



Compliance with Influenza Vaccination and the Health Belief Model

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In this edition of the journal, two papers contain reports on the possible reasons for poor compliance with influenza vaccination [1,2]. One deals with the population over the age of 65 and the other with healthcare workers. Since the reasons for vaccination in the two subpopulations are somewhat different, the factors affecting compliance may differ. Among the elderly, there are clear medical indications for vaccination [3], whereas among healthcare workers, more emphasis is given to the potential cost-benefits of the procedure [4]. In both studies in this issue of the journal, the authors demonstrate low compliance rates – among the elderly about 50%, and among healthcare workers only about 11%.

Compliance with influenza vaccination has been dealt with extensively in the medical literature, both separately and as part of the more general subject of compliance with recommended preventive measures. The Health Belief Model, first described in the 1950s [5,6], is a popular framework for conceptualizing this issue. Interestingly, while neither Abramson and Cohen-Naor [1] nor Habib et al. [2] explicitly mention this model, both use terminology consistent with its underlying assumptions. The basic dimensions of the model comprise individual perceptions such as perceived susceptibility, perceived severity, perceived benefits and perceived barriers. These are coupled with modifying behavior such as demographic variables and cues to action [7]. In essence, the individual perceptions itemize the different components affecting the decision whether or not to take action.

Perceived susceptibility (threat) is the individual belief regarding the likelihood of experiencing the condition, and perceived severity is the extent to which one believes that the potential threat will affect one's state of affairs. Perceived benefits relate to confidence in the efficacy of the preventive measures. Perceived barriers are beliefs about the extent to which the preventive measure may be expensive, unpleasant or simply inconvenient. Cues to action can be either internal, such as experiencing non-specific somatic sensations, or external such as information

from the media or personal physicians. Finally, health behavior is influenced by general health beliefs about vulnerability and the consequences of health problems.

On the face of it, perceived susceptibility to influenza should be clear. The disease is highly predictable in that it follows a remarkably consistent seasonal pattern. However, since the attack rate varies widely from year to year, there is also a strong element of uncertainty. Although the disease can cause significant mortality among the elderly and chronically ill, the difficulty in ascribing individual deaths to influenza tends to detract from its impact at the personal level. This may diminish the perceived severity. On the other hand, the perceived benefits should be clear. The efficacy of the influenza vaccine among the elderly is well-documented [3,8,9]. In a recent study, Nichol et al. [8] showed that among elderly people with chronic lung disease, hospitalization rates in the influenza season were 50% lower and death rates 70% lower in the vaccinated subjects averaged over a period of 3 years. The efficacy of the vaccine in reducing morbidity in young adults has been demonstrated in several studies [10,11].

Why then the skepticism about the benefits of the vaccine? The diagnosis of influenza is essentially based on clinical signs and symptoms that are identical to those for many viral infections. Thus even if the efficacy of the vaccine is high, the vaccinee may suffer from another viral infection with "flu-like" symptoms and create the mistaken perception of vaccine failure. This undermines the perceived belief in the benefit of the vaccine. It is thus not surprising that both Abramson and Cohen-Naor [1] and Habib et al. [2] found that good compliance is associated with the belief that the vaccine gives good protection (perceived benefits).

For healthcare workers, the factors affecting compliance are likely to be somewhat different since the use of the vaccine is governed largely by cost-benefit considerations. Whereas influenza vaccination has been found to be cost-beneficial in people aged 65–74 [12], for the working population the financial benefits are sometimes less clear.

While studies have shown an economic benefit to employers [13], in a recent randomized trial in a working population in the United States the reduced costs associated with morbidity did not compensate for the financial outlay associated with vaccination [4]. This was demonstrated even during a year when the vaccine virus matched that of the predominantly circulating virus. It should be noted, however, that this study was conducted over a period of 2 years only, and the costs are applicable to the United States. Thus the findings cannot be generalized, without qualification, to other populations in general, and to Israel in particular. Nevertheless, a single study such as this one, appearing in a high profile journal, may have a disproportionate influence on physicians. They thus need to be kept informed of the potential financial benefits of vaccination based on a wide balanced overview of the literature, which at present supports vaccination of workers on economic grounds [14].

Another limiting factor that may affect motivation to be vaccinated is the possible failure of the individual worker to view absenteeism from work as a particularly negative outcome. Since the perceived severity in the working population may be relatively low, any perceived barriers would become much more dominant. For example, if the vaccine is not given during working hours, inconvenience may become a dominant factor. In fact, Habib et al. [2] found that non-compliance among healthcare workers was associated with low awareness of severity of the illness (perceived severity), of vaccine efficacy (perceived benefits), and unavailability of the vaccine in the workplace (perceived barriers).

What can we learn from the two studies in this issue of the journal? Despite the observation that compliance is affected by several components of the Health Belief Model, both Abramson and Cohen-Naor [1] and Habib et al. [2] found that one of the commonest potential barriers is lack of information from physicians. A similar finding was reported from a study in the United Kingdom [15], where compliance among the elderly was 48%. The failure of physicians to inform patients of the benefits of vaccination appears to affect compliance in all age groups, although not surprisingly it appears to be much more marked among healthy people under the age of 65.

Although the Health Belief Model has been used widely to examine the behavior of patients, there is a dearth of studies incorporating the model in evaluating the behavior of physicians. It seems eminently reasonable to apply the same criteria of perceived susceptibility, severity, benefits and barriers to determine the role of physicians in poor patient compliance. To what extent are they aware of the susceptibility of their patient populations? To what extent do they believe that severe complicated disease is not uncommon, and to what extent are they convinced of the efficacy of vaccination? To what extent are they concerned

about reducing worker absenteeism? While improved compliance for influenza vaccination will require concerted patient information campaigns, there seems no doubt that they should be accompanied by much more targeted physician education. In addition, technical aids such as computerized reminder systems could help to motivate the physician to ensure that the target population for vaccination is indeed informed of the need for vaccination. If these goals are met and vaccination is readily and conveniently accessible to the target population, perceived benefits will improve, perceived barriers will be reduced and compliance should increase.

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