

# Concerns for low coverage of influenza vaccination in middle-aged adults

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A survey in Hong Kong on middle-aged adults revealed a low influenza vaccination uptake rate of 13%. As a heterogeneous population comprising individuals at different levels of risk for complications, effective development of strategy for improving vaccination coverage in middle-aged adults should be prioritized.

## To the Editor

While the vulnerability of elderly people for influenza disease has been well established, parallel problem in middle-aged adults (between 50 and 64 y old) is less well appreciated. In the late 90s, American Academy of Family Physicians recommended lowering the age of routine influenza vaccination to 50, in view of their higher risk of complications from influenza.<sup>1</sup> Influenza-related hospitalization and mortality was reported to be substantial in an Australian study using data obtained between 1998 and 2005.<sup>2</sup> More recently from a global perspective, the high risk of death from influenza A (H1N1) was found to be similar between middle-age adults and the elderly ( $\geq 65$ ).<sup>3</sup> In Hong Kong, for example, 41% of serious or fatal influenza occurred in middle-aged persons, compared with 17% in elderly, during the Winter season of 2010/11.<sup>4</sup> The incidence of severe disease was highest at age 51 to 60, despite a similar seroprevalence compared with younger people.<sup>5</sup> To protect public health, influenza vaccination is generally recommended for middle-aged adults, though the actual process, its acceptance and coverage vary across countries.<sup>6,7</sup>

In Hong Kong, the Government has recommended that people of age 50–64 receive influenza vaccination yearly, but unlike that for elderly there is no subsidy involved.<sup>2</sup> To determine the coverage of vaccination and its associated factors,

we conducted a postal survey before the Winter influenza season in 2012 in one representative administrative district, targeting households with  $\geq 1$  adults aged 50–64. With an estimated response rate of 10.5%, the study enrolled 441 respondents, of which only 13% had received vaccination prior to the influenza season. As subsidy is not provided, it is not surprising that a majority (76%) was vaccinated at private clinics and full payment was made by 63% of the vaccinees. Respondents generally had a low perceived risk of influenza disease. The main factors associated with vaccination were an older age, being economically active, history of previous vaccination, chronic disease (Table 1). The low vaccination uptake has arisen from a relatively low perceived risk of influenza disease, and the demand for self-payment for a preventive measure that needs to be administered yearly. Understandably, there were subpopulations with underlying medical conditions, who would more likely see influenza as a health threat. Middle-aged adults do not constitute a uniform population with common characteristics, but can be roughly divided into 2 groups, some at a higher risk of complications from influenza and other at similar risk as the general population, or low risk. Our result of a 13% uptake was identical to that for lower risk middle-aged persons reported in a study in England, where 57% of higher risk persons had received the vaccination.<sup>8</sup>

Through modeling, studies in countries in Europe, United States and Australia had concluded that the vaccination of middle aged adults was generally cost-effective.<sup>9–12</sup> While direct extrapolation of results from these models should be cautioned, the low uptake of influenza vaccine in middle-aged persons would nevertheless undermine efforts to prevent influenza infection and disease in the community. In the development of vaccination program, the heterogeneity of middle-aged population poses a challenge to public health authorities. Financial subsidy does not necessarily increase vaccination uptake if the self-perceived ‘lower risk’ sub-populations do not come forward for vaccination. New strategy is needed to boost uptake of middle-aged men and women in order to reduce population morbidity and slowing population spread of seasonal influenza virus.

## Conflicts of Interest

The authors declare that there are no conflicts of interest.

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**Table 1.** Factor associated with receiving vaccination before the winter influenza season 2012/13 (n = 441)

	Influenza vaccination				OR	95% CI	p-value
	No (n = 384)		Yes (n = 57)				
<b>Female gender</b>	226	59%	31	54%	0.83	0.48–1.46	0.524
<b>Age between 60–64</b>	104	27%	31	54%	3.21	1.82–5.66	< 0.001*
<b>Being health-care workers (including retired)</b>	17	4%	5	9%	2.08	0.73–5.86	0.168
<b>Economically active</b>	189	49%	19	33%	0.52	0.29–0.93	0.027*
<b>Attained post-secondary education</b>	116	30%	24	42%	1.68	0.95–2.97	0.074
<b>Vaccination history</b>	91	24%	45	79%	12.07	6.12–23.81	< 0.001*
<b>Living with children and/or elderly</b>	121	32%	25	44%	1.70	0.96–2.99	0.067
<b>Presence of chronic illnesses</b>	113	29%	25	44%	1.87	1.06–3.30	0.03*
<b>Perceived high chance of influenza disease</b>	35	9%	9	16%	1.87	0.85–4.13	0.122

\*p &lt; 0.05.

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