Abstract

Amidst the human suffering caused an influenza epidemic it is all too easy to overlook the disease’s wider social and economic impact. Not only does influenza impose huge infrastructure demands on health care systems, but it exacts substantial economic costs in terms of sickness-related absenteeism, disrupted work schedules and lost productivity to society at large. Influenza accounts for around 10% of sickness-related absence from work in Europe where the likely cost of lost productivity in France and Germany, for example, ranges from £5.6 billion to £8.5 billion per year, according to ESWI estimates.

But how to assess the full economic impact of influenza? The direct costs are easily enough identified, but what about the indirect costs? How should these be measured? How for example, does one assess the cost of lost opportunities, and what are the economic gains of vaccination regarding avoided costs?

Finally, which target groups for vaccination would generate the greatest avoided costs? Leaving aside the moral implications of such a question, the fact remains that politicians and health policymakers need the cold hard figures to optimally allocate the costs of vaccination and preventative health campaigns. These issues and more were clearly delineated during this session, co-chaired by Drs. T. Szucs of the University of Zurich and K. Nichol of the University of Minnesota.

Report on the conference session Economic and social impact of epidemic and pandemic influenza

Chairmen:
- Dr. T.D. Szucs, University of Zurich, Switzerland
- Dr. K. Nichol, University of Minnesota, Minneapolis, USA

Speakers:
- Dr. M. Meltzer, Center for Disease Control and Prevention (CDC), Atlanta
- Dr. E. Hak, UMC Utrecht, The Netherlands
- Dr. J. Chancellor, Consultant, Innovus Research Ltd, UK
- Mrs. C. Ammon, Business Group Influenza, Geneva, Switzerland

“In the 21st century the death rates are going to vary hugely in terms of what you can predict. And we will not be able to tell its scale.”
Dr. M. Meltzer, Senior Health Economist, CDC, Atlanta

“I think the next pandemic will lead to an uncontrollable situation: a very high death rate and huge costs.”
Dr. E. Hak, UMC Utrecht, The Netherlands

“Based on our analysis across four European countries, offering vaccination to all people between 50 and 64 years of age would be cost-effective.”
Mr. J. Chancellor, Consultant, Innovus Research Ltd., UK

Opening the session, Dr. E. Hak of Utrecht University’s Medical Centre, pointed to research showing that if a pandemic were to hit the United States, for example, the human and economic costs would be astronomical.
“Deaths would range from 89,000 to 207,000 and the cost to the US economy could run as high as $167 billion,” he said. “But these are conservative estimates because they do not include loss of productivity costs,” he told participants.

Based on a recent study\(^1\) by his institution to estimate morbidity, mortality and direct medical costs, Hak and team predicted that the next influenza pandemic in the Netherlands would infect one-third of the Dutch population, Hak concluded that high-risk sub-groups and the adult population aged 20–64 years should be the focus of vaccine treatment and prevention. But he also noted that “I think the next pandemic will lead to an uncontrollable situation: a very high death rate and huge costs”.

### The ability of science to circumscribe economic impact

The following speaker also had a sobering view of the ability of science to circumscribe the economic impact of a pandemic.

“Flu is a disease that visits us every year and we really do not know what its costs are to society. For any given gross attack rate, there’s a wide range of potential deaths. In the 21st century, the death rates are going to vary hugely in terms of what you can predict, and we will not be able to tell its scale,” said Dr. M. Meltzer, senior health economist at the US Center for Disease Control in Atlanta.

Meltzer said the CDC has examined the economics of vaccination in the United States based on the priority of saving high-risk lives versus decisions linked to macro-economic costs avoided. Noting that the vast number of pandemic victims “who are going to clog up doctors’ offices and the medical system” will be under 65 years of age, Meltzer said policymakers face a Salomonic choice.

“If you choose risk-of-death as the criterium, then priority goes to those over 65: Grandma gets the first available supplies. But if it is to maintain society and keep it running, then from a purely economic viewpoint you have to protect the 20–65 working age group and then the 0–19 year-olds. But this sends Grandma to the bottom of the list,” he said. “If you’re the minister of health of country X, which of these do you choose? The economics of a pandemic suggest that you vaccinate the high-risk populations of adult sand children first—and the elderly last.”

He also stressed that vaccination policy must protect “the first-responders” so that health care workers and doctors can treat others. But that assumes health care workers get themselves vaccinated—a challenge echoed time and again during the 4-day ESWI conference. Indeed, the problem was reiterated by session speaker C. Ammon of the Geneva-based Business Group Influenza.

“Vaccine uptake among HCWs remains very low and absenteeism (due to sickness) is a widespread problem within healthcare systems,” she said. “Flu is the first reason for absenteeism—about 10 percent of the total. After returning, the person has lost 50 percent of his productivity during the period.”

Even with the best of preventive measures, however, Meltzer underscored the impossibility of predicting for policymakers what vaccinations will produce in terms of the number of lives saved.

“Next year will be different than this year. Some years there will be virtually nothing; others will see an absolutely deluge of hospitalizations and deaths,” he said. “This is a very important message to pass to the public and policymakers: we do not know exactly what we are preparing for.”

### Cost-effective vaccination policy

The session’s subsequent speaker agreed. “The fluctuating annual rate of influenza attacks is important among the many variables involved in economic modeling of flu,” Mr. J. Chancellor, consultant with Innovus Research Ltd., based in High Wycombe, UK, told participants. “Vaccination policy needs to be cost-effective averaged over good and bad years.”

Chancellor presented a cost-effectiveness model for reorienting policy in Europe. Noting that vaccination across the continent is currently recommended for people aged over 60 and those with chronic conditions associated with high risk of influenza complications. This contrast with the USA, which recommends vaccination of all over-50s.

The objective of Innovus’ research was to determine “whether extending routine influenza vaccination to all adults aged over 50 would be cost-effective in several countries and continents,” he said.

His company conducted a cost-effectiveness analysis for four countries: France, Germany, Italy and Spain. The study predicted that vaccinating over-50s would lead to an average of 116,700 and 56,000 avoided-cases per year in France and Germany, respectively, while in either Germany or Italy “the financial impact on absenteeism, together with healthcare resource savings, actually exceeds the cost of vaccination.”

 Routinely vaccinating all people between 50 and 64 years of age would be cost-effective, Chancellor concluded. “These conclusions hold for the four European countries studies and we think they would be similar in other advanced countries, too,” he said.

### Cost effectiveness of vaccinating school children

Wrapping up the session, Dr. K. Nichol outlined the results and conclusions of her institution’s study to assess the

\(^1\) See Chapter I, Proceedings of the scientific sessions for the scientific paper based on this study.
economic implications of vaccinating 6–18-year-old school children against influenza. Balancing the direct and indirect vaccinations costs per person – estimated at $29.77 – against the study’s estimated avoided costs of $31.54, Nichol said the results pointed in one direction.

“We think vaccinating school children in this age group would be highly cost-effect and even cost-saving for society at large,” she concluded.