Transforming research results into useful tools for global health: BOOST

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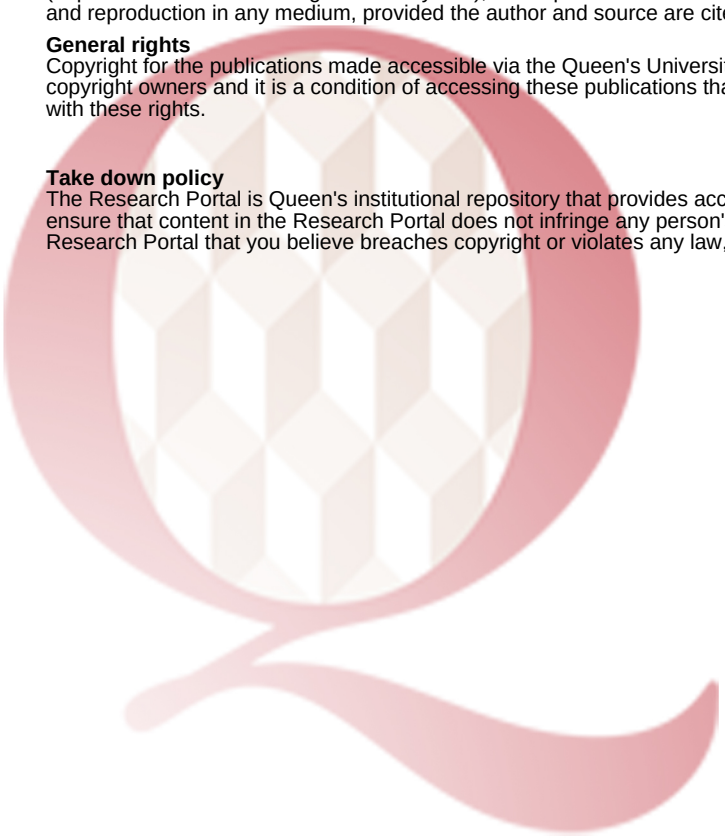

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We reported the results of the PRECOG study[1] in the inaugural issue of *The Lancet Global Health* (July, 2013). Although visual outcomes of cataract surgery have usually been assessed weeks or months after surgery, this study of 4000 patients at 40 hospitals in low-income and middle-income countries (LMICs), where few patients return after operations, demonstrated that assessment of vision the day after surgery could reliably measure operative quality. We felt the readers of *The Lancet Global Health* might be interested to hear about the next chapter of this work.

A group of the non-governmental organisations (NGOs) who supported PRECOG are now working with Aravind Eye Hospital (Madurai, India), one of the largest eyecare facilities in the world, to create an app leading users in LMICs through data collection protocols validated in PRECOG. An informal market survey of 90 hospitals in LMICs showed strong demand for user-friendly software allowing users to measure and benchmark their surgical results against other practitioners in a cloud-based database, while also providing simple advice on improving outcomes.

On the basis of this feedback, our app, called BOOST (Better Operative Outcomes Software Technology), steps the user through two rounds of data collection. First, uncorrected (without glasses) visual acuity the day after surgery is measured for 60 consecutive patients. This round allows outcome quality (proportion of patients with good [≥6/18] and bad [≤6/60] visual acuity) to be benchmarked, initially against the PRECOG database, and subsequently against other BOOST users. Second, users choose from among three reasons for poor vision outcomes (refractive problems, surgical misadventure, presence of ocular comorbidity) for each of 20 consecutive patients returning 6 weeks or more after surgery with presenting vision of 6/60 or less. The app then suggests changes in practice to remediate the most common cause of poor vision identified for a user.

At this point, programmers at Aravind have completed a Microsoft Windows version of the software, which will be field-tested at facilities participating in the initial market survey. Hospitals performing cataract surgery in LMICs and interested to test and provide feedback on V1.0 of BOOST are welcome to contact the authors. Funding is being sought to modify V1.0 on the basis of user feedback, and migrate it to the Android platform. The app will be made freely available on websites of supporting NGOs, eye hospitals, and national ophthalmic organisations. We hope in this way to transform our research result into a practical tool to improve cataract surgical quality in areas of limited resources.

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1 Congdon N, Yan X, Lansingh V, et al. Assessment of cataract surgical outcomes in settings where follow-up is poor: PRECOG, a multicentre observational study. *Lancet Glob Health* 2013; **1:** e37–45.