

Methods: We have created a low-cost videolaryngoscope by combining a smartphone-compatible endoscope with a 3D printed hyper-angulated blade. The technology was iteratively designed using SolidWorks® 3D modeling software, and printed with the Dremel 3D20 Idea Builder using biocompatible PLA. The device is reusable and costs \$25. It was designed, manufactured and tested at United Mission Hospital, Tansen, Nepal.

Findings: The “Tansen Videolaryngoscope” was tested against a conventional Macintosh direct laryngoscope (DL) in a CPArline® airway manikin model. The study involved 32 participants with no prior videolaryngoscopy experience and varying levels of intubating skill. We found improved Cormack-Lehane grade of view on laryngoscopy (Videolaryngoscopy: 2.63 (SD: 1.54), Direct: 3.75 (SD: 1.14), $p = .0035$), and increased “ease of use” with our device (Videolaryngoscopy: 1.31 (SD: .47), Direct: 2.28 (SD: .92), $p = 0.000047$). There was not a statistically significant difference in the intubation success rate, time to visualize cords or time to pass ET tube between both laryngoscopes.

Interpretation: A smartphone compatible endoscope combined with a 3D printed blade provides a good basis for low-cost videolaryngoscopy. This work illustrates the potential for medical innovation in resource limited settings using simple, inexpensive technology. Further trials in a “difficult airway” manikin, followed by testing in patients, could enable this simple, low cost option for videolaryngoscopy to be clinically available in the near future.

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Abstract #: LAN.005

Getting High Quality Data to Drive Programs: How is the Quality of the Data Collection System Associated with the Quality of Routine Health Data in Malawi?

R. O'Hagan¹, M. Marx², K. Finnegan³, P. Naphini⁴, K. Ng'ambi⁵, K. Laija⁶, E. Wilson², L. Park², S. Wachepa⁷, J. Smith⁶, L. Gombwa⁶, A. Misomali⁸, T. Mleme⁶, S. Yosefe⁴; ¹Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA, ²Johns Hopkins Bloomberg School of Public Health, Baltimore, USA, ³Johns Hopkins University, Baltimore, Maryland, USA, ⁴Ministry of Health, Malawi, Lilongwe, Malawi, ⁵Ministry of Economic Planning and Development, Lilongwe, Malawi, ⁶National Statistical Office, Zomba, Malawi, ⁷National Statistical Office, Zomba, Malawi, ⁸Johns Hopkins Bloomberg School of Public Health, Lilongwe, Malawi

Background: Routine data can be a rich source of information for health systems. However, the perceived and actual quality of routine health data in low- and middle-income countries hinders its use for policy and programming. We conducted a data quality assessment (DQA) with the aim of characterizing the quality of routine data in Malawi's health system and identifying associated systems-level factors.

Methods: The DQA was led by the Central Monitoring and Evaluation Division of the Ministry of Health of Malawi. It was conducted in 15 randomly selected districts, stratified by zone. The sample included 16 hospitals, 90 randomly selected health centres, and 16 district health offices (DHOs), including one district with

two DHOs. Registers, monthly reports, and computerized records were reviewed for five service areas: antenatal care (ANC4), family planning, HIV testing and counseling (HTC), and acute respiratory infection (ARI) and pneumonia diagnosis. Interviews were conducted with facility and district personnel to assess current Health Management Information System (HMIS) functioning.

Data quality was characterized within four domains: availability; completeness; consistency; and validity. Analysis of variance and multiple linear regression were used to measure the association between data quality and facility and DHO performance in HMIS functional areas.

Findings: Data quality varied across service areas; median verification ratios, comparing register and report totals, ranged from 0.78 [IQR 0.25 – 1.07] for ARI to 1.00 [IQR 0.96–1.00] for HTC. Procedures required by Malawi's HMIS policy are not implemented at many facilities: only 60% of facilities report receiving a documented supervisory visit for HMIS in the six months preceding the assessment. Adherence to data quality practices is low, with a mean score of 0.51 out of 1.00 [SD 0.30]. Half of facilities have a full-time statistical clerk; however, employment of statistical clerks at facilities is not significantly associated with the availability or completeness of data.

Interpretation: These findings can guide improvements in Malawi's HMIS, including increased awareness of and adherence to existing policies. The associations between systems-level factors and data quality can inform efforts to strengthen HMIS in other LMICs.

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Abstract #: LAN.006

Bottlenecks and Red Tape Reduce Access to Government Support Programs by Botswana's Most Vulnerable Young Women

R. van der Wal¹, A. Cockcroft², B. Maswabi³, N. Andersson⁴; ¹McGill University, Montreal, Québec, Canada, ²McGill University, Gaborone, Botswana, ³CIET Trust Botswana, Gaborone, Botswana, ⁴McGill University, Montreal, Canada

Background: Botswana's HIV prevalence is among the highest worldwide, with young women disproportionately affected. Structural barriers such as poverty, lack of education, and gender violence mean that young women are unable to implement HIV-prevention choices. Transactional and age disparate sex increase their HIV risk. A national structural intervention, implemented as a stepped-wedge cluster randomized controlled trial (ISRCTN54878784), aims to prepare young women to apply to available government support programs and to align the programs in favour of young women. Records review revealed that these programs don't reach the most vulnerable.

Methods: An exploratory study reviewed demand- and supply-side challenges to accessing government support programs in the first intervention district. All participants gave verbal consent and received assurances of anonymity. A young woman from the district and a local researcher undertook semi-structured interviews with 18