THE ROYAL SOCIETY

The Academy of Medical Sciences

Summary of oral evidence: Professor David Menon FMedSci.

10 April 2006

Professor David Menon FMedSci is Head of the Division of Anaesthetics, University of Cambridge. The views expressed were the personal views of Professor Menon.

Members of the working group present were: Sir John Shekel (chair), Professor Barry Furr, Professor Neil Ferguson, Dr John McCauley, Professor Andrew McMichael, Professor Karl Nicholson, Dr Geoffrey Schild and Professor Robin Weiss.

Key points

Clinical care in a pandemic

Professor Menon described a paper he co-authored with the Intensive Care Society on modelling the impact of an influenza pandemic on critical care services, which was published in September 2005. Following media coverage of the paper, Professor Menon and his colleague Dr Bruce Taylor (Portsmouth NSH Trust) were approached by the Department of Health for information and Dr Taylor now sits on a Department of Health planning committee.

Professor Menon explained to the working group that in a pandemic it would be would be beneficial to track illness and to know which, and how many, patients with influenza are likely to be admitted into the intensive care unit (ITU). The study used community modelling to model the demand for critical care beds in England in a pandemic. Currently 10-20% of patients in hospital with pneumonia are admitted to ITU, 50% of which require mechanical ventilation. Professor Menon's modelling predicts that ITU capacity will be needed at more than 200% of present capacity.

Professor Menon told the group that it will be vital to study extensively the first few cases in a pandemic, for example, to answer questions such as does the pandemic virus act like the avian virus, and is it the disease or host response that kills as this may affect treatment choice. For example in past pandemics, the cytokine response has lead to organ failure and admission to ITU. Mini pandemics may arise within regions of one country and much can be learned about the severity of the illness if sufficient resources are deployed in time. This should not be considered a luxury, but a vital part of any response.

Information gathered from the initial cases can be used to estimate the predicated length of time a patient will spend in ITU. Studies have shown that in seasonal influenza the median length of time in ITU is 3-4 days, but it is predicted to be approximately 10 days for a pandemic strain. The percentage of hospital patients requiring critical care will crucially dependent on the virulence of the virus. This may in turn determine which patients should be ventilated, for example, should the very ill be admitted to ITU and ventilated if they are unlikely to recover? This will depend to some extent on public expectation and resources available.

Current preparedness planning

Professor Menon was asked if anything more could be done now to prepare for a pandemic. He told the group that there is no money available in the NHS to train fallback nurses to operate ventilators in a pandemic. He went on to say that the numbers of appropriately trained staff available in a pandemic will be the limiting factor. It is predicated that, like the general population, 25% of nursing staff will become ill in a pandemic but numbers of available staff will decrease further if schools close and nurses have to stay at

home to look after their children. Professor Menon also highlighted other operation problems in a pandemic, for example hospital delivery issues such as intravenous (IV) fluids, food, consumables and antibiotics for associated bacterial infections.

Therapies

Existing antiviral treatments were discussed and it was noted that Tamiflu can not be administered IV as the appropriate pharmacokinetic studies have not been done. Professor Menon's group hoped to examine the effectiveness of Relenza (which can be given IV) in patients admitted to ITU this winter but no cases of seasonal influenza were admitted to his ITU (perhaps due to the uptake of seasonal flu vaccines following the pandemic alert). Hospitals are not stockpiling antiviral drugs.

The use of monoclonal antibodies from recovered individuals to treat high risk staff was discussed. Their high cost (up to £30,000 per year) will mean they will not be used extensively but may be justified for very high risk staff, although there is a risk of other blood-borne infections.

Communication within the NHS

Professor Menon believes that communication is poor within the NHS. As previously described, it is vital to learn from the first clinical cases in a pandemic but there need to be methods in place to disseminate the information throughout the NHS. Professor Menon believes that the information needed is not likely to be disseminated through the Department of Health, but more likely through the Intensive Care Society or by word of mouth. He believes that this needs to be addressed by the Department of Health.

Clinical research in a pandemic

Professor Menon discussed the need for clinical research in a pandemic and the associated problems of ethics committee approval, trials needing to be conducted in multiple centres and gaining consent from unconscious patients. He aims to submit a proposal to the MRC call for evidence for research programmes which will be activated if a pandemic occurs, although he has encountered problems in preparing the submission. The proposal is to collect phenotype data from patients admitted to hospital and will require research nurses to collect blood samples. However, it is hard to employ nurses for a study which may not happen so he is proposing to transfer nurses from an ongoing research programme which is likely to be suspended in a pandemic.

Diagnostic tests

Professor Menon was asked about the importance of diagnostic tests in a pandemic and thought that they may be important in diagnosing the first few individual cases. However, he did not see bedside diagnostics as relevant once the pandemic had become a population problem.

Risk of infection to staff

The working group discussed with Professor Menon if he anticipates an increased risk of infection in hospital to patients and staff. This will depend on clinical severity, viral infectiousness and viral shedding. Pandemic influenza is likely to likely to be different from SARS which was predominately a hospital acquired infection. However subsequent discussion showed that we have no hard data on whether hospital staff are exposed to a significantly greater risk of acquiring the infection than the public. In the absence of such information, or if new data emerge showing that this is indeed the case, clinical staff should be offered the maximum practicable protection against infection. This would be important not just to prevent staff sickness in personal terms, but also to maintain morale and ensure that the clinical workforce was maintained as well as possible. Immunization of staff, if possible, would be highly desirable.