Author's response to reviews

Title: Integrating vector control across diseases

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Author's response to reviews: see over
Covering letter for the revised article: “Integrating vector control across diseases”

15th September 2015

Dear Mr Recchioni,

Many thanks for your email of the 21st August, 2015, which I received on 7th September 2015. Below we detail the edits we have made to the manuscript in response to the points raised. We all track these changes in the attached updated manuscript.

The manuscript now makes direct reference to issues of insecticide resistance and outlines how cross-disease integration of vector control should be combined with other forms of integrated vector management to prevent resistance. It also emphasises the need for focal local tailoring of control against the relevant vectors.

We look forward to hearing from you soon.

Yours sincerely,

Nick Golding

on behalf of all the authors
Resistance management

One reviewer has stressed the importance of resistance management based on the threshold for the least susceptible of all local vectors targeted. In our previous version of our manuscript we felt that this level of detail was not warranted since insecticide-resistance management is not the main focus of the article. However, to help provide clarity we now add the following (additions in boldface):

“Vector-borne disease control is hindered by dwindling financial resources as well as other challenges such as development of insecticide resistance [10]. Simultaneous deployment of multiple vector control methods, some of which are not based on insecticides, can reduce disease transmission to far lower levels than those achieved using a single intervention and help slow the development of insecticide resistance thereby providing cost-effective and sustainable reductions in disease burden [11]. In areas with multiple vector species insecticide resistance management programmes should be adopted as soon as resistance is detected in one vector species, although ideally such programmes should be introduced before resistance develops [12].”

Focal control

Reviewer 2 made the point that all vector control challenges require very focal local tailoring. We agree with this point and had already made a related point regarding targeting larval control to the specific species present:

“Whilst insecticide treatment of nets, screens and walls are implemented at the household level, larval source management must be targeted at the breeding sites of the specific vector species of interest, necessitating different procedures for different vectors. For example, application of larvicides is appropriate for controlling Anopheles [33] whereas polystyrene beads may be more effective for the urban Culex vectors of lymphatic filariasis [34] and the removal or larvicidal treatment of water containers is more useful for the Aedes vectors of dengue and yellow fever [35, 37].”

We have now added a sentence to the section on planning control programmes to emphasise that interventions also need to be tailored to the local environment:

“Large-scale cross-disease vector control programmes would need to be adapted to local-scale variation in order to best target the specific combination of diseases present in at-risk communities. Planning a large-scale programme of integrated vector control will therefore require more detailed knowledge of the spatial distribution of each disease, as well as their susceptibility to available vector control methods. As with any vector control programme, the interventions selected for control would need to be tailored to the local environment as well as to the vector species present. The operational effectiveness of multi-disease vector control programmes must then be evaluated in the field.”

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