

Drug Label Ribbons to Improve Patient Safety in Low-resource Environments

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These images demonstrate the operating room medication labeling system of a public referral hospital in Malawi (*left image*) and a new system being piloted by the authors in a district hospital of Malawi (*right image*).

Many systems have been developed to prevent medication administration errors, including standardized color-coded labels, two-person verification, operating room pharmacists, and adverse event reporting systems.¹ However, very few of these are feasible in low-resource settings. Even color-coded tape is often unavailable or unaffordable. As demonstrated in the far-right of the *left image*, the underlying tray labels are often relied on and the syringes themselves may remain unlabeled. In most low-income countries, adverse event reporting systems are absent, which limits the ability to monitor errors. A recent meta-analysis of medication errors in anesthesia practice in sub-Saharan Africa found only five case reports and seven studies.² Most reported errors are substitution errors, and the most common causes are syringe swapping or mislabeled syringes.^{1,3}

Although the actual number of adverse events related to syringe labeling is unknown in the index hospital, we nonetheless pursued quality improvement efforts. We sought to develop a medication labeling system that is affordable, easy to apply, and sustainable in low-resource settings. Color-coded ribbon labels can be made at low cost in almost any setting and can be reused to limit expense. Since January

2019, we have found these ribbons to be an easy, durable, and effective tool, and we are working toward widespread implementation and evaluation of this concept.

Competing Interests

The authors declare no competing interests.

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