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study has shown that coarse particles (diameter >2.5 µm) are most common in many Indian cities. Our findings from particulate matter collected from various Indian cities showed that coarse particles predominantly influence the total inflammatory responses induced by particulate matter. Therefore, a reduction in PM$_{2.5}$ alone might not result in the proposed health benefits. Coarse particles will continue to dominate India’s metropolitan cities owing to an increase in vehicle usage, infrastructure shortages, and improper solid waste collection and transport. Indian cities that are below the rank of metropolitan cities are also facing high population growth and uncontrolled development. Because of the unpaved roads and resource shortages in these growing towns, coarse particle exposure will probably increase in the future. These coarse particles can deposit in distal airways and the upper respiratory tract and might modulate carriage of bacteria in this area. Upper respiratory carriage of bacteria is a prerequisite for infection and is the primary reservoir for transmission in children and adults. Population growth and overcrowding might increase the concentration of airborne biological particles in Indian cities; such increases would be caused by resuspension of road dust, improper handling and transport of sewage, increased vehicle usage, and solid waste in Indian cities. Our experiments have shown that airborne biological particles constitute a small, but notable, portion of the particulate matter and influence the total inflammatory response induced by particulate matter. Similar results were reported for particulate matter collected from other countries.

Our research shows that airborne biological particles are an important part of exposure in Indian households that burn biomass. In summary, the Commission makes an ambitious proposal to enhance public health through a reduction in global exposure to air pollution. The development of successful control strategies to reduce air pollution requires planning at national, regional, and local levels and plausible inclusion of several external parameters, such as coarse particles. A more open-minded, flexible, and inclusive approach might be more effective to reduce the air pollution and adverse health effects at a regional level.

I declare no competing interests.

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Accelerating the evidence for new classes of long-lasting insecticide-treated nets

The comment by Gerry F Killeen and Hilary Ranson (April 21, p 1577), on our trial of long-lasting synergist piperonyl butoxide and pyrethroid-treated nets and indoor residual spraying for control of insecticide-resistant malaria mosquitoes (April 21, p 1577), although summarising accurately the trial’s findings, was less a commentary on its implications for future malaria control than a critique on the slow rate of progress in getting piperonyl butoxide synergist and other new long-lasting insecticidal nets implemented to scale. The appeal by Killeen and Ranson, to roll out interventions not yet tested against malaria outcomes rather than accelerating the evidence-based process that our trial intended to inspire, runs the risk of reversing the process of evaluation or resuming the stalemate or free-for-all that arises between products when interventions are not fully assessed. What our study has shown is the importance of rigorous controlled trials to build evidence and guide strategy. What future trials of next generation long-lasting insecticidal nets will require is a funding stream that will address the need for more timely evidence on effectiveness and durability. To guide malaria control strategy, an alliance or body of stakeholder representatives should be established that is competent to make far-reaching public health decisions on the basis of that evidence. What would be helpful now is a review of why the stalemate on the use of piperonyl butoxide synergist long-lasting insecticidal nets has existed for so long and how this trial can provide lessons for the future.

The authors of the comment took the opportunity to express frustration at the delays in decision making at WHO. With the benefit of the new evidence on piperonyl butoxide-treated long-lasting insecticidal nets, it becomes easier to see why policy should change. But, until our trial, there was no definitive evidence that malaria control was being compromised by increasing insecticide resistance or that standard long-lasting insecticidal nets were starting to fail in some places. The global malaria burden had continued...
Correspondence

earlier and, on this, we concur. They say that trials should have been done there was not enough evidence to insecticidal nets and in Ranson says that our findings were not expected an additive effect between the evidence based on entomology we can build on that. Before then, did broadly accord is reassuring, and they would do so. That the outcomes did broadly accord is reassuring, and we can build on that. Before then, the evidence based on entomology alone was insufficient to shift policy to more expensive piperonyl butoxide-treated long-lasting insecticidal nets. The trial did reveal several important findings that were not predicted. We expected an additive effect between the piperonyl butoxide-treated long-lasting insecticidal nets and indoor residual spraying interventions. That we did not see one was surprising, and useful, as it means there is no case for the more expensive combined intervention, when one intervention is sufficient. Killeen and Ranson say that we shall never know whether piperonyl butoxide-treated long-lasting insecticidal nets could slow the emergence of insecticide resistance. There is plenty of time to show that resistance selection can be slowed down, or even reversed, if the piperonyl butoxide-treated long-lasting insecticidal nets are scaled up fast enough. There are signs that the scale-up is already starting, following on from trial evidence. Another result that might have gone the other way was the effect of pirimiphos methyl indoor residual spraying when combined with standard long-lasting insecticidal nets. Many trials of combinations of indoor residual spraying and long-lasting insecticidal nets have not seen an added effect with other classes of indoor spraying insecticides. The long residual effect of this particular indoor residual spraying is remarkable and unprecedented for any member of the organophosphate or carbamate insecticide class and makes intermittent application of indoor residual spraying a viable malaria control strategy. The appetite for running a small series of controlled trials on new classes of long-lasting insecticidal nets has recently grown, with the UNITAID Catalytic Fund stepping in to fill the evidence gap identified by WHO. Running in parallel to this series will be a restricted number of pilot rollouts in selected countries to gain more evidence from routine deployment, so that scale-up of the new long-lasting insecticidal nets is not delayed for longer than necessary.

We declare no competing interests.

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1 Killeen G F, Ranson H. Insecticide-resistant malaria vectors must be tackled. Lancet 2018; 391: 1551–52.

Department of Error

Libre JM, Hung C-C, Brinon C, et al. Efficacy, safety, and tolerability of dolutegravir–rilpivirine for the maintenance virological suppression in adults with HIV-1: phase 3, randomised, non-inferiority SWORD-1 and SWORD-2 studies. Lancet 2018; 391: 839–49—In the legend of table 1 of this Article (published online first on Jan 5, 2018), the most commonly reported NNRTI at baseline should read “dolutegravir–rilpivirine, n=185 [36%]; CAR, n=183 [37%]”; the most reported common adverse event identified by WHO. Running in parallel to this series will be a restricted number of pilot rollouts in selected countries to gain more evidence from routine deployment, so that scale-up of the new long-lasting insecticidal nets is not delayed for longer than necessary.

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