
Capacity of Thailand to Contain an Emerging Influenza Pandemic

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Southeast Asia will likely be the epicenter of the next influenza pandemic. To determine whether health system resources in Thailand are sufficient to contain an emerging pandemic, we mapped health system resources in 76 provinces. We used 3 prepandemic scenarios of clustered cases and determined resource needs, availability, and gaps. We extended this analysis to a scenario of a modest pandemic and assumed that the same standards of clinical care would be required. We found that gaps exist in many resource categories, even under scenarios in which few cases occur. Such gaps are likely to be profound if a severe pandemic occurs. These gaps exist in infrastructure, personnel and materials, and surveillance capacity. Policy makers must determine whether such resource gaps can realistically be closed, ideally before a pandemic occurs. Alternatively, explicit assumptions must be made regarding allocation of scarce resources, standards of care, and priority setting during a pandemic.

The World Health Organization (WHO) has highlighted how the Asia-Pacific region has been an important center of emerging diseases such as severe acute respiratory syndrome (SARS) and avian influenza. Since 2003 (as of September 10, 2008), 15 countries have experienced human cases of infection with influenza virus A subtype H5N1 (1), and subtype H5N1 infection is now endemic in poultry in several countries. The H5N1 subtype continues to pose an important public health threat in both the short term and the long term. Southeast Asia remains a likely region from which future emerging infectious diseases, including the next influenza pandemic, are likely to emerge (2,3).

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In a resolution issued in April 2005, WHO expressed concern about the general lack of global preparedness for pandemic influenza (4). Since then, considerable international efforts have been expended, and substantial resources have been committed to controlling avian influenza and preparing for pandemic influenza (5). Because the question is not whether a pandemic will occur but rather when (6), policy makers have been urged to take action in preparedness planning, including making national preparedness strategies operational (5,7,8). However, despite efforts to support preparedness, no universally accepted, organized method of evaluating preparedness exists, and concerns have been raised that implementation of many national strategic plans may be unrealistic (9,10). Several approaches have been adopted to evaluate preparedness, including assessments of national strategic plans (9,11), desk-top simulations (12), full-scale field exercises, case studies with site visits to assess health systems (8), and mathematical modeling exercises (13,14). All have particular strengths and weaknesses. Most of these approaches, although linked to national strategic and operational plans, have not included assessments of capacity to respond (that is, of available resources at each site and the potential to mobilize these resources). Without determining capacity to respond, the feasibility of effectively and efficiently implementing plans in a time of crisis remains highly uncertain.

In this article, we define and quantify, at the province level, the health system resources likely to be drawn upon in the event of WHO prepandemic phases 4 and 5 in Thailand, a relatively well-developed, middle-income, Southeast Asian country at high risk for being the epicenter of the next pandemic. We estimate gaps in resources, given several prepandemic influenza scenarios. These scenarios were previously developed by policy makers and have been used extensively in tabletop exercises in most provinces throughout the country. Our aim was to determine the chal-