



Surgical Mesh should be available inguinal hernia repair in Low and Middle Income Countries

Presenter: Stephen Tabiri

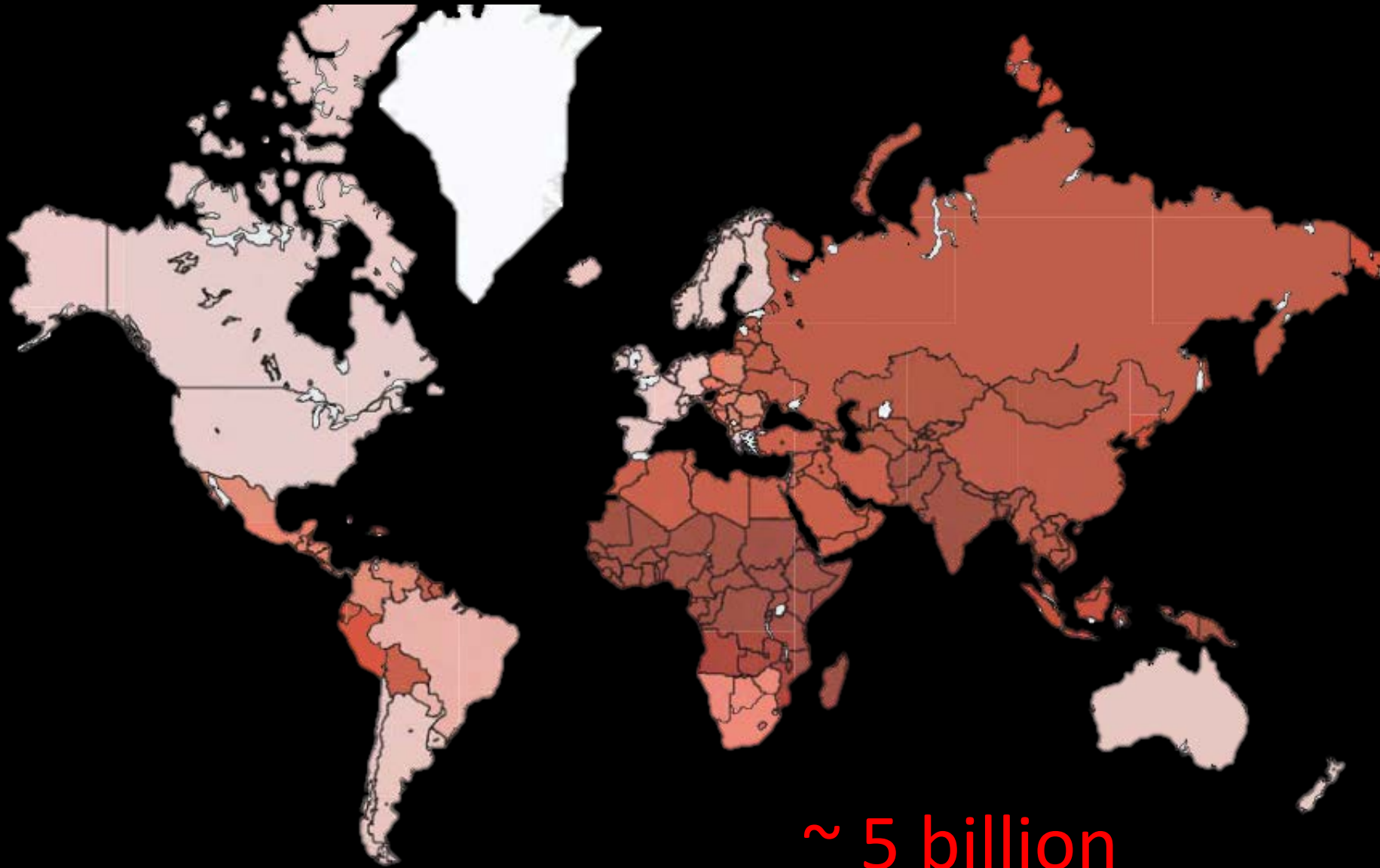
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Declaration

- Nothing to disclose



Proportion of population without access to surgery
0% 100%

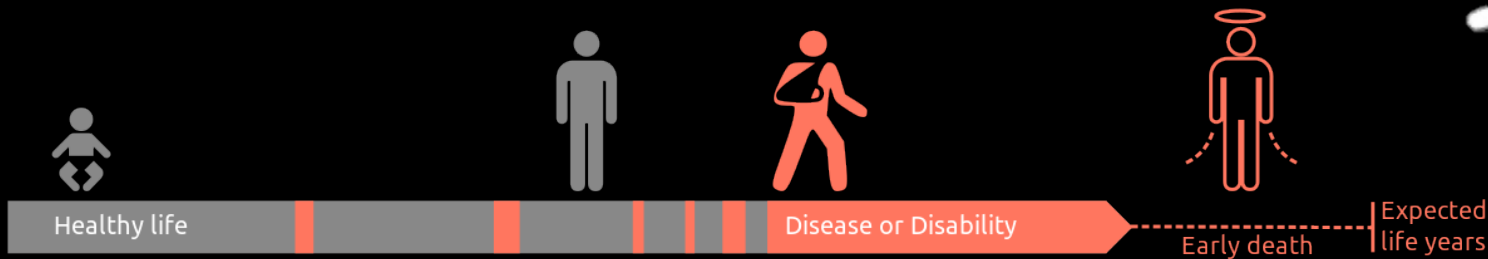
Meara JM et al. Global surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *The Lancet* 2010; 386 (9993); 569-624.
Debas et al. Disease Control Priorities in Developing Countries. 2nd ed. Washington, DC: World Bank and Oxford University Press; 2006: 1245-1259.

DALY

Disability Adjusted Life Years is a measure of overall disease burden, expressed as the cumulative number of years lost due to ill-health, disability or early death

$$= \text{YLD} + \text{YLL}$$

Years Lived with Disability + Years of Life Lost



Intervention	Cost per DALY averted (in \$US)
Inguinal hernia repair (Ghana)	\$14.66
Cataract surgery	\$50
Vitamin A supplementation	\$10
Oral rehydration solution	\$1000
Antiretroviral therapy for HIV/AIDS	\$900
Insecticide treated bednets	\$29

Shillcutt et al., Cost-effectiveness of groin hernia surgery in the Western Region of Ghana. *Archives of Surgery* 2010; 145: 954.

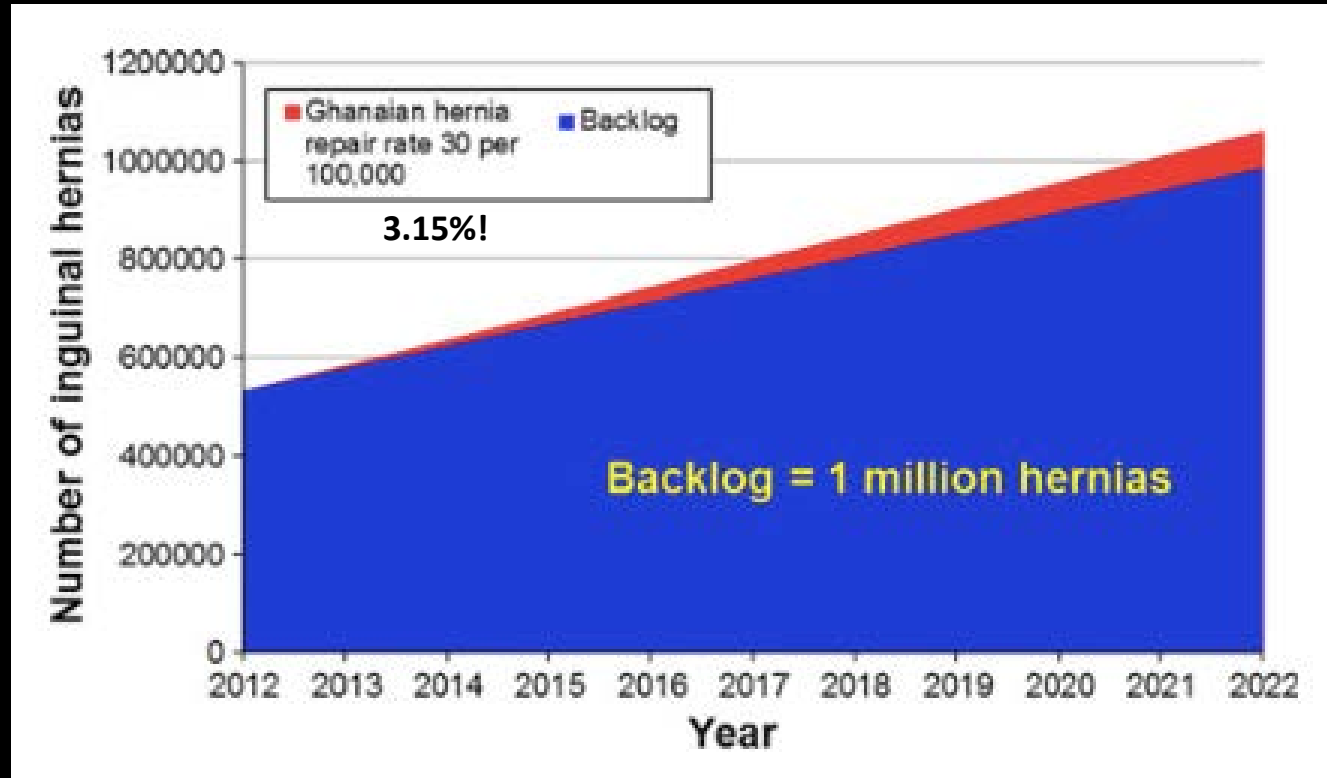
Chao et al., Cost-effectiveness of surgery and its policy implications for global health: a systematic review and analysis. *Lancet Global Health* 2014; 2: e334-e345.

Traditional methods and results



Table 2 Prevalence of treated and untreated inguinal hernia in 803 men in the Barekese sub-district of Ashanti, Ghana

Age group (years)	Number of men	Inguinal hernia prevalence (95 % CI ^a)	Scar prevalence (95 % CI)	Treated and untreated inguinal hernia prevalence (95 % CI)
15-44	557	5.1 (2.9, 7.2)	1.4 (0.5, 3.0)	6.6 (3.8, 9.4)
45-64	181	20.4 (14.6, 26.2)	4.4 (1.4, 7.4)	24.9 (18.7, 30.8)
65 or older	65	32.3 (20.9, 43.7)	3.1 (0, 7.5)	35.4 (23.6, 47.2)
Total	803	10.8 (8.0, 13.6)	2.2 (0, 5.4)	13.0 (10.2, 15.7) vs 1.4-7.9%



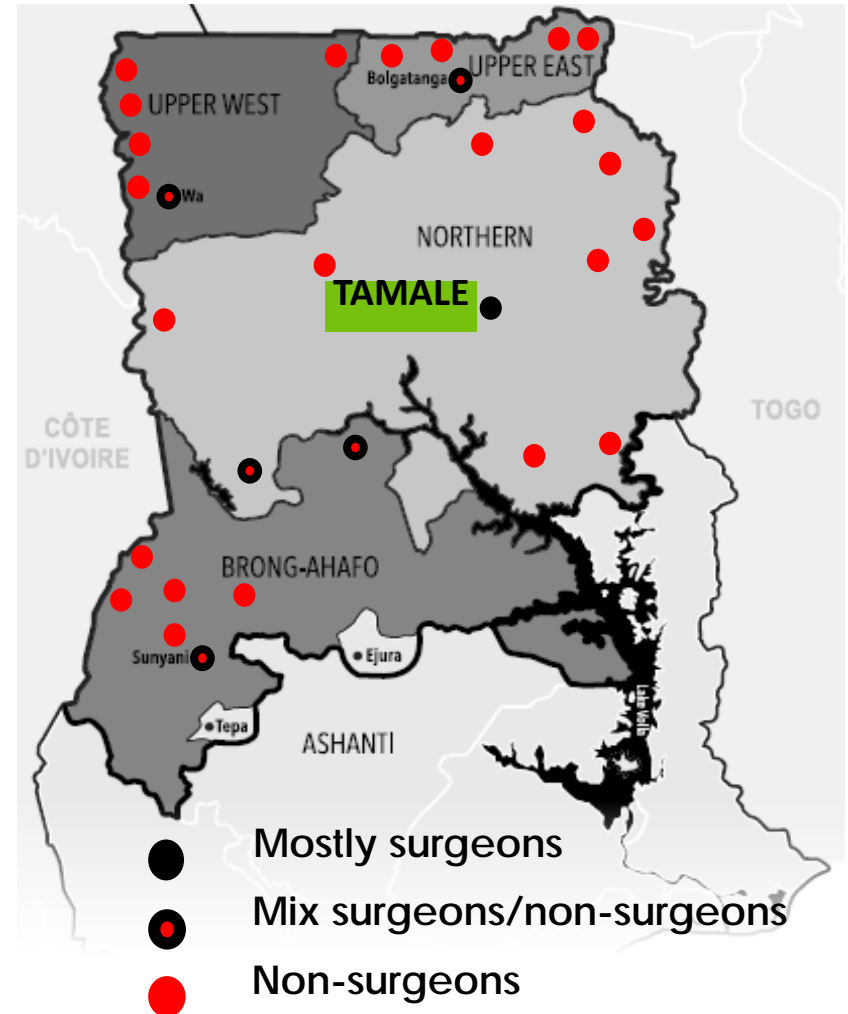
Ohene-Yeboah M, Beard JH, Frimpong-Twumasi B, Koranteng A, Mensah S. Prevalence of inguinal hernia in adult men in the Ashanti Region of Ghana. *World Journal of Surgery* 2015; 40: 806-812.

Beard J, Oresanya LB, Ohene-Yeboah M, Dicker R, Harris HW. Characterizing the global burden of surgical disease: a method to estimate inguinal hernia epidemiology in Ghana. *World Journal of Surgery* 2013; 37: 498.

- **Purpose:** assess the current state of inguinal hernia repair in northern Ghana. Specific focus on use of *mesh*
- **Methods:** 2013-2017, operative reports from 23 hospitals in northern Ghana. All males 18 and older
- **Analysis:** multivariate logistic regression to determine predictors of mesh

RESULTS

- 23 hospitals, 2013-17
- 4523 hernia repairs
 - District **70%**
 - Regional **35%**
 - Teaching **3%**
- **Non-surgeon physicians 68%**
- Surgeon **32%**
- **Suture repair 94%**
- Mesh repair **6%**



RESULTS

- **Predictors of mesh use:**

- Teaching hospital (OR 7.94, $p = 0.001$)
- Surgeon (OR 4.54, $p = 0.001$)
- Regional hospital (OR 0.22, $p = 0.000$)
- Emergent surgery (OR 0.56, $p = 0.047$)

- **Barriers to mesh use:**

- High cost (59%, 10/17)
- Unavailable (41%, 7/17)
- Training (0%, 0/17)

SUMMARY

- **In northern Ghana, hernia repairs primarily occur:**
 - District hospitals (70%)
 - Non-surgeon physicians (68%)
 - Without mesh (94%)
- **Predictors of mesh use:**
 - Positive: teaching hospitals, surgeons
 - Negative: regional hospitals, emergent cases
- **Recommendation:** Focus interventions to increase availability of mesh in district/regional hospitals

Mosquito nets

- Sterilization at 121°C
- Reduce surface area by 40%
- Loss of macroporous structure turns net into hard, shrunken, non-pliable mass
- Maximum abdominal pressure is higher than the tensile strength and tear force of these nets
- Lack of registration for medical usage
- These nets should NOT be used????

Mitura K., Koziat S. (2018). The influence of different sterilisation types on mosquito nest mesh characteristics in groin hernia repair. *Hernia*. <https://doi.org/10.1007/s10029-018-1756-6>

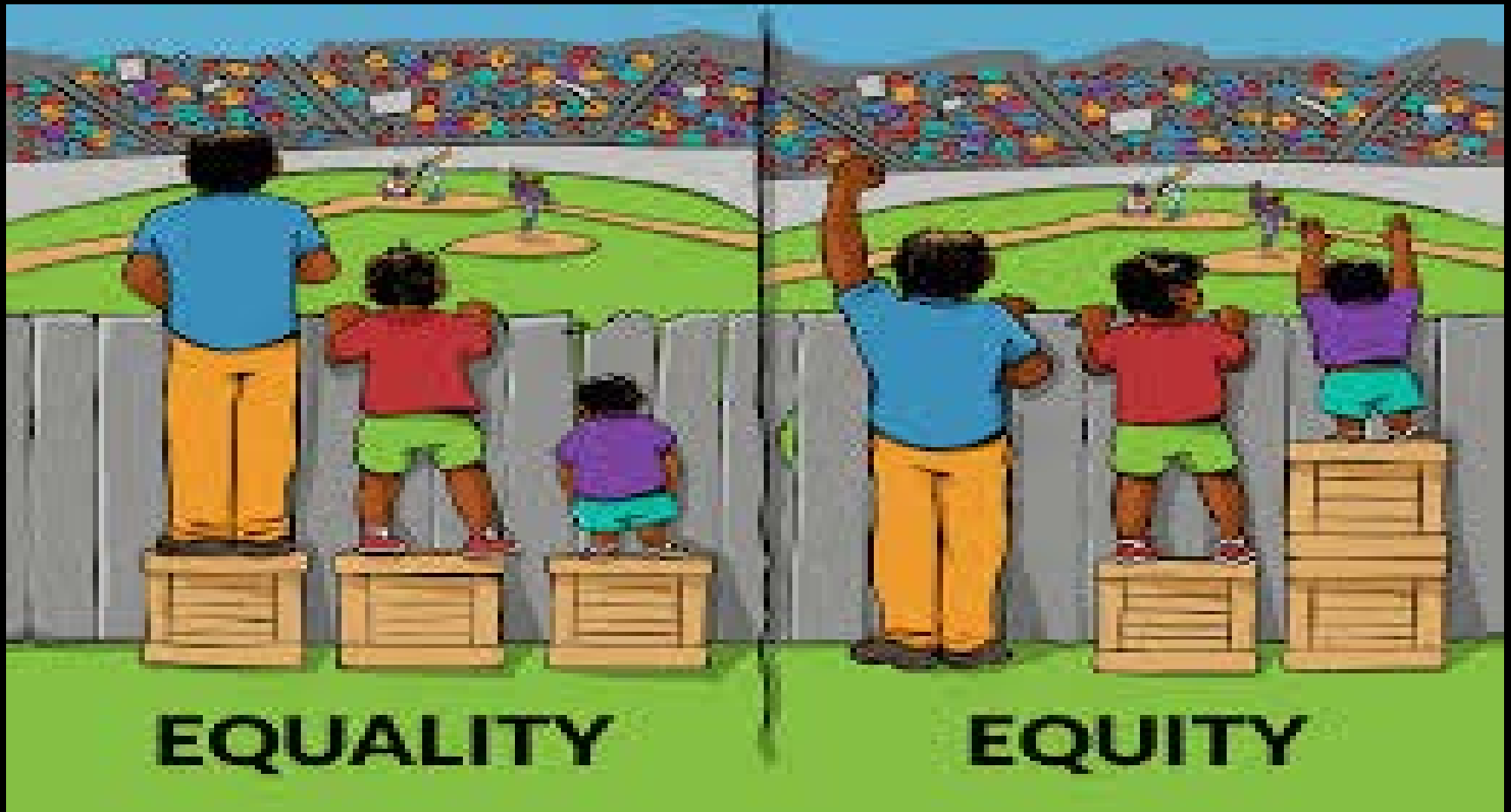
What is global surgery?

- “A field that aims to **improve health** and **health equity** for all who are affected by surgical conditions or have a need for surgical care, with a particular focus on underserved populations in countries of all income levels, as well as populations in crisis, such as those experiencing conflict, displacement, and disaster.”

Medical mesh

- Initial problem was the cost and availability
- Ghana Hernia Society, stakeholders and collaboration BARD
- The medical mesh is currently available slightly less than 10 USD Ghana
- Further reduction is possible with the support of surgeons in HICs
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AIM OF GLOBAL SURGERY



NOT FATHER CHRISTMAS

Thank You!

- Stephen Tabiri
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