

Instructor's Note

This case study can be used to motivate several learning objectives and tied to specific course objectives in the modules. In case studies the students are not spoon fed. They have to wade through relevant and irrelevant data and identify ways to organize the facts that matter. The orthodox economic paradigm for vaccine introduction is supposed to be straightforward comparison of an ICER to a country's willingness to pay to avert a DALY. Seldom are either of these parameters available. Instructors can use this case study to bring out the basics of estimating ICERs, data quality, budget impact, and the need to understand decision thresholds that differ across various stakeholders.

This case study could be introduced early in the course to motivate topic matter. Returning after topics have been covered could help to solidify learning.

Economic Evaluation

Understand the basic concepts of economic evaluation

Assess the quality of the analysis and apply the findings to a policy decision

Perform a basic analysis of new vacc, and embed equity into the analysis

Perform a basic analysis of new vacc, be able to analyze broader economic benefits of vaccines, and links between GDP and health outcomes

Costing of the program / strategies / treatment

Understand the difference between financial and economic costs, understand the line items

Classify differing perspectives e.g. households, health sector, and society

Decide what costs to include

Decide what outcomes to measure

Systems, Logistics

Understand systems for procurement of vaccines

Understand price dynamics

Understand cost implications of vaccine adverse events

Financing

Understand how budgets are developed

Understand the value of budget impact, factor affordability into decision making

Budget Impact

Understand supply and demand of vaccines and associated equipment

Understand the value of budget impact, factor affordability into decision making

Health Economics

Viewing how vaccines fit into health system building blocks

Should We Introduce This Vaccine?

Case Study

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In our study of the economics of vaccination it is easy to become so focused on costs and health impacts that we forget about all of the other factors that matter for good decisions. One way to see economics in a richer, more realistic context is to examine case studies. In case studies people have to make decisions influenced by many things including costs.

The objectives of this case study of the economics of vaccine introduction are: 1) To understand the diversity of considerations that affect whether to introduce a vaccine; 2) To differentiate costs from other important factors 3) To develop models of the costs of vaccine introduction as well as the non-cost considerations; 4) To outline how to proceed to measure the costs of vaccine introduction as well as becoming more informed about the non-cost considerations.

Some might be predisposed to say, “Yes, we should always introduce a vaccine.” However, responsible stewards of public resources have to be willing to acknowledge that a better answer might be, “No”, “Not now”, or to consider a phased or targeted introduction. Hopefully, this case will help even the most “Yes-bound” vaccine introducer accept plausible conditions to support the answer “No” or “Not Now”. Being willing to understand why “No” is a possible answer should be helpful to committed vaccine advocates as they chart a pathway from “No” to “Yes”.

This case is drawn from ongoing deliberations by the Thai government to introduce rotavirus vaccine and pentavalent pneumococcal vaccine. The case study is divided into four sections: 1) Background; 2. Stakeholders and their concerns; 3. Framework for decisions; 4. Information gathering.

The case study can be examined by either groups working in teams or by individuals. Study questions are interspersed. The question of this case study is posed from the perspective of the Thai government as a steward working for the better well-being of the people of Thailand is, “Should we introduce this vaccine?” Students should end their study of this case prepared to defend their answer.

Background

In Thailand there is an Advisory Committee on Immunization Practices (ACIP) that advises the ministry on vaccine schedules, vaccine formulations, and decisions to include new vaccines on the formulary 1. The Thai ACIP consists of 28 members with expertise in vaccinology, immunology, pediatrics, internal medicine, obstetrics, public health, infectious diseases, and preventive medicine. Members represent government, professional associations, and others are individual subject matter experts. There are no consumer representatives or pharmaceutical company representatives. There are no economists. The ACIP meets between 1-3 times per year as needed. The ACIP can call in experts to testify and it makes use of WHO’s immunization recommendations and guidelines. The ACIP has paid a lot of attention to data and data quality and prefers local evidence based on prevalence, cost, and cost-effectiveness

studies conducted in Thailand. In the past, when local data were not available the ACIP has recommended that local studies be conducted prior to a decision.

The government is not obligated to implement their recommendations, but it has historically never rejected them. Implementation of ACIP recommendations may occur after a delay if the Ministry of Health finds it prudent to spend time negotiating better prices or developing implementation plans.

In 2017 the ACIP of Thailand is considering 3 vaccines for inclusion in the Thai Expanded Program on Immunization (EPI):

- Haemophilus influenzae type b (Hib) vaccine
- Rotavirus Vaccine
- Pneumococcal conjugate vaccine (PCV-13)

In a series of interviews with key informants, Thai health economist Siriporn Pooripussarakul identified decision criteria that matter to decision makers deciding to introduce a new vaccine². Dr. Pooripussarakul found that not all decision criteria matter equally for each type of decision maker.

Decision Criterion	Estimates for Thailand for		
	Hib vaccine	Rotavirus vaccine	PCV-13
Burden of disease: number of cases affected by the disease, or health problem that can be prevented by the vaccine	3.8 new cases per 100,000 population per year	33,578 new cases per 100,000 population per year	11-29 new cases per 100,000 population per year
Target age group for the vaccine	< 5 years	< 5 years	< 5 years
Budget impact: financial consequences of adopting the new vaccine	1,443,565,660 Baht per year	1,041,994,995 Baht per year	5,121,681,482 Baht per year
Fever from vaccine: fever defined by an oral temperature of 37.5 °C occurring 12 hours after vaccination and lasting for 1 day	2-10%	0	33%
Severity of disease: symptoms that affect the patient	Death, disability	Not severe	Invasive pneumococcal disease (meningitis, bacteremia)
Vaccine effectiveness: the percentage reduction of disease provided by vaccine	95%	70-85%	89%
Cost of vaccine: the retail price of vaccine per course of vaccination	1,753 Baht	1,265 Baht	6,208 Baht

All groups agreed that the severity of a disease and the side effects from the vaccine were the two most important decision criteria. Policy makers and healthcare professionals believed that the incidence of a disease in Thailand was the third most important decision criterion. However health care administrators believed that the cost of a vaccine and budget impact were more important.

In order to decide to introduce a new vaccine to Thailand the multiple types of decision-makers need to find a way to use these multiple decision criteria to decide whether to introduce a vaccine. Before the ACIP can begin to answer the question “Should we introduce this vaccine?” it will need to come up with a strategy for using these facts, finding out what else it needs to know, and establishing consensus among stakeholders who do not agree on which facts are the most important.

The big decision about “Should we introduce this vaccine?” cannot be answered until a number of smaller decisions are taken. Let us suppose that all of the data are going to be presented to the ACIP at its next meeting. Put yourself in the role of the secretariat. You want to predict what ACIP members will ask for in order to expedite their deliberation. You want to set up their deliberation so they can make as much progress as possible without having to wait many months to come to their next meeting.

Problem 1) Identify the immediate problems that need to be addressed before the next ACIP meeting. What multiple small decisions will need to be made before the ACIP can reach the big decision on vaccine introduction. **IT IS NOT YOUR JOB TO RECOMMEND FOR or AGAINST INTRODUCING A VACCINE. FOCUS ON WHAT ACIP WILL NEED IN ORDER TO DECIDE.**

Problem 2) Are there higher level strategic issues that are related to the multiple small decisions? What are these principles that apply to the case and how can you as secretariat help the ACIP take on these bigger strategic questions so that it will make better decisions in all cases?

Problem 3) Summarize the information that you have in addition to Table 1. Not all of the information you desire and not all of the information that will matter to ACIP takes the form of hard facts. Summarize ALL of the information that is relevant to the question. Which are facts? Which are opinions? Which are assumptions? Which are fuzzy facts? Which are hard facts? What do you wish you knew, but don't know?

Problem 4) What alternative options does the ACIP secretariat have before the next meeting in order to be of the most help to the committee. List the pros and cons for each option. There should be at least 3 good options. Your list should also contain several bad options.

Problem 5) Make a recommendation for action based on the work you did for problem 4. Explain why this is the best recommendation.

Problem 6) How will you know if your plan for action is a good one prior to the meeting? How will you correct your course if your plan of action was not the best one?

BONUS QUESTION

What do you predict the ACIP will decide when they come to the question “Should we introduce this new vaccine?”

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