

**Title:** Calling time on asthma deaths in the tropics – how much longer must children and adults wait for essential medicines?

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Every day about 1,150 people die – largely avoidably - due to asthma<sup>1</sup>. In comparison malaria kills about 1,175 people per day.<sup>2</sup> The great majority of asthma deaths occur in children and adults living in the tropics, where effective asthma management may be either non-existent or inaccessible. Yet with correct diagnosis and treatment many deaths from asthma could be prevented.

The recent Lancet Commission<sup>3</sup> suggested new ways of thinking about asthma, challenging conventional concepts of asthma as a single disease and proposing a more targeted approach. While development of novel phenotype-driven approaches occurs, robust evidence shows that people with asthma symptoms improve with the World Health Organisation's (WHO) "essential asthma medicines", and thus the term asthma as a clinical diagnosis opens the door to asthma management.

Inhaled  $\beta_2$ -agonists and inhaled corticosteroids are the cornerstone of effective management for asthma. These classes of medicine were developed over half a century ago and their role in cost-effective treatment and prevention of exacerbations and deaths, as well as control of asthma symptoms is well established. However, most deaths and disability due to asthma occur in people who are not taking medicines, especially inhaled corticosteroids, which are more expensive. We therefore ask: "how much longer must children and adults with asthma living in the tropics have to wait for these essential medicines?"

The Global Burden of Disease Study has estimated that there are 339 million people with asthma globally, representing roughly 1 in 20 of the world's population.<sup>4</sup> Asthma is the commonest chronic disease in children and remains one of the commonest chronic diseases in adults. Limited access to appropriate management leads to mortality and morbidity avoidable by straightforward strategies and actions.

These strategies and actions are described in the Global Asthma Report 2018,<sup>5</sup> written by 53 authors from around the world and produced by the Global Asthma Network.<sup>6</sup> The Report sets out what is known about asthma, its burden, management and where the major gaps

lie, highlighting the above issues, intending to influence those in authority to act promptly and wisely to reduce the global burden of asthma. The Global Asthma Report 2018 has 22 recommendations (five to WHO, nine to governments, four to health authorities and four to health professionals, professional societies and patient organisations) mainly about the need for better access to affordable quality-assured essential asthma medicines, better asthma management packages, better asthma data, and more asthma research.

Infectious diseases such as malaria (“tropical diseases”) have been a scourge on humankind forever but over the last century global death rates from tropical diseases have fallen due to evidence-based public health measures. At the same time noncommunicable diseases (NCDs) have risen. They now cause 71% of global deaths, 85% of which occur in low- and middle-income countries (LMICs).<sup>7</sup> Age-specific death rates are nearly double in LMICs compared to high-income countries. In 2011, asthma was among four main groups of NCDs prioritised by the United Nations (cardiovascular diseases, cancer, diabetes, chronic respiratory diseases). These four account for about 80% of NCD deaths.<sup>7</sup> Globally, asthma is ranked 16<sup>th</sup> among the leading causes of years lived with disability<sup>4</sup> and 25<sup>th</sup> for all ages among the causes of burden of disease measured by disability adjusted life years.<sup>8</sup>

Remarkably, asthma management including essential asthma medicines was not included in WHO’s 2011 “Scaling up actions against NCDs”<sup>9</sup> and was not listed as a “Best Buy” or highly cost-effective intervention in subsequent WHO publications like the Global Plan.<sup>10</sup> In 2017, using the WHO-CHOICE methodology, WHO reported that low dose inhaled beclometasone and a short-acting  $\beta_2$ -agonist was effective (not a “Best Buy”) and cost 1000-5000 international dollars per DALY averted in LMICs,<sup>11, 12</sup>. However, the basis for this high estimate is not readily apparent in WHO’s Technical Papers,<sup>12, 13</sup> which cite evidence that regular use of inhaled corticosteroids reduces the risk of death due to asthma by 87% (and, incorrectly, attribute the same benefit to inhaled salbutamol therapy).<sup>12</sup> The technical briefing appears to assume that only 1.5% of people with asthma will use inhaled corticosteroids, a grossly sub-optimal level of coverage, as the proportion should be at least 25% in children, and higher in adults. To advance the care of asthma, better data and better models of cost-effectiveness are needed.

There is abundant evidence that asthma can be controlled in resource-poor settings. For example, in four asthma pilot projects (Benin, China, El Salvador and Sudan) funded by the World Bank and organised by the International Union Against Tuberculosis and Lung Disease and its partners, the training of clinicians in implementation of guidelines and evaluation of outcomes was combined with the procurement of affordable, quality-assured, essential asthma medicines,<sup>5</sup> after one year all countries observed a substantial reduction in

asthma severity, visits to emergency services and hospitalisations. It would provide further evidence if countries evaluated the costs and outcomes of their own asthma management activities, to measure how the provision of affordable quality-assured essential asthma medicines and more efficient, targeted and equitable delivery of standardised asthma care reduces the burden of asthma on patients and health services.

The Global Asthma Report 2018,<sup>5</sup> describes the steps required to reduce the burden and mortality from asthma, and the data needed to monitor progress. The Global Asthma Network Phase I will be completed in 2019.<sup>6</sup> It will estimate the prevalence and severity of asthma, describe risk factors and management in adults and children, and provide up-to-date data, and time trends where previous comparable data exists.<sup>14</sup>

This patient story from Kenya <sup>5</sup> should be a thing of the past

*“...I had run away from my husband, so that I go die in my parents’ home. I had to stop working at the factory and I could not even do the housework...”*

We call time on avoidable asthma deaths and on people with asthma not having the right to quality of life.

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