



Controlling Buruli Ulcer Disease: Will a Rapid Diagnostic Test Help?

TakeAIM 2019 Runner-Up:

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Imagine your family goes on holiday to Ghana. After a few months, you observe a painless swelling on your 10-year-old nephew's leg. Weeks later, this swelling progresses into a deep wound. Well, your nephew may have contracted Buruli ulcer (BU)!

BU is a neglected tropical disease that affects the skin. If not treated early, it can lead to permanent disability. According to WHO, BU has been reported in 33 countries globally. In 2018, there were approximately 2700 new cases and 28 percent disability at diagnosis.

Prevention and control of BU depends on early diagnosis and treatment. Current diagnostic methods for detecting BU have failed to keep pace with its growth and there is a need to find new methods that are effective in high BU prevalent settings. Concerned with this need, researchers developed a rapid diagnostic test (RDT) for BU. The RDT is simple, portable and can be used at the point of care for quick diagnosis providing timely results.

My research is building a mathematical model that evaluates the cost effectiveness of the RDT compared to existing diagnostic tools. We establish the costs for implementation, the benefits to the community infected and the effectiveness of RDT. We perform a decision analysis and determine whether it can be adopted or not.

My work will not only guide policy makers on decision making on cost-effective health interventions but also save millions spent on late stage treatment of BU especially in rural remote areas where health care funding is still poor.

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The Smith Institute, enabled by the generous sponsorship of our leading corporate partners, ran the TakeAIM competition in 2019 to make visible the crucial role that mathematics will increasingly play in all aspects of our lives. The competition was open to undergraduate and postgraduate students working in the mathematical sciences. First prize was £1,000 of Apple or Amazon vouchers, with second prize winners receiving £200 and 8 runners-up receiving £25 in their choice vouchers.