**Episode 3: Global Burden of ENT disease**

**Guest:** Dr. James Saunders & Dr. Samuel Okerosi

**Question:** Define Global Burden of Disease. Can you explain how the global burden of disease is calculated?

**Dr. Saunders**

* The concept was born in the 1990s to have a metric quantifying the burden of disease across the world and across different contexts in both low and high resource countries.
* There's a *series of reports on the global burden of disease.* The project is primarily carried out and managed by the **Institute of Health Metrics and Evaluation at the University of Washington**.
* Global burden of disease looks at prevalence of a disease in a country and then looks at the disability that's caused by that disease.
  + Disability Adjusted Life Year (DALY): there is a set weight of disability for different disease states. Multiplying the prevalence and disability weight of the given disease provides an estimate of what the burden of that disease is for the country. Add all of that up to get the global burden of disease.
  + WHO definition: One DALY represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition are the sum of the years of life lost due to premature mortality (YLLs) and the years lived with a disability (YLDs) due to prevalent cases of the disease or health condition in a population.
* Extrapolation is common due to incomplete sets of data.

**Question:** Gives us an example of this in the hearing world. Otitis media, one of the most common diseases in the world. What's its DALY compared to laryngeal cancer?

**Dr. Saunders**

* DALY is made up of years lost to the disease and years lived with the disease.
* QALY is Quality Adjusted Life Years fully lived life with no disease or disability which is represented by the integer 1 and a loss of life is 0; while DALY is the inverse; death is 1 and life without disability or disease is a 0.
* Two approaches to DALY. Either you have a disability and the number of years you've lived with it or you died from the disease process and it's the number of years you would have lived if you didn’t have that.
* For most part, hearing loss or acute otitis media, it’s years lived with the disease because it's rarely fatal.
  + The big player is uncategorized hearing loss which is about 40 million DALY which is years lived with disease. Otitis media by comparison is 3.5 million DALY, laryngeal cancer is about 2-3 thousand DALY because it's much less prevalent.
  + Otitis media is extraordinarily prevalent but largely nonfatal while laryngeal cancer is associated with a high rate of mortality but is much less prevalent.

**Question:** Sam, how does that manifest in your setting?

**Dr. Okerosi**

* In Kenya, the figures do exist in planning and policy. But the challenge is, how relevant and accurate are the figures?
  + Most are likely extrapolations especially when including regions where the physicians are not available. In my case, a lot of data used to calculate the global burden of disease is simply not recorded.
  + In the local setting in Machakos, we tend to see more HN cancer due to the health seeking behaviors of our populations (delayed). Patients may not present until they have upper airway obstruction or neck masses.
  + Data and recording are a challenge. We tend to miss out on benign conditions-for example, pediatric hearing loss when there is otitis media present. I suspect we are picking up very little otitis media.

*“If you don’t have the resources to screen for these diseases, you won't have the data.”* - Dr. Saunders

**Question:** In absence of that data, how do we know what conditions need to be treated? Do we use algorithms from HIC data countries' burden of disease programs to see what might exist there, or do we use screening programs to try to figure out disease?

**Dr. Okerosi**

* Get the perspective of the local team.
  + Survey that asks “what are the common diseases that you treat? Common conditions they treat and those they would like to target may be different.
  + Figure out the priorities. In the long term it will be necessary to encourage a system of collecting data so that the data is robust, accurate, and meaningful.

*“The DALY has utility to look at cost effectiveness and across regions. But you would be foolish to use that as your assumption of what you’re going to find when you’re on the ground.”* - Dr. Saunders

**Dr. Wiedermann**

* The three-delay model is at play where patients are delayed in different phases of seeking and receiving care.
  + There was this phenomenon that would happen where once you have gone into an area that was previously underserved resulting in increased access for a myriad of diseases that can now be treated, you start to see presentations of all types. If data were collected prior to the increase in access, the numbers would be artificially low. Patients come in when they know that they can receive care. This could be described as the unseen burden of disease. The delay is due to lack access to and availability of treatment.

**Dr. Okerosi**

* When an ENT is sent to a new county, we start with a clinic of 4-5 patients a day, then it spikes to 40-50 patients after 6-8 months.
* Example: Elderly males with upper airway obstruction and with noisy breathing would have their symptoms confused for a wheeze. They would be treated with nebulizers and inhalers. Then they realize he actually has upper airway obstruction. The more that the ENT raises awareness around conditions that can be treated, they can be referred to the appropriate speciality and treated.

*“When considering how the global burden of disease applies to the real world, the first thing written down is “Work Force”. You have to have people to treat it.”* - Dr. Saunders

**Question:** “Sam, one thing I’m seeing in Nicaragua for hearing loss is a lot of variation between communities. Villages even just a few kilometers apart may have different rates and presentations of disease. Do you see this type of microvariation? At some point there is this assumption that all LMICs are at an even playing field, and the burden disease tries to account for that but I see a lot more variability than I see similarities for hearing loss in the rest of the world. Are there certain communities with high prevalence for certain types of cancer?”

**Dr. Okerosi**

* Yes, laryngeal cancer may be more prevalent through certain parts of the country. If we pick patients from our main referral centers, you would see that certain regions have more laryngeal cancers and more would have more hypopharyngeal cancers. We did actually see a variation based on different regions. Large groupings might obscure those variations.

**Question:** Do you think the data is good enough that if we picked an area in the USA where that data didn’t exist, say a subpopulation in Montana, do you think that the burden of disease would apply to that sub-population in Montana.

**Dr. Saunders**

* If you are a policy maker making GBD data to determine healthcare priorities, then you have to look at it at a more national level.
* But if you’re going on to treat a specific disease in a specific population or community, then the national definition may not hold, so you have to be more sensitive to the microenvironment.

**Question:** It seems like there is a lot of nuance to applying to GBD data at the clinical level, how should we go about interpreting this data and how should we let it guide our decisions abroad if we want to participate in global surgery?

**Dr. Okerosi**

* You could look at the global, national, and regional GBD of disease and look at the variability and determine how you could affect that.
* More research is required.. Do not proceed with the data you have. Start researching and comparing the data that you have. Especially from regions with limited data.

**Dr. Wiederman**

* *(Saunders et al. 2018)*is a paper that serves as an educational foray into what global burden of disease means and how it can be extrapolated. Then Sam, as he said before if this data can’t be extrapolated, figure out your own answer.
* **Global OHNS Initiative** is determining different diseases we should be interested in, using a DELPHI method, soon to be published.

**Organizations**

**WHO Disability Adjusted Life Years Definition and Calculation**

<https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158#:~:text=DALYs%20for%20a%20specific%20cause,resulting%20from%20the%20specific%20cause>.

**Institute of Health Metrics and Evaluation at the University of Washington**

<https://www.healthdata.org>

**Global OHNS Initiative**

<https://www.globalohns.org/>

**Mayflower Medical Outreach**

<https://www.mayflowermedical.org/>

**References**

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**Book chapter**

1.     History of ENT in Kenya, Fifty years of health services in Kenya (1968- 2018. Macharia I M, Okerosi S N, Aluoch J A, 2018.

Supporting information

***CONDITIONS MENTIONED IN GBD***

1. Hearing loss – 4th most common chronic disease
2. Otitis Media - 3rd most common short term disease
3. Cleft Lip and Palate – contribute a relatively small amount but are disproportionately represented in Cochrane database of systematic reviews
4. Head and Neck cancer
   * 1. Contribute to less than 1% of Global DALYs
     2. whilst all H&N cancers have increased in prevalence, age-standardized rates have decreased for all H&N cancer except thyroid and oral
     3. Current focus: determine the the percent of H&N cancer health burden that is directly attributable to tobacco and alcohol abuse
5. Trauma \*Head and neck injuries from trauma may be under-represented as GBD estimates the trauma burden for only the most severe injury.
   * 1. Looking ahead: plan to code: facial and skull fractures, foreign bodies of the ear, airway burn
6. (Oral disorders)