



## COPING WITH EPIDEMIOLOGICAL DISEASE OUTBREAKS: LESSONS FROM SARS<sup>1</sup>

### Introduction

**T**he outbreak of SARS in March 2003 put considerable strain on a number of countries, in particular China, Hong Kong, China, Singapore, Taiwan Province of China and Viet Nam. Within a short space of time, over 8,400 persons were infected with the virus, resulting in over 800 deaths worldwide. However, the pronounced economic and social impacts of SARS were largely the result of the fear and panic that arose in the absence of proper information and the lack of a cure. The increased flow of people, goods, services and information in a globalized world economy has quickened and intensified such impacts. Aggressive media coverage also provided a favourable environment for such developments.

The spread of SARS was contained by June 2003 but uncertainty remains high, particularly as there is still no cure or proper diagnostic test. The emerging side effects of the drugs used in treating the disease, its episodic reappearance in some affected countries and possible return during the winter season, together with the reported presence of the virus in the environment, prevent a definitive conclusion being placed on the outbreak. Moreover, the potential threat of the disease re-emerging in epidemic proportions has not been completely ruled out, particularly in a scenario of an outbreak in populous developing countries such as India, Bangladesh or even rural China, where health systems with limited resources may not be able to cope. Therefore, a review of the experience of the countries affected by SARS in handling the outbreak may provide insights for managing similar incidents in the future and help to mitigate the resulting economic and social impacts.

### The economic impact of SARS

Estimation of the economic impact of SARS is not an easy task as several other factors, such as geopolitical tensions in West Asia and the weak recovery in industrial countries, were affecting countries in the region in 2003. Moreover, a shortfall in output as a result of postponement of economic activities in a given period could be offset by improved performance in the following period, while some output losses may not be recovered at all,

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making it difficult to assess the net output loss due to the disease outbreak correctly. Some of the methodological issues involved in estimating economic losses in the region owing to SARS are discussed in a recent ADB publication,<sup>2</sup> in which the overall cost of SARS for East and South-East Asian economies is estimated as being equal to US\$ 18 billion in 2003, or approximately 0.6 per cent of GDP. Economies such as Singapore and Hong Kong, China are estimated to have lost as much as 3 per cent of GDP to SARS. However, the economic impact of the disease on some countries may not be as severe as initially feared, as indicated by the GDP growth rates for the third quarter of 2003 in China and Thailand, which were better than expected.

Although there is no firm evidence, the disease appears to have had mixed implications for countries in the region not directly affected by SARS. Some of those countries benefited as export orders for garments and leather, for example, were shifted to them from SARS-affected countries, while most were hit by the slump in tourism.

There were several channels by which SARS affected economies in the region. The fear and panic caused by uncertainties about the transmission mechanism of the disease, lack of information and the absence of a cure caused a demand shock in the short run. Private consumption demand fell as the demand for services such as travel, tourism and entertainment was adversely affected. The East and South-East Asian subregions, in particular, which depend heavily on tourism for employment and foreign exchange earnings, are especially vulnerable to the spread of diseases such as SARS.

***Capital flows to the region were not significantly affected by SARS***

While the short-term impact of SARS on economies in the region was clearly visible, whether or not diseases such as SARS could have long-term effects depends to a large extent on the ability to contain the spread of the disease and efforts to restore public confidence by eliminating the uncertainties surrounding it. In this regard, there is no firm evidence of a significant negative impact on capital flows to the region as a result of SARS. Most of the stock markets in the region, which registered declines in the initial stages of the disease, recovered quickly, signalling that investors were not too worried about its long-term effects. In addition, FDI, which is usually based on a long-term investment plan, is unlikely to be permanently affected by adverse short-term developments, particularly when macroeconomic fundamentals are as strong as they have been in the region.

### **Transparency in managing risks**

***Timely and accurate dissemination of information can minimize the costs of an epidemic***

The importance of disease surveillance and the dissemination of accurate information was highlighted by the gravity of the spread of the disease. Lack of accurate information on the transmission mechanism of the disease was a prime factor in the undue panic and fear caused among the public and

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<sup>2</sup> Asian Development Bank, "Assessing the impact and cost of SARS in developing Asia", in *Asian Development Outlook 2003 Update* (Manila, Asian Development Bank, 2003), available at < <http://www.adb.org/Documents/Books/ADO/2003/update/sars.pdf> > .

the dissemination of accurate information in time could help to minimize such negative effects. Governments and the media, as well as international organizations such as WHO, were constantly engaged in the dissemination of information on SARS and on appropriate precautions that the public could take after its outbreak. However, information on the overall low morbidity and mortality associated with SARS tended to be underreported in the media compared with more sensational stories of individual cases and clusters.

The delayed recognition of the disease in China and the delay in full disclosure of information to the public and to the international community are considered to have contributed to the rapid spread of the virus worldwide. China's initial delay in the disclosure of information could very well be due to its lack of experience in handling unexpected crises of the magnitude of SARS and the present stage of its transition.<sup>3</sup> Considerations of political economy are also likely to have played a role, as the trade-off between transparency and economic growth might have compelled Chinese authorities to be cautious in the full disclosure of information for fear of large economic costs and social disruption. However, from a global welfare point of view, full transparency at the expense of a drop in growth would have been socially optimal. Such an approach would also have strengthened the rights of individuals to basic information.

***The delayed recognition of the disease in China contributed to its rapid spread***

The public good nature of information makes it vital for Governments wishing to retain credibility and the public's trust to ensure that full and accurate information is made available as soon as possible, so as to minimize panic and mitigate economic and social costs. This is particularly so when alternative channels for the diffusion of information, accurate or otherwise, such as the Internet, are readily available to the public. Governments need to work closely with medical and health professionals, as well as the media, in disseminating accurate information so as to convince the public of their transparency and reduce needless conjecture and apprehension.

### **Public health issues**

The negative externalities relating to infectious diseases make government intervention in the prevention of diseases a rational strategy. The general acceptance of these rules was amply evident during the recent outbreak of SARS with unprecedented public sector involvement in the fight against the deadly disease. However, the outbreak of SARS highlighted the inadequate preparedness of public health systems to cope with outbreaks of epidemiological diseases. There was no effective mechanism, not only at the country level but also at the global level, to face the challenges posed by SARS. This was a reflection of weaknesses in public health policies and poor coordination and cooperation among relevant institutions, both at the national level and within countries. Lack of financing and commitment, shortage

***SARS highlighted the inadequate preparedness of public health systems to deal with a sudden crisis***

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<sup>3</sup> Chi Fulin, "Lessons learned from China's SARS crisis", in World Bank, *Transition Newsletter*, vol. 14, Nos. 4-6, April-May-June 2003, available at < <http://www.worldbank.org/transitionnewsletter/aprmayjun03/pgs8-11.htm> > .

of trained health personnel and inadequate and insufficient R and D were additional problems.

***Public-private partnerships could play a vital role in the health sector***

The outbreak of SARS was a reminder of the fact that growth by itself is insufficient and well-functioning public health systems are essential for sustainable development. The lack of a proper diagnostic test and a cure for the disease reflected the inadequate focus on health research even at the global level. As such, reorientation of public health systems to meet the emerging challenges of an increasingly integrated global economy with a focus on institutional development, R and D, financing and capacity-building is vital. Public-private partnerships could be an effective mechanism for the sustainability of public health systems, particularly in the areas of R and D, health insurance and financing.

Health workers have become highly vulnerable to diseases such as SARS owing to the lack of proper diagnostics and infrastructure.<sup>4</sup> The service provision capacity of health-care systems in most developing countries is already strained owing to weak infrastructure and the high cost of medicines and, as a result, the systems are not in a position to cope with unanticipated surges in the demand for health services emanating from diseases such as SARS.<sup>5</sup>

The strong fiscal position in most of the countries affected by the disease facilitated its management without causing serious macroeconomic instability. The outcomes would have been different had the disease spread to developing countries which are financially constrained by large fiscal deficits and are technically incompetent in dealing with diseases such as SARS.<sup>6</sup> To compound the difficulties, many of these countries are dependent on tourism, an important factor in disease transmission, for foreign exchange earnings. This highlights the need for the availability of contingency funds to assist poorer countries in the event of the outbreak of a similar disease.

### **Disease surveillance**

***Disease surveillance is key to the prevention of epidemics***

Historical experience demonstrates that epidemiological diseases spread rapidly owing to close contact among people. The increased flow of people, goods, services and information across borders in an increasingly integrated global economy implies that adverse developments are quickly transmitted within a country and spread to neighbouring States. This was clearly evident in the case of the SARS epidemic. In such a scenario, surveillance is clearly vital in preventing the spread of diseases. Many

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<sup>4</sup> For example, about 86 per cent of total SARS infections in Singapore were initially contracted in hospitals, while several medical workers in Viet Nam died of SARS.

<sup>5</sup> The health system in China's countryside, where 70 per cent of the total population of 1.3 billion people lives, was ill-prepared to cope with the SARS outbreak. Not all suspected SARS patients could be hospitalized in a timely manner owing to the shortage of beds at designated hospitals.

<sup>6</sup> World Health Organization, "WHO SARS Scientific Research Advisory Committee concludes its first meeting", available at < <http://www.who.int/csr/sars/archive/research/en> > (2003).

countries affected by SARS appear to have failed in their surveillance of the disease. Countries with effective surveillance mechanisms and information dissemination channels were able to contain the spread of the disease at a relatively low social cost, while those lacking such mechanisms paid a greater price for their failure.

The strategies adopted by Singapore and Viet Nam are good examples of the effective containment of SARS. While efforts to control the spread of the disease were backed by strong political commitment in both countries, each country adopted a strategy suited to its means. In Singapore, surveillance measures involved (a) mandatory notification of suspected cases, (b) enforcement of effective contact tracing, (c) isolation of all suspected cases in the SARS hospital, (d) daily monitoring of fever clusters in all hospitals and nursing homes and (e) temperature screening by thermal imaging scanners at points of entry and in the community. Viet Nam, with limited resources, used basic surveillance tools supported by a good information dissemination system to achieve similar results. The immediate dissemination of information on the recent SARS case that emerged in Singapore several months after the spread of the disease was controlled reflects the country's firm commitment to transparency and prevention and the aftermath illustrates the market response to transparency.

***Strong political commitment was behind the success stories***

The strict measures adopted by Singapore in its attempt to control the spread of the disease were thought to be the world's harshest and possibly to have violated the fundamental rights of the public. However, in assessing their desirability, the circumstances as well as the overall social cost in the absence of those measures need to be taken into account. Considerations of political economy, as well as the trade-off between human rights and the potential threat of extinction of an entire small city-State in an extreme case scenario, make even draconian preventive measures rational in a crisis situation, in the short run.

### **Early warning systems and travel advisories**

The importance of the existence of an early warning system in alerting countries around the globe to impending epidemics was evident during the SARS outbreak. The global alert issued by WHO in March 2003, for the first time in its history, gave every country in the world time to prepare for a potential epidemic. However, the global alert on SARS was declared five months after the emergence of the virus in China, reflecting inadequacies in the present system. The delay in the identification of the disease where it originated and the lack of a positive response from some countries, which made the global warning less effective, provided room for the disease to spread rapidly within the region. Early identification of diseases and dissemination of information on outbreaks when they are still in their initial stages to global watchdogs such as WHO could help to contain epidemics sooner.

***Early warning played an important role in alerting countries to the impending threat***

The potential for the rapid spread of the disease through travel made travel advisories an important element of disease prevention. In the case of SARS, travel advisories were mainly initiated and issued by WHO, warning the public to avoid travelling to affected areas. Many countries issued travel advisories in line with the WHO travel warnings.

The negative effects of travel advisories on domestic economies made such warnings offensive to local authorities, leading to disputes in many cases. These could divert authorities in affected countries from giving priority to disease prevention to focusing on dispute settlement. These incidents demonstrate the importance of global cooperation in setting standard rules for such global warnings. Lack of cooperation in adhering to such warnings and the prioritizing of domestic economic considerations at the expense of global health have proved to be costly.

### **Regional and global cooperation**

***International travel makes disease prevention a global exercise***

The involvement of international travellers in the spread of the disease made its prevention a global exercise. The strategies adopted by some countries in the screening of international travellers, quarantine procedures, restriction on re-entry of migrant workers and travel warnings during the outbreak of SARS led to disputes between countries, making individual country efforts on disease prevention less effective. This highlighted the fact that the fight against diseases such as SARS, which spill over across borders, requires a cooperative effort. Focus on common screening and quarantine procedures for international travellers by all affected countries and cooperation with WHO with regard to the issuance of travel warnings may improve preparedness for effective disease prevention in future disease outbreaks.

***Regional and global cooperation can enable countries to maximize resources in the fight against epidemics***

The outbreak of SARS illustrates the importance of regional and global cooperation in handling epidemics that have far-reaching implications at the regional and global levels. Regional cooperation enables countries to restrict the spread of the disease through a common strategy based on mutual understanding of the issues involved. It also enables countries to make maximum use of available technology in the treatment of patients and to collaborate in R and D and in financing. Regional cooperation could also facilitate early preparedness for preventing epidemiological diseases that could emerge as a result of, for example, bioterrorism, lapses in laboratory biosafety and environmental pollution. The high cost of treating SARS also gives added impetus to the global debate on the provision of drugs at affordable prices to developing countries. The latter is particularly important with regard to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) and its bearing on public health and the fight against diseases in developing countries.

The existence of a subregional alliance, ASEAN, facilitated cooperation in the regional fight against SARS. The leaders and health ministers of ASEAN and their counterparts from China, Japan and the Republic of Korea (ASEAN+ 3) were able to map out a common strategy to

fight the virus in East and South-East Asia and agree on a set of standard practices for all countries dealing with SARS at several meetings held in 2003. Additional important outcomes of these meetings were a proposal for the establishment of an ASEAN disease control unit that would be responsible for coordinating technical information on emerging diseases; collaboration between the ASEAN Expert Group on Communicable Diseases with experts from China, Japan and the Republic of Korea in developing a plan for regional cooperation in conjunction with relevant centres under WHO or the Centers for Disease Control and Prevention in the United States; and the setting up of a special SARS fund by ASEAN and China to fight the disease. The web site maintained by the ASEAN Secretariat on SARS is an important resource for countries in the subregion.<sup>7</sup>

Meanwhile, the Asia-Pacific Economic Cooperation ministers endorsed the APEC Action Plan on SARS (see box) with the objective of building public confidence through (a) promoting a common set of guiding principles for health-screening of travellers, (b) encouraging cooperation in the prevention and treatment of SARS along with other emerging diseases and (c) exchanging accurate and timely information and best practices, on such measure as credible communications strategies. Although countries in South Asia were not directly affected by SARS, SAARC also took several steps to strengthen preparedness for preventing the spread of the disease.

### Salient features of the APEC Action Plan on SARS

#### Immediate steps

Information-sharing	<p>Hyperlink to the Ministry of Health in each economy, or equivalent agency responsible for SARS, to facilitate instant information exchange and cooperation</p> <p>Hyperlink to the APEC Emerging Infections Network to provide information for health officials and researchers on SARS and other emerging infectious diseases</p> <p>Link to other relevant international organizations, such as WHO, and to the ASEAN SARS Containment Information Network</p>
Strengthening a credible infectious disease strategy for APEC	<p>Coordination with WHO on how it could best be used to support international and national efforts to combat SARS</p>
Promoting common guiding principles for health-screening of air, land and sea travellers	<p>Pre-departure screening of all passengers from SARS-affected areas to prevent the spread on SARS to other economies. Pre-departure screening is conducted in conformity with WHO guidelines and may involve the completion of a standard health declaration card and a temperature check before boarding the vessel.</p> <p>Screening of all arriving passengers from areas with recent transmission of SARS</p> <p>Sharing of information in a timely manner on SARS cases that have travelled between member economies to enable contact tracing</p>

<sup>7</sup> Available at < [http://www.aseansec.org/your\\_sars.htm](http://www.aseansec.org/your_sars.htm) > .

Promotion of best practices and good ethics among officials to enable others to learn and benefit from such practices

**Medium- and long-term steps**

Communications strategy      Developing a communications strategy, including travel advisories and best practices for tour operators and relevant agencies

Trade facilitation              Preparation of a plan of action with a focus on promoting overall transparency in the implementation of measures in response to SARS

Promotion of mutual recognition of screening procedures to minimize inconvenience for travellers

Streamlining of border controls to ensure that screening procedures and appropriate health safeguards are implemented in a manner which does not unduly restrict business mobility

Information dissemination      Dissemination of scientifically based, timely and transparent information on SARS both within the business community and among the general public

Regional cooperation          Strengthening of cooperation in developing common standards for monitoring and reporting infectious diseases, as well as other public health issues

Setting up of networks among medical institutions of member economies to provide prompt information on emerging infectious diseases

Source: < <http://www.apecsec.org.sg/apec/ministerial-statements/sectoral-ministerial/trade/2003-trade/action-on-sars.html> > .

***Effective implementation of regional action plans is necessary for future disease control***

The growing disparities between some of the disease prevention strategies adopted by countries, which often led to disputes, were evident during the initial stages of the outbreak of SARS. The settlement of most of these issues at the meetings of ASEAN+ 3 and APEC ministers was a testimony to the importance and effectiveness of regional cooperation in handling similar diseases. However, the mere existence of disease prevention mechanisms makes little sense if they are not put into action, as was seen during the SARS outbreak. Effective implementation of the proposed APEC Action Plan would provide a sound basis for future disease control.

**Conclusion**

Dealing with SARS was a learning experience for many countries. While some were successful in containing the spread of the disease with basic tools supported by aggressive surveillance, others were able to control it with sophisticated instruments. For some countries, fighting SARS was a painful experience as the lack of transparency, inadequate health-care systems and the public's fear and panic prevented them from taking the measures required to control the spread of the disease in its initial stages. However, the experience has provided an opportunity for Governments to reconsider policies and practices in public health and in the dissemination of information. Re-examination of health policies, streamlining practices in disease surveillance and in the dissemination of information to the public, and strengthening regional cooperation, are essential to ensuring preparedness for the effective control of similar outbreaks in future with minimal economic and social damage.