Interim Report of the
Defense Science Board Task Force
on

SARS Quarantine

December 2004

Office of the Under Secretary of Defense
For Acquisition, Technology, and Logistics
Washington, D.C. 20301-3140

This report is a product of the Defense Science Board (DSB). The DSB is a Federal Advisory Committee established to provide independent advice to the Secretary of Defense. Statements, opinions, conclusions, and recommendations in this report do not necessarily represent the official position of the Department of Defense.

This Report is **Unclassified.**

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DEFENSE SCIENCE
BOARD

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION, TECHNOLOGY & LOGISTICS)

SUBJECT: Interim Report of the Defense Science Board (DSB) Task Force on Severe Acute Respiratory Syndrome (SARS) Quarantine

I am pleased to forward an interim report of the DSB Task Force on Severe Acute Respiratory Syndrome (SARS) Quarantine. The Task Force was asked to review and comment on the interaction of public health needs and national security needs using the SARS epidemic as a specific example.

The strategic and operational procedures currently in place within the Department of Defense provides an adequate basis to control a future health emergency. Additionally, the Department is working to incorporate the lessons learned from SARS into its procedures. The Task Force provides some specific recommendations to improve the current process. The Task Force is planning a future meeting to review the progress to date and to produce a final report.

I endorse all of the Task Force's recommendations and propose you review the Task Force Chairman's letter and interim report.

William Schneider, Jr.

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DSB Chairman

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DEFENSE SCIENCE
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MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT Interim Report—Defense Science Board Task Force on SARS Quarantine

The Task Force established by the Defense Science Board (DSB) to assess Department of Defense quarantining guidance for dealing with a Severe Acute Respiratory Syndrome (SARS) epidemic met on three occasions during 2003-2004 to review the status of current and planned Department of Defense (DoD) policies and procedures related to SARS outbreak response. The Task Force received a number of briefings describing SARS and other disease outbreak response and quarantine operations, Centers for Disease Control and Prevention SARS guidelines, lessons learned, DoD global surveillance systems, and military/civilian public health interfaces. We operated at a deliberate pace as both, the course of the outbreak and the maturing institutional responses, were rapidly moving targets.

Since the World Health Organization announced the last chain of human SARS coronavirus (SARS-CoV) transmission was broken in July 2003, a small number of confirmed cases have been reported, most originating from laboratory accidents in China, Taiwan, Singapore. Implementations of control measures (isolation, contact tracing and quarantine) were immediate and effective in controlling the spread of SARS in these events. The nations involved quickly alerted the global medical community, which seems to indicate an encouraging new level of openness, improving opportunities for public health response to disease outbreaks worldwide.

Based on the events of recent months, there is no indication that SARS represents a major public health problem to the United States this year. However we must remain vigilant and maintain the capability to detect and respond to a re-emergence. Other emerging pathogens, particularly influenza (H5N1) continue to pose a threat to the United States and to national security. Based on current evidence, SARS is a threat that was relatively easy to contain with a fairly low reproductive number and little or no asymptomatic transmission.[1] However, a system adequately prepared for a pathogen such as today's SARS may not be well equipped to handle the next novel pathogen. Therefore, higher levels of vigilance should also apply to other emerging diseases.

The efforts and lessons learned from SARS have helped to improve the nation's and the Department's capacity to respond to major epidemics. In general, the national

[1] Fraser C et al. Proc Natl Acad Sci U S A. 2004 Apr 20;101(16):6146-51.

concept of operations plan, Department Directives, and Center for Disease Control and Prevention (CDC) guidelines provides the necessary framework. Commanders are responding in a reasonably effective manner to implement the principles outlined in the Department Directive regarding emergency health powers, including quarantine. Plans are reportedly underway to further detail the Departmental plans dealing with public health emergencies and disease outbreaks. However, given the complexities involved in executing an effective and measured response, it would be prudent for the Task Force to provide oversight of the Department's progress over the next several months.

The following findings and recommendations are provided:

(a) Appropriate quarantine and isolation procedures occur within a spectrum and need not be perfect to have a salutary effect on an epidemic. While the military should be particularly vigilant not to be in fact or by allegation the vehicles of pandemic spread, the costs of extensive quarantine are very high, and provisions would be needed for welfare of those immobilized by quarantine restrictions. The transmissibility and virulence of the SARS-CoV, as we know it today is relatively low by the standards of other pathogens, but this may not be the case if the virus mutates or for future emerging pathogens.

(b) A level of uncertainty should be expected when constructing a reliable quarantine model, particularly during the early states of the outbreak. Working in close concert with civilian authorities, and heeding considered advice from CDC expertise as primary fiduciaries of US public health are essential to quarantine execution within DoD. Many policies and procedures will have to be improvised in light of current and local circumstances. While functional interfaces between civilian and military public health agencies exist at the very lowest and highest levels within DoD, efforts aimed at strengthening lines of communication among local military and civilian decision makers at the community level would pay dividends in outbreak response.

(c) A comprehensive exercise program that addresses the seams in the larger system of civilian and military, both within and outside the United States may prove helpful. Military commanders should actively participate with the civilian leaders of their communities in addressing trans-jurisdictional quarantine issues, in developing mutually agreed upon protocols, and in testing these plans through tabletop and actual exercises to demonstrate their need and identify their weaknesses. Systems and tools for collecting, organizing, and real-time tracking outbreak will be important and helpful to decision makers dealing with uncertainty.

(d) The protection of the force strengthens the civilian defense and response to an outbreak. The Department's capability to perform its mission could be limited if there is no plan for immediate protection of the force. While DoD has cautiously adopted a supporting role in response to an outbreak and related consequence management, this deferral may result in delayed action when immediate action is

demanded. Establishing training programs for Public Health Emergency Officers and criteria upon which to base recommendations advocating specific public health powers should help to reduce delays.

(e) The availability of isolation facilities in the event of a large outbreak could be a limiting factor. The Department should consider new technologies and alternative approaches to isolation. Since fecal contamination is a concern given persistence of SARS-CoV in stool, DoD may wish to review the empirical evidence on the efficacy of personal hygiene measures, including hand washing and use of masks in preventing SARS transmission and more generally in preventing infectious disease transmission. Regardless of whether additional SARS outbreaks are on the horizon, DoD should introduce signage similar to that posted in restaurant washrooms.

(f) Recommendations to enhance the Department Directive, *Emergency Health Powers on Military Installations* and the National SARS CONPLAN are included in Appendix B.

Dr. Joshua Lederberg,
Chairman of the Defense Science Board Task Force on SARS Quarantine

COL Roger L. Gibson, Executive Secretary of the Defense Science Board Task Force on SARS Quarantine

Enclosures:
1. Appendix A: Terms of Reference
2. Appendix B: References
3. Appendix C: A Review of Reference Documents by Dr. Thomas Inglesby, Center for Biodefense Strategy

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Appendix A: Terms of Reference

THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON
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ACQUISITION, TECHNOLOGY AND LOGISTICS

JUL 11 2003

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference—Defense Science Board Task Force on Quarantining Guidance for the Severe Acute Respiratory Syndrome Epidemic

You are requested to establish a Defense Science Board (DSB) Task Force to assess quarantining guidance for the Severe Acute Respiratory Syndrome (SARS) epidemic. Until the advent of an effective vaccine, quarantine may be the most effective means of containing the outbreak of SARS. However, quarantining may have an adverse impact on DoD planning and operations by preventing the flow of men and material to areas of concern. It may also erode relationships with host countries, and impact our forces through anxieties about family members.

To integrate public health needs, on behalf of national security, the Task Force should review and assess the following:

a) Existing doctrine and process by which quarantine policy is generated, as applied to all personnel in OCONUS as well as CONUS theaters.

b) Required cooperation with non DoD agencies and non US government entities including other countries.

c) Capacity of local commanders to rapidly surveil disease status, and establish need, ways and means for quarantine in relation to their assigned missions.

d) Methods, technologies and legal doctrine to allow safe transport of personnel through quarantined areas, and restriction of movement where needed.

e) Sample scenarios.

f) Coordination and allocation of DoD and non DoD resources to combat SARS

g) Identification and tracking of individuals potentially exposed to SARS.

The Task Force should also identify those features of the SARS guidance which may be applicable to future infectious disease outbreaks.

The study will be sponsored by me as the Acting Under Secretary of Defense (Acquisition, Technology and Logistics) and the Assistant Secretary of Defense (Health Affairs). Dr. Joshua Lederberg will serve as the Task Force Chairman. Lieutenant Colonel Tom Swinson, United States Navy, OSD(Health Affairs) will serve as the Executive Secretary. Commander Dave Waugh, United States Navy will serve as the Defense Science Board Secretariat representative.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DOD Directive 5105.4, the "DoD Federal Advisory Committee Management Program," It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of Section 208 of Title 18, U.S. Code, nor will it cause any member to be placed in the position of acting as a procurement official.

Michael W. Wynne
Acting

Appendix B: Defense Science Board Task Force on SARS Quarantine Interim Report—References

1. Terms of Reference--Defense Science Board Task Force on Quarantining Guidance for Severe Acute Respiratory Syndrome Epidemic, July 11, 2003

2. DoD Directive 6200.3, Emergency Health Powers on Military Installations, 5/12/2003

3. United States Government Severe Acute Respiratory Syndrome (SARS) Concept of Operations Plan (CONPLAN), January 8, 2004

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<u>Appendix C</u>: Defense Science Board Task Force on SARS Quarantine Interim Report— A Review of Reference Documents by Dr. Thomas Inglesby, Center for Biodefense Strategy

Document: ***<u>DoD Directive "Emergency Health Powers on Military Installations" May 12, 2003</u>***

This Directive would be useful in a commander's response to SARS or other disease outbreaks that were natural or caused by bioterrorism. It instructs military commanders to designate Public Health Emergency Officers (PHEO) who would counsel the commander on disease containment decisions in the event of public health emergencies like SARS or bioattacks, and it outlines the types of actions that might be deemed necessary. But I do have a number of concerns and some recommendations for change/amendment:

Section 4.1: **Recommend expanding possible scope of necessary response beyond specific Military Installations.**

The Directive focuses on military installations, property and personnel. It may be that disease containment measures would be necessary only within a specific military installation, but SARS cases may not be discovered until they are scattered geographically. A plan must be outlined for organizing a Command-wide or DoD-wide disease containment strategy in the event of widespread SARS cases.

Section 4.4: **Highlight importance of systems for Real-Time Tracking Scope of Outbreak** and **prepare decision-makers for much uncertainty.**

The Directive instructs the PHEO to ascertain the scope of the outbreak and the distribution of illness. Unfortunately, there will be a great deal of uncertainty. In all probability, we will not have rapid diagnostic tests available to confirm or exclude all cases. There will be many suspect cases, waiting for days to get final diagnosis. Tools for collecting and organizing the information on cases, their locations, etc. will be crucial as decision-makers try to decide what public health disease containment actions to take. These information technology tools should be established ahead of time. Even with such tools, decision-makers should understand that there will be much irreducible uncertainty regarding the extent of the outbreak and the location of cases. A military commander who is accustomed to a great deal of "situational awareness" on the battlefield may be surprised at how poor the situational awareness is with regard to the extent of a disease outbreak. In the military and civilian communities, there has been much focus on surveillance systems for "detecting an outbreak", but in general, far too little attention has been given to surveillance systems for managing an outbreak.

Section 4.6: **Recommend clear articulation of the process by which Decisions would be made to take these Special Public Health Powers.**

The powers being considered may be deemed necessary to control an outbreak. But they could at the same time have serious negative consequences. For example, stopping all ingress and egress of major military installation could:

- affect supplies of commodities and medicines within the installation;
- increase level of public anxiety within and outside of the base;
- keep civilians from leaving the base: and
- convince persons to hide their own illnesses to avoid detection and isolation, etc.

It is also not clear from this Directive that the Public Health Emergency Officer (PHEO) would have had any professional experience in disease containment response. It would be ill-advised to have a PHEO with no past experience in disease outbreaks be the sole lead advisor to the Military Commander on these decisions. A system should be arranged so that Military Commanders facing serious disease containment decisions (e.g. the possible need to use serious public health powers) could receive the counsel/expertise of public health experts at CDC (who have made such decisions in the past) and the counsel of DoD health leaders at a minimum. The Directive as written notes that military commanders simply need to inform the appropriate service Surgeon General and the ASD for Health Affairs of their major disease containment decisions. I would suggest turning that around so that these decisions are at least informed by the counsel of these DoD health leaders unless logistics make that impossible.

Section 4.6: **Recommend establishment of criteria upon which a PHEO could base recommendations advocating for specific public health powers**.

Even with an experienced PHEO (and even if the PHEO had substantial counsel from CDC experts at the time), it would be useful to agree in advance on the types of grave outbreak conditions that would necessitate complete closure of a base, or the quarantine of individuals or the "controlling of evacuation routes". Again, these are potentially very serious actions. The DSB Task Force was briefed about a Commander's experience last year when he had considered such actions during SARS outbreaks in Asia. The Commander noted that he did not feel like he had sufficient counsel to make good decisions on these matters. Advanced discussion and planning on these issues may help commanders make better choices. Prototype scenarios with different types and extent of disease outbreaks may be helpful for PHEO and military commanders as they plan for possible responses.

Section 4.6: **Recommend that military commanders make advanced plans to harmonize their disease containment decisions with appropriate civilian leaders**.

If a military installation is within or adjacent to a city that also has cases of the disease, a military commander should be encouraged to try to harmonize decisions and actions with

the civilian leaders of the surrounding areas. For example, actions taken by the Commander of Andrews AFB responding to SARS on his base should be aware of actions being taken by elected officials in Washington, DC and State of Maryland. Such cooperation would best be established by advanced planning. The DSB Task Force was briefed on a number of military/community efforts that had attempted to forge such cooperative efforts, but it sounded like not a great deal of progress had been made. I would explicitly direct the PHEO to immediately initiate such cooperative planning efforts as a part of his or her responsibilities.

Document: ***US Government Interagency SARS Concept of Operations Plan***

I recognize this is meant to be a summary document, but found it was theoretical and vague to the point of not being particularly useful to those who would find themselves in the midst of decision-making or public health operations during a large SARS outbreak.

Specific comments: By design or neglect, DoD's responsibilities are vague in this CONOPS. It would seem reasonable to assume that a large multi-city outbreak of SARS would create tremendous burden on the US health care and public health systems. There are certainly thresholds beyond which hospitals would have difficulty functioning (as point of reference, look at what happened to major Canadian hospitals with single digit numbers of SARS cases – whole sections of their hospitals became dysfunctional or non-functional). Therefore, the DoD may be asked to provide logistical and/or personnel and/or health care facility and/or transport support during such a crisis. Presumably requests for such DoD help would be made through NORTHCOM now, but the mechanisms by which such requests would happen, how decisions would be made (especially if military units were also deployed overseas in Iraq) remain unclear and are not articulated in this document.

The charts on page 15, 16, 20, 24 illustrate DoD responsibilities. Included in these responsibilities on page 24 is "support DHHS quarantine and isolation":

- What does "support DHHS quarantine and isolation" mean?
- Does it mean that DoD can enforce DHHS quarantine decisions with force?
- Does it give DHHS all the logistical support and material resources it needs for implementing voluntary home stays?

In the area of quarantine and isolation in particular, more clear articulation to the DoD of the actions that DHHS might take and how it would plan to implement them is warranted. Expectations should be clarified now, in advance of a crisis, not during a crisis.

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