Use of influenza vaccine in The Netherlands

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Influenza vaccination is safe and effective in reducing mortality and morbidity due to influenza, but compliance with the guidelines for use of the vaccine seems to be low in both the United Kingdom and The Netherlands.[1,2] The aims of this study were to establish the degree to which patients who should be immunised according to official Dutch guidelines are actually immunised and to understand why some patients receive the vaccine and others do not.[3]

Patients, methods, and results

Patients belonged to one of four groups: those with chronic heart disease (with a valve lesion or a history of myocardial infarction), chronic obstructive pulmonary disease, diabetes mellitus, or chronic renal insufficiency for which dialysis was required. According to the official Dutch guidelines immunisation is mandatory for these groups, regardless of age. The records of all patients who were to visit an outpatient department in this hospital and in two large general hospitals elsewhere in The Netherlands in a given week were reviewed. All 646 patients who should have been immunised according to the guidelines were asked to answer a questionnaire. Those who accepted were subsequently interviewed by telephone.

Sixteen patients refused to participate and 35 were not reached by telephone. Answers were obtained from the remaining 595 patients (92%), 346 men and 249 women with an average age of 57·3 years (range 18 to 90 years). In the year preceding the interview 333 patients (56%) had received the vaccine (table): 89/162 (55%) with chronic heart disease, 91/169 (54%) with chronic obstructive lung disease, 78/152 (51%) with diabetes mellitus, and 75/112 (67%) undergoing dialysis. The highest rate of immunisation (90%) was found for a dialysis department which provided all patients with information about immunisation together with a prescription to obtain vaccine every year. For patients aged 65 years and older the immunisation rate was 66% compared with 50% for patients younger than 65 ($\chi^2=12{\cdot}69$; $p<0{\cdot}01$).

Of the 333 immunised patients, 300 (91%) remembered having received advice to be immunised from their physician at least once; of 262 patients who were not immunised, only 50 (19%) had received such advice. General practitioners had immunised 279 patients, specialists at the outpatient clinics 46, and other doctors the remainder. In total, 170 (61%) of those immunised by general practitioners and 43 (93%) immunised by specialists received reminders.

In 103 of the 262 non-immunised patients lack of advice was the reason for non-immunisation, in 65 the patients thought that immunisation was unnecessary, and 24 had been advised by their physician to avoid immunisation; fear of side effects kept 47 patients from accepting the vaccine, and 23 had other reasons for not having been immunised.

Immunisation status of patients and advice to be immunised, according to questionnaire responses

	Immunised	Non-immunised	Total
Advice to be immunised	300	50	350
No advice to be immunised	33	212	245
Total	333	262	595

Comment

Slightly more than half of the interviewed patients had been immunised, which is more than commonly seen without a special vaccination programme.[1,2] This relatively high figure may be an overestimation, due to our selection of patients from hospitals. Nevertheless, 44% of patients had not been immunised.

We conclude that whether someone receives the vaccine depends largely on whether this person is advised and reminded to do so. This suggests that informing patients personally of the need for immunisation and reminding patients annually could increase use of the vaccine.[4] To achieve this physicians must be convinced that immunisation of high risk groups is necessary and that patients have to be motivated to undergo it, despite the possibility of side effects.[5]

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Winter pressure on hospital medical beds

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In winter it becomes difficult to admit patients who require emergency medical treatment because of shortage of beds. We investigated whether this is due to more emergencies occurring or patients who are admitted having a longer stay, or both.

Patients, methods, and results

Scottish Morbidity Records (SMR 1) from Grampian region (plus Orkney and the Shetland Islands) are processed in Aberdeen by using a computerised system with record linkage. The population was about 500 000 during the study, and most of the hospitals are in Aberdeen. We examined the 66 819 admissions to general medical beds over the five years from 1984 to 1988. The presence or absence of significant seasonal variation was determined by cosinor analysis.[1,2] Where appropriate, numbers were corrected for length of month to 31 days.

Monthly admissions, mean length of stay, and bed occupancy were established for all patients and for patients with cardiovascular or respiratory disease (40·2%)—that is, ischaemic (14·1%), cerebrovascular (5·1%), other circulatory (12·0%), and respiratory (9·1%) diseases—and for patients with all other diseases (59·8%). Patients were also grouped by age (0-54, 55-64, 65-74, >75). However long the admission all the days were allocated to the month of admission for the calculation of length of stay.

Seasonal variation in numbers of admissions, length of stay, and bed occupancy during 1984-8 in Grampian region

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Correlation coefficient, r (%)	p Value	Amplitude	Mean
Total No of admissions	5 732	5 744	5 733	5 634	5 795	5 690	5 276	5 509	5 656	5 660	5 949	5 682	30	NS	2·1	5 667
Mean length of stay (days)*	10·331	10·760	10·099	9·980	9·841	9·418	9·032	9·297	9·221	9·403	9·416	9·212	71	<0·01	6	9·653
Total No of beds occupied	57 968	58 471	57 715	56 913	57 016	56 848	53 001	53 069	52 491	53 614	55 810	53 479	76	<0·01	4·6	55 492
No of admissions:																
Patients with cardiovascular/respiratory disease	2 366	2 376	2 362	2 302	2 296	2 235	2 040	2 209	2 188	2 243	2 393	2 394	76	<0·01	5·8	2 279
Patients with all other diseases	3 366	3 368	3 371	3 331	3 499	3 454	3 236	3 300	3 468	3 417	3 556	3 288	2	NS	0·5	3 387
No of beds occupied:																
Patients with cardiovascular/respiratory disease	29 353	30 580	29 477	28 979	27 868	27 291	25 133	25 337	25 148	26 575	27 705	27 003	88	<0·001	8·1	27 479
Patients with all other diseases	28 615	27 891	28 238	27 934	29 148	29 557	27 868	27 732	27 344	27 039	28 105	26 476	49	<0·05	3·0	28 013
Ratio of cardiovascular or respiratory disease to all other diseases*	1·026	1·096	1·044	1·037	0·956	0·923	0·902	0·914	0·920	0·983	0·986	1·020	92	<0·001	7·9	0·981
Patients aged >75:																
No of admissions	1 456	1 388	1 415	1 428	1 381	1 367	1 284	1 331	1 293	1 282	1 380	1 459	72	<0·01	5·1	1 369
Mean length of stay (days)*	16·228	18·013	15·457	16·416	15·957	15·317	14·325	14·134	13·769	14·679	14·124	14·397	69	<0·01	9·0	15·213
No of beds occupied	22 120	22 031	22 457	21 869	22 162	21 735	20 438	20 335	19 603	19 743	20 176	21 090	92	<0·001	6·3	21 135
Models:																
Model i	58 546	60 977	57 231	56 557	55 769	53 372	51 184	52 686	52 255	53 287	53 360	52 204	71	<0·01	6·0	54 706
Model ii	55 331	55 447	55 341	54 385	55 939	54 926	50 929	53 178	54 597	54 636	57 426	54 848	30	NS	2·1	54 704

NS=Not significant. *Not corrected for month length. †ICD codes circulatory 390-459; respiratory 480-496; 510-519.

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No monthly variation in admissions was found (table). The figure for the month with the lowest number of admissions (July) was 11% below that for the month with the highest (November), but cosinor analysis did not show significant seasonality. In this analysis low amplitudes may require larger numbers to show significance. Admissions for cardiovascular or respiratory disease and in patients aged over 75 were strongly seasonal, but admissions for all other medical disorders were not.

The average winter admission was 1·2 days longer than the average summer one and 1·7 days longer in February than July. The seasonality of length of stay was highly significant ($p<0·01$) for total admissions and for all patients over 75, while in groups within the total it was significant at a lower level—for example, in patients with respiratory disease ($p<0·05$), patients with all other medical disorders ($p<0·05$), and patients with cardiovascular disease minus those who had had strokes (with a long and erratic length of stay) ($p<0·05$) but not for patients with cardiovascular diseases alone. Socioeconomic factors as well as more seriously ill patients may contribute to increased length of stay.

Bed occupancy by patients with cardiovascular or respiratory disease in winter had a high amplitude, and imprinted a winter peak on the total. The ratio of bed occupancy by patients with cardiovascular or respiratory diseases to that by those with all other diseases was highly significant ($p<0·001$). Patients admitted in winter stay longer, more often have cardiovascular or respiratory disease, and are on average older. In contrast, there was a significant peak in bed occupancy for patients with all other disorders in May and June ($p<0·05$), when the winter excess burden of cardiovascular or respiratory disease has declined. This was the only non-winter peak. When all beds are occupied in winter practitioners are alerted, the threshold for admission is probably raised, and patients who potentially could be admitted are investigated as outpatients.

In people aged over 75 the amplitude of seasonal variation was greater for number of admissions, length of stay, and bed occupancy compared with that of the total group of patients.

In models i and ii bed occupancy was calculated by multiplying admissions by length of stay. Model i holds admission number steady at the mean of 5667, and model ii the monthly length of stay steady at the mean of 9·653 days. Only model i shows significant seasonality. The results are similar to those for actual number of admissions and length of stay.

Comment

The winter pressure on medical beds is due to longer stays in hospital rather than more admissions. Patients in hospital during winter are, on average, more ill than those in hospital during summer, and patients with cardiovascular or respiratory disease and older patients dominate beds during winter. Overall mortality has long been known to increase in winter,[3] and we have shown that morbidity also shows this trend.

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ONE HUNDRED YEARS AGO

It would appear to be the opinion of Dr. Macdonald, M.P., and Coroner for East London, that when a dead body is found in the water death must have been due to drowning; at least that is the only inference to be drawn from his remark at an inquest the other day that "when a person is drowned you don't want a doctor to tell you that." With every respect for his high and responsible office, we would wish to point out that such a doctrine is most dangerous. A *post-mortem* examination, besides demonstrating the fact that death had resulted from drowning, might enable the medical man to form an opinion whether this had been the result of accident or suicide; for example, the discovery of an unsuspected pregnancy, or the proof of some previous but unsuccessful attempt at suicide. But the examination might also demonstrate that death had not been due to drowning but to some other cause, and then the fact of the body being in the water would be practically conclusive of murder. We therefore protest in the strongest possible manner against the prevailing custom of assuming that because a body is found in the water there is no need to ascertain the cause of death, and we sincerely deplore that this custom should receive the sanction of a medical coroner.

(*British Medical Journal* 1891;ii:488)