic, and acutely distressed. Fetal heart tones are present, but low. When she speaks with the admitting intern he informs her that he will need payment prior to admission. She is unable to read frequently posted hospital signs that state services are free as she did not complete primary school.
- Upon further examination and after payment, she is diagnosed with uterine rupture emergent Cesarean Section and repair should be completed. While directing the patient to Theater, the patient is informed that there are no sterile gloves and the family should purchase these prior to initiation. As well, analgesic medications should be provided by the patient.
- After successful completion, the patient is transported to a holding area. Family is called to supervise. No monitoring or analgesia is provided.
- The patient is discharged the following day with a small supply of supplemental vitamins as prevention of future neural tube defects. The patient however does not comply as she is concerned local community will believe her to be HIV+.

CONSTRAINTS OF DELIVERY: RESOURCES

- The most immediate and obvious constraint
- Human, financial, supply (drug, equipment, imaging etc.).
- Lack of resources for the community as well as the hospitals.
 - High incidence of malnutrition, lack of clean drinking water



CONSTRAINTS OF DELIVERY: POLITICAL

- Although stable compared to other East/Central African governments, corruption is widespread.
- Low wages and poor working environments in government hospitals drive practitioners to cover personal costs through patient extortion.
- Average anesthesiologist salary for 1.5 million UGX/month
 - Equivalent to ~\$450
 - Much more can be earned in private hospitals and in Kampala
- Poor work environments leads to culture of indifference/inefficiency.¹
- Central government provides only a fraction of budgeted funds²
 - Provide ~\$30,000 to support local NGO hospitals
- Central purchasing leads to corruption
 - Spinal bupivacaine example



CONSTRAINTS OF DELIVERY: EDUCATION AND CULTURE

- Physical illness is seen as a spiritual punishment
- Sick individuals are ostracized by the community
- Patients reluctant to take preventive medications for fear of being thought to have HIV
 - HIV prevalence in Uganda ~10%
- High utilization of spiritual healers "witch doctors". Leads to delayed diagnosis and advanced pathology.
- Primary School participation: 90%
 - Completion: <60%
- Adult literacy rate: 73%
- Low birthweight: 12%
- Underweight children: 13%



CONSTRAINTS OF DELIVERY: INEFFECTIVE/INAPPROPRIATE AID

- Much of the donated equipment is obsolete or unnecessary.
 - Creates stacks of unused equipment
 - Causes logistics nightmares
 - Harvard School of Public Health found some developing countries receive 50% of drugs as donations and nearly 40% of those are inappropriate.⁴
- International brigades can make local staff feel overworked and underappreciated

CONSTRAINTS ON DELIVERY: ADMINISTRATION

- Potential for the greatest amount of change.
- Just as anesthesiologists drive change and performance improvement in developed countries, potential exists in Uganda.
- How:
 - Cultural paradigm shift: ownership of patients, end corruption, enhance efficiencies
 - Oversight of perioperative services (Pre-anesthesia, recovery, ICU rounding)
 - Quality metrics: data collection and evidence based changes
 - Patient advocates
 - Ancillary staff education and training
 - Development of collaborative efforts with centers of excellence in developed world.



CONCLUSION

"The only ones among you who will be truly happy are those who will have sought and found how to serve".

Albert Schweitzer



REFERENCES

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