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Monitoring the performance of “screen-and-treat” cervical cancer prevention programs

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Over the past decade, “screen-and-treat” programs for cervical cancer prevention have been initiated across low- and middle-income countries [1,2]. Service utilization trends were analyzed from the Cervical Cancer Prevention Program in Zambia (CCPPZ) [3], the largest such program in sub-Saharan Africa. In CCPPZ, trained nurses provide digital cervicography-aided visual inspection with acetic acid (VIA)-based screening and immediate treatment by cryotherapy, and referral for histologic evaluation of advanced lesions. The study evaluated rates of “same day services” (numerator: VIA-positive women receiving same-day cryotherapy plus VIA-negative women receiving counseling and follow-up advice; denominator: total number of women screened) and “appropriate referrals” (numerator: women with histologically-confirmed precancerous cervical intraepithelial

neoplasia [CIN] grade 2+ lesions; denominator: women undergoing histologic evaluation) during the program implementation period. Trends in the probability of these outcomes over time were calculated using the R-software 2.11.1. The University of Zambia Research Ethics Committee exempted this secondary data analysis from human subjects review and informed consent.

Among 58 802 women undergoing initial or follow-up evaluation between January 2006 and April 2011, the vast majority (51 753, 88%) received “same-day services” (including 9867 [of 15 867 VIA-positive] receiving cryotherapy, and 41 886 VIA-negative). “Same-day service” provision increased significantly over time (P trend < 0.001); a woman screened in 2011 had 2.4 (95% CI, 2.1 – 2.7) times higher odds of receiving “same-day services” than someone screened in 2007 (Fig. 1, left panel). Out of 2840 women with histopathology results (punch biopsy or loop electrosurgical excision conducted during the referral visit), 1364 (48%) had CIN2+ diagnosis (“appropriate referral”). This proportion increased over time (P trend < 0.001); in 2011, a woman had 1.9 (95% CI, 1.5 – 2.6) times higher odds of receiving “appropriate referral” than someone referred in 2007 (Fig. 1, right panel). The probability curves fit with restricted cubic splines revealed discernible upward and downward shifts. The inflections largely coincided with program expansion (i.e. introduction of new nurses who had a relatively higher rate of referral than more experienced nurses).

Relatively straightforward internal quality evaluation metrics (“same-day services” and “appropriate referrals”) can serve as proxies of programmatic outcome measures. Since secular declines in disease burden are unlikely over the short term, the finding of increasing odds of “appropriate referrals” and “same day services” can be attributed to refinement in programmatic performance with expansion of service delivery, largely aided by improved training and capacity building, but also the availability of distance consultation services via telemedicine support [4]. Complementing other quality assurance efforts, such evaluation metrics can be built into similar efforts being undertaken in other low- and middle-income countries.

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Fig. 1.

Trends in performance of “screen-and-treat” services in the Cervical Cancer Prevention Program in Zambia (CCPPZ). The left panel depicts the predicted probability (and 95% confidence intervals) of “same day services,” while the right panel depicts the predicted probability (and 95% confidence intervals) of “appropriate referrals” between 2007 and 2011.