ISPOR Asia Pacific Summit 2026

Cost-effectiveness of High-dose Influenza Vaccine Strategies for Older Adults in Japan

Poster Code: EE112

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1 BACKGROUND

- Seasonal influenza causes substantial morbidity and mortality among older adults.
- High-dose inactivated influenza vaccine has shown greater immunogenicity and effectiveness than standard-dose vaccine.
- Its economic value in Japan remains uncertain.

2 OBJECTIVE

To evaluate the cost-effectiveness of age-targeted high-dose influenza vaccination strategies for older adults in Japan.

3 METHODS

- Cost-utility model from the healthcare payer perspective.
- Target population: adults aged >=65 years.
- Strategies: no vaccination; current standard-dose vaccination; high-dose vaccination for adults aged >=65, >=70, >=75, or >=80 years, with standard-dose vaccination below each threshold.
- Base-case assumptions: one-season vaccine protection, lifetime mortality loss, 100% high-dose uptake among eligible age groups.
- Costs included vaccine and administration costs and medical costs.
- Outcomes: costs, QALYs, and ICERs.
- Willingness-to-pay threshold: JPY 5 million/QALY.

4 KEY MODEL INPUTS

High-dose vaccine price	Standard-dose vaccine price	Administration cost
JPY 5,000	JPY 1,500	JPY 3,200

Outcome	Comparison	VE
Influenza illness	Standard-dose vs no vaccination	50.0%
	High-dose vs standard-dose	**24.2%**
Influenza hospitalization	Standard-dose vs no vaccination	28.0%
	High-dose vs standard-dose	**14.4%**
Influenza illness QOL	During illness	0.737

VE: vaccine effectiveness. Base-case vaccine effects were applied to influenza illness and hospitalization.

5 DATA SOURCE AND ABBREVIATIONS

- Analysis based on Japanese vaccine evaluation committee materials and the accepted ISPOR abstract.
- HD: high-dose; SD: standard-dose; VE: vaccine effectiveness; ICER: incremental cost-effectiveness ratio.
- All costs are shown in Japanese yen (JPY); ICERs are shown as million JPY per QALY.

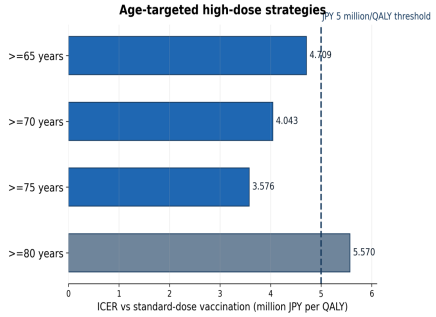
6 BASE-CASE ECONOMIC RESULTS

Strategy	Cost (JPY)	QALYs	ICER vs no (million JPY/QALY)	ICER vs SD (million JPY/QALY)
No vaccination	2,455	0.95732	-	-
Standard-dose vaccination (current)	6,403	0.95936	1.935	-
HD >=65 years	9,671	0.96005	2.639	4.709
HD >=70 years	8,988	0.96000	2.438	4.043
HD >=75 years	**8,270**	**0.95988**	**2.269**	**3.576**
HD >=80 years	7,561	0.95957	2.271	5.570

3.576	>=75	Cost-effective
Lowest ICER vs SD (million JPY/QALY)	Most efficient HD target age	HD targets ≥65, ≥70, ≥75 ICERs < JPY 5M/QALY vs standard dose

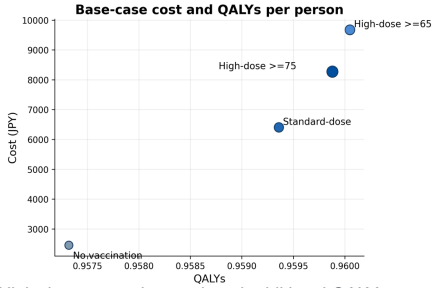
The >=75-year strategy had the most favorable ICER among the evaluated age-targeted high-dose introduction strategies.

7 ICERS VERSUS STANDARD-DOSE VACCINATION



Strategies targeting adults aged >=65, >=70, and >=75 years remained below the JPY 5 million/QALY threshold; the >=80-year strategy exceeded it.

8 COST-QALY PLANE



High-dose strategies produced additional QALYs at higher costs. Age targeting improved the incremental value versus replacing standard-dose vaccination for all adults aged >=65 years.

9 KEY FINDINGS

1 Cost-effective
High-dose vaccination was cost-effective versus standard-dose vaccination for strategies targeting adults aged >=65, >=70, and >=75 years.

2 Most efficient
Targeting adults aged >=75 years provided the most efficient use of resources among evaluated strategies.

3 Boundary case
The >=80-year strategy exceeded the JPY 5 million/QALY threshold versus standard-dose vaccination.

10 SCENARIO ANALYSES

- ✓ Including related respiratory and cardiovascular disease prevention improved cost-effectiveness.
- ✓ Some best-case scenarios showed dominance.
- ✓ Conclusions support the economic attractiveness of age-targeted high-dose vaccination.

11 CONCLUSIONS

- At JPY 5,000 per high-dose vaccine dose, introducing high-dose influenza vaccine for selected older adult groups in Japan is economically attractive.
- Among evaluated age-targeted strategies, vaccination for adults aged >=75 years showed the most favorable ICER.
- These findings may help inform age prioritization within Japan's influenza vaccination program.

12 POLICY CONTEXT AND INTERPRETATION

- Japan already has annual standard-dose influenza vaccination for older adults; high-dose vaccine introduction changes vaccine choice within an existing program.
- The base case focused on influenza illness and hospitalization; broader respiratory and cardiovascular benefits were evaluated in scenarios.
- When high-dose vaccine is priced at JPY 5,000, the economic results favor prioritizing older age groups, particularly adults aged >=75 years.
- Implementation decisions may also consider vaccine supply, local operations, and preserving access to current vaccination opportunities.

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MODEL OVERVIEW

1 STRATEGIES
No vaccination / SD
HD at ≥65, 70, 75, or 80

→

2 CLINICAL EVENTS
Influenza illness / hospitalization
Mortality

→

3 VALUE ASSESSMENT
Costs + QALYs → ICER
JPY 5M/QALY threshold

Base-case signal: HD for adults aged ≥75 years was the most efficient strategy.

Disclosures

This study was supported by the Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare, Japan.