Influenza Vaccination

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It is estimated that the overall annual number of hospitalizations associated with influenza in the United States is 20,000–300,000. This is reflected in an average of 114,000 excess hospitalizations [1]. Rates of influenza-associated hospitalizations vary with age. At ages 0–4 years it ranges from 100:100,000 in low risk to 500:100,000 in high risk populations. In people aged ≥65 years rates have ranged from 200 to more than 1,000 per 100,000 population. In this population influenza-associated death rates are estimated at 30 to over 150 deaths per 100,000 population. It is estimated that between 20,000 to more than 40,000 deaths annually are influenza associated. The Institut Pasteur estimates the annual number of influenza-related deaths in France to be between 500 and 4,000 [2]. In the 1918 pandemic at least 21 million deaths were attributed to influenza [3].

Influenza vaccine was introduced 50 years ago [4], and for many years was used for the elderly and persons belonging to high risk groups. In recent years, however, it has been recommended that vaccination be used more widely to combat "in-house" infections in the home, community and workplace, and reduce the high costs of absenteeism plus medical care caused by influenza. Cost-benefit and cost-effectiveness of vaccination have been firmly established in many studies [2,5–7]. These studies showed reductions of 36–43% in absenteeism and 44% in visits to physicians, and 37% in hospitalizations for congestive heart failure. The economic savings were substantial.

While there is a general consensus with regard to the benefits of vaccinations there are also certain points for concern. The first is the antigenic variability of the viruses involved in different outbreaks [8]. These changes, which occur annually, present a formidable task for the healthcare system. A new outbreak must first be monitored and diagnosed, the causative strains isolated and identified, followed by recommendations for the production of the next years' vaccination programs determined by the WHO, CDC and other agencies. A comprehensive network of epidemiological agencies and laboratories in many countries are involved. The recommendations must be made in time for manufacturers to provide the necessary material under very strict production scrutiny. This is a complex process that is not fail-proof. Firstly, the determination of the imminent strains may prove wrong. Secondly, the causative agents at the end of the season may be different from those at the beginning of the season. Such mishaps occur and people who are vaccinated may still be exposed and prone to illness. Furthermore, as occurred recently [9], there are possible delays in production and supply of the vaccine. For the coming season it means that instead of the recommended expansion of the vaccination programs, we in fact have to restrict them.

Another problem that emerged since vaccination was implemented is the occurrence of complications and untoward effects. Such effects are usually negligible, but not necessarily so. An "outbreak" of Guillain-Barre syndrome in 1976 caused a major alert [10]; and in February of the same year an outbreak at Fort Dix was caused by swine-type Influenza A virus, which is the same strain believed to be responsible for the 1918 pandemic. All over the world health authorities became preoccupied with efforts to prevent a new pandemic and the production of vaccine was accelerated. In the USA the government allocated a huge budget for this purpose and banned exportation of the vaccine. Shortly after the vaccination campaign was begun an increase in the numbers of Guillain-Barre syndrome were documented. More than 500 cases were reported, with 25 deaths. This prompted cessation of the vaccination and the destruction of millions of doses. I remember that the Israel Defense Forces could not obtain vaccine from the U.S. and we purchased it from other countries. Among 90,000 of those vaccinated there was not a single case of Guillain-Barre syndrome! In more recent years [11] findings suggested "slightly more than one additional case of Guillain-Barre Syndrome per million persons vaccinated." Retrospective interpretations [10] did not rule out possible causative connections. Nonetheless, such mass production under the threat of imminent epidemics carries the risk of inadequate quality control and delays in supply.

Despite the above-mentioned pitfalls, vaccination is still the mainstay for prevention of morbidity and mortality from influenza. In recent years an alternative approach is being developed and used, namely antiviral agents, but these drugs do not replace vaccination, which has proved to be the most effective method. Finally, vaccination of healthcare workers is essential to prevent influenza among them, their families and their patients. Healthcare managers should make every effort to increase the compliance of their personnel.

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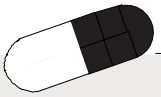
Capsule



Video game after effects

The relation between sleep and memory is still poorly understood. Stickgold et al. analyzed hypnagogic imagery, the types of visual images experienced just before falling asleep, after long sessions of playing the computer game Tetris. They compared amnesia patients, normal volunteers without any prior experience playing the game (novices), and players with considerable Tetris experience (experts). All three groups reported similar highly stereotyped images. Because amnesics described the same kind of experience, this finding indicates that declarative memory processes do not underlie the effect. Rather, the images seem to be more akin to priming of perceptual processes, a function that is fully intact in amnesics.

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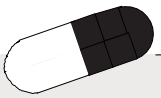
America's present need is not heroics but healing, not nostrums but normalcy, not revolution but restoration, nor agitation but adjustment, not surgery but serenity, not the dramatic but the dispassionate, not experiment but equipoise, not submergence in internationality but sustainment in triumphant nationality.

Warren G. Harding, 29th American President (1865–1923)

Capsule



Making an unkind cut

In Alzheimer's disease, the accumulation of beta-amyloid peptide in the brain results from the cleavage of its precursor protein by the membrane-associated aspartic protease memapsin 2. Hong et al. have determined the crystal structure of the protease domain of memapsin 2 complexed with an inhibitor at a resolution of 1.9 angstroms. Although the hydrogen bonds involving the inhibitor backbone resemble those of other aspartic proteases, contacts with inhibitor side chains are different, and the inhibitor backbone has an unusual bent structure. These features may facilitate rational design of drugs that specifically inhibit memapsin 2.

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