Influenza vaccination in the elderly: 2. The economics of sending reminder letters

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Reminder letters and follow-up telephone calls were used to increase influenza vaccination acceptance by 273 well elderly registered at an urban community health centre. The net effect of the reminder letters was to increase overall coverage to 43%, from 17% in the previous year. Follow-up telephone calls to patients who had not responded to the letters increased coverage to only 55%. Calculation of costs per additional vaccination given revealed that the use of reminder letters alone was much more cost-effective than follow-up telephone calls in increasing coverage. However, with the current fee-for-service reimbursement by medical care insurance in Ontario, neither means of improving vaccination coverage would result in net practice earnings. The implications for an effective and efficient annual influenza program in Canada are discussed.

On a fait parvenir à 273 personnes âgées bien portantes qui étaient inscrites à un centre de soins communautaire une lettre de rappel les invitant à se faire vacciner contre la grippe afin d'accroître le taux d'acceptation. Cette campagne a permis de porter de 17% à 43% le taux d'acceptation par rapport à l'année précédente. Par la suite, on a téléphoné aux récalcitrants, mais cela n'a accru le taux d'acceptation que de 12%. Si l'on se fonde sur le coût par vaccination supplémentaire, il est clair que la campagne postale seule est beaucoup plus rentable que le suivi téléphonique. Mais comme l'assurance-maladie ontarienne rembourse uniquement à l'acte, le médecin ne gagnerait rien, sur le plan strictement pécuniaire, à utiliser l'une plutôt que l'autre méthode pour accroître le taux de vaccination. Les auteurs formulent quelques remarques sur l'efficacité et la rentabilité d'un programme annuel de vaccination anti-grippale au Canada.

Routine annual influenza vaccination for the elderly has long been recommended by public health authorities in North America.[1] Yet published estimates of the coverage (the proportion of eligible people who are vaccinated) achieved for this population have generally been below 20%.[2,3] In the last issue of *CMAJ* (pages 371 to 375) we reported the results of part 1 of this study, which was undertaken to evaluate the impact of reminder letters and follow-up telephone calls on the acceptance of influenza vaccination among 273 elderly people who were registered at a community health clinic in Hamilton, Ont. The use of a reminder letter alone resulted in an increase in the overall vaccination coverage of patients over 65 years of age, from 17% in 1981 to 43% in 1982. When both a letter and a follow-up telephone call were used the overall coverage increased to only 55%.

In spite of the substantial increase in vaccination coverage achieved with reminder letters (which was similar to that found in studies in the United States[4-6]) this follow-up method is not widely used in primary care practices. One reason may be the economics of such "outreach maneuvers" for physicians in private practice. No studies have been published of the relative cost-effectiveness of using reminder letters and subsequent follow-up telephone calls to increase vaccination coverage. Neither have the implications for practice earnings been studied in a fee-for-service system of physician reimbursement, a system that is used in Canada, where patient copayment plays little or no role in financing health care delivery.

In this paper we have calculated the relative cost-effectiveness of using both reminder letters and follow-up telephone calls to increase influenza vaccination coverage among the elderly, as well as the net practice earnings that would result from such activities in primary care practices operating within a provincial health insurance plan. The clinic in which the study was carried out is a health service organization funded on a capitation basis by the Ontario Ministry of Health.

Patients and methods

The study population, the setting of the clinic in which the study was conducted and the study design were described in part 1. In previous years no outreach efforts had been made at the clinic to inform elderly patients of their need for influenza vaccination.

The cost-effectiveness ratios for both the reminder letters and the subsequent follow-up telephone calls to nonresponders were calculated as "net costs to the practice per extra vaccination achieved". The ratios were then compared to determine the relative efficiency[7] of the two outreach strategies. We also calculated for

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each maneuver the net profit or loss to a typical Ontario general practice operated on a fee-for-service basis under provincial medical care insurance.

Results

Reminder letters

The cost of sending 273 reminder letters was estimated at between $156 and $180 — about 57 to 66 cents per letter.*

Since there had been no health education campaigns for vaccination and no "influenza scare" in Hamilton between autumn 1981 and autumn 1982, we assumed that the difference between the vaccination coverage of the target population in 1981 (17%) and 1982 (43%), after reminder letters had been sent, was due to the effect of the reminder letters. The effectiveness of the reminder letters in 1982 is the difference in coverage of the target population, 26%. Since there were approximately 72 more vaccine recipients in 1982, the cost-effectiveness of the letters is between $2.16 and $2.50 per additional vaccination, depending on the labour costs assumed.

Under the Ontario Hospital Insurance Plan (OHIP) the reimbursement received at the time of the study for an influenza vaccination given in a fee-for-service general practice (not including other services rendered at the same visit) was $3.15. However, the total practice costs for each additional vaccination delivered (as a result of the reminder letters) were between $3.11 and $3.80, depending on the nursing and secretarial labour costs assumed.† Therefore, the use of reminder letters to increase vaccination coverage in a fee-for-service practice would result in, at best, only "break-even" earnings or, at worst, a substantial loss. As well, since almost all the costs of sending such letters were variable‡ and approximately proportionate to the number of letters that were sent, the practice earnings would not likely increase in larger practices. In short, there are few "economies of scale" to be had from this approach to improving coverage. On the other hand, the effectiveness and thus the overall profitability of sending reminder letters might well be reduced if the pre-existing coverage were higher than the 17% we found in our study. Such an effect would occur if the maximum achievable coverage were in some way a "ceiling", representing a sort of saturation in the target population. As we described in part 1, there was some evidence of such an effect in our study population owing to a "hard core" of patients who did not accept influenza vaccination.

Follow-up telephone calls

The total costs of the follow-up telephone calls were between $120 and $180 (between $1 and $1.50 per person), depending on the labour costs assumed. Yet these calls brought only another 23 persons (less than 20% of those telephoned) for vaccination.§ Therefore, as might be expected for a measure targeted only to initial nonresponders, the cost-effectiveness of follow-up telephone calls was much less favourable than that of the initial reminder letters — approximately $5 to $8 per additional person vaccinated. Furthermore, even if all of the nonresponders to the reminder letters had received a follow-up telephone call the overall coverage would have been increased from 43% to only about 55%. This gain is unimpressive given the sizeable costs incurred.

With the current OHIP rates the use of follow-up telephone calls for all the nonresponders to the reminder letters would have also resulted in sizeable practice losses. Each additional vaccination resulting from a phone call cost the practice between $6 and $9 but generated only $3.15 in additional revenue. As with reminder letters, the costs of follow-up telephone calls are almost proportional to the number of calls made. Therefore, the financial picture is, again, not likely to improve with increasing practice size and would probably be less favourable with higher pre-existing levels of coverage.

Discussion

Shortcomings of the study

We acknowledge that our study does not represent a true cost-effectiveness analysis. We have simply reported the potential profitability of sending reminder letters for influenza vaccination to the elderly in an Ontario general practice. We made no attempt to measure the actual impact of vaccination on morbidity or mortality, or on the subsequent winter's "workload" in the practice and the associated fee-for-service income.

The main reason we did not conduct a true cost-effectiveness analysis is that substantial methodologic problems beset the determination of vaccine effectiveness in a small practice population over 1 year. First, ideally, a randomized controlled trial is required to estimate the impact of vaccination in an unbiased fashion. Current official public health recommendations for vaccination among the healthy elderly[1] make such a design ethically difficult to justify, although evidence on the effectiveness of influenza vaccination in the elderly has come largely from outbreaks of particular strains of influenza

*This cost comprised $26 for materials, $48 to $72 for labour and $82 for postage. The range of values for labour costs has been used throughout the cost calculations as a "single-variable sensitivity analysis". This corresponds to the wide range of wages we found were paid to nursing and secretarial staff in general practices in Hamilton.

†The total practice costs included the cost-effectiveness of sending the reminder letters, per se ($2.16 to $2.50), as well as the costs incurred by the practice for the administration of vaccine (30 cents for materials and 65 cents to $1 for nursing labour per vaccination).

‡Most of the cost of sending the letters was "variable" rather than "fixed",[8] in that only the printing costs, which were minimal (less than 15% of the total cost of the reminder letters), were fairly constant for a wide range of total letter volume — that is, they constituted a true "economy of scale".

§For logistic reasons only a systematic sample of 75% (118 patients) of the 156 nonresponders to the letters was telephoned. All the values quoted for the overall impact of the telephone calls have been prorated for all 156 nonresponders.

virus in closed institutional populations of the chronically ill.[9-11] Second, the sample sizes required for determination of the expected reductions in morbidity and mortality among the healthy elderly would be greater than the number of patients available in the clinic where our study was conducted. Lastly, most recent reviews of the effectiveness of influenza vaccination have suggested that the net impact of vaccination on the health of the well elderly may not be demonstrable in certain single winters because of inadequate antigenic matching of vaccine virus strains and the wild organisms that sweep through North America in a given year.[12,13] However, there is widespread agreement in the literature that the long-term impact of vaccinating the healthy elderly is likely to be substantial if it is averaged over many years.[11-15]

Objections may also be raised regarding our minimal costing of physicians' and nurses' time for the vaccination program as well as our failure to include additional practice income that may be generated from medical procedures and examinations carried out incidentally during a visit for vaccination. With regard to the first point, we explicitly designed a delivery scheme that used nurse-practitioners for the visits solicited by the reminder letters so as to minimize vaccine administration costs. The presence of a physician at the clinic is generally regarded as adequate clinical supervision for the injection of a vaccine as safe as influenza vaccine. Furthermore, it can be argued that even when a practice does not have a full-time registered nurse or a nurse-practitioner such personnel could be hired on a part-time basis each fall simply to operate "mass injection" clinics for the elderly and chronically ill.

With respect to our failure to include additional practice income, we question the ethics of physicians' soliciting patient attendance for general clinical services — that is, procedures not generally deemed worthwhile health maintenance maneuvers — especially if the public is paying the bill. As Kennie[16] has recently pointed out, very few health maintenance maneuvers have been established as effective in the elderly; vaccination, including influenza vaccination, is one of them. Doubtless, many physicians bill provincial medical plans for minor or major assessments of other problems that are performed during patient visits that are initiated specifically for influenza vaccination. However, we felt we could not legitimately include income from such physician-initiated services as a "defraying factor" against vaccine delivery costs.

Implications for health policy

Within the overall constraints to the effectiveness of influenza vaccination that we have demonstrated are there significant health policy implications for primary care in the two major findings of our study? These findings were, first, that a tripling of influenza vaccination coverage can be achieved through the use of simple reminder letters and, second, that current medical care insurance reimbursement, at least in Ontario, provides no financial incentive to physicians to send such letters. For primary care policy the relevant question is surely What is the most efficient way to encourage physicians to deliver the vaccine to the one in two independent elderly persons who apparently would accept it if properly informed each autumn?

The simplest solution would be to merely increase the fee for service, which is paid by provincial health insurance schemes to physicians for each influenza vaccination. The increase would have to not only cover physicians' costs of sending annual reminder letters, but also offer physicians a small profit margin for undertaking extra administrative work in their offices.

A potential snag in such a policy is that general practices would receive extra income proportionate to the level of vaccination coverage achieved by them. At first sight this would appear to provide medical practices with an economically appropriate incentive for improving vaccination coverage, almost like a productivity bonus. However, such a policy may be unfair to some physicians. Medical practices that serve better informed, more health-conscious elderly, many of whom have already developed the habit of presenting for annual influenza vaccination, would tend to be rewarded under such a scheme, independent of local physicians' efforts to further improve coverage. Conversely, general practices that serve patients who are uninformed about, unused to or reluctant to receive vaccination might use considerable resources to send reminder letters but would be less likely to increase coverage and would therefore perhaps suffer a financial loss. While there may appear to be economic merit in the public's paying only for the product and not for the promotion, such a scheme might well provide some primary care practitioners, particularly those practising in socially disadvantaged areas, with little incentive to increase influenza vaccination coverage.

What about the alternative — paying physicians specifically for sending out reminder letters? This policy would entail offering a new fee-for-service form of reimbursement per letter sent. Such an option could probably maximize the use of reminder letters but, unfortunately, would make explicit the relative inefficiency of physicians' offices as production units for mass mailings. Our findings suggest that it costs approximately 60 cents (about half of which is postage) per elderly person per year to send reminder letters, even in a practice that already has an age–sex register. Persons 65 years of age and over make up about 10% of the Canadian population. The total cost of such a program would therefore be substantial. Fully half of it would constitute a direct transfer payment from provincial ministries of health to the federal Post Office. Much more economic alternatives come to mind if one is simply trying to inform the elderly of their need for vaccination every autumn. For example, a brief, machine-printed message could be added to pension cheques that are mailed between August and November. The relevant question for future research then becomes whether such "depersonalized" notices are as effective in improving vaccine acceptance as letters from patients' personal physicians.

Conclusion

Our study has provided a quantitative evaluation of

the key constraints to influenza vaccination coverage among the independent elderly in primary care and an economic appraisal of the relative efficiency of two possible strategies for increasing coverage. The evidence we have presented appears to confirm, in the Canadian context, what Schoenbaum[17] has recently pointed out in the United States: "The traditional approach to the prevention of influenza does not appear to be working well." Schoenbaum went on to conclude that the United States urgently needs "new approaches to protection and more effective programmes for delivery". The same can be said of the primary care delivery system for routine influenza vaccination in Canada. Unless the task of annually informing the elderly of their need for influenza vaccination is taken on and effectively performed by either the government or health care providers, overall vaccination coverage is unlikely to reach the levels required to make an impact on influenza's considerable toll in later life.

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