

# **Adapting Health Technology Assessment to Changing Health Care and Social Context**

## **Bridging research and policy decisions**

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- HTA/CDE/TFDA
- HTA Practice
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# Health Care in Taiwan

- **Total health expenditure - 6.62% of GDP**
- **National Health Insurance (NHI)**
  - **Introduced in 1995**
  - **Mandatory, single-payer social health insurance**
  - **Comprehensive**
  - **Low premium & low co-payment**
  - **Universal coverage(99.9%)**
  - **Public satisfaction(80.4%)**



# Second Generation NHI Act in Taiwan

- ❑ Implemented since January 1<sup>st</sup>, 2013
- ❑ HTA is officially written into law for drugs, devices, and medical services
- ❑ Evaluation of the HTA dossier conducted in CDE, TFDA.
- ❑ If needed, recommendation of reimbursement forwarded to Expert Meeting, then to Pharmaceutical Benefits & Reimbursement Scheme (PBRs), NHIA
- ❑ Expand public participation, relevant government agencies, experts, scholars, the insured, employers, medical providers, drug company and patients group in PBRs



# PBRS



## CONGRESS BLOG

THE HILL'S FORUM FOR LAWMAKERS AND POLICY PROFESSIONALS

Congress Blog 

Congress Blog feed 

May 23, 2014, 08:00 am

# Taiwan: A model in affordable health technology

By Wen-Ta Chiu, M.D., Ph.D

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COMMENTS 0

Taiwan realized the goal of providing universal health care coverage by launching the National Health Insurance (NHI) program in 1995. Covering 99.9 percent of the population, including prison inmates, the NHI gives patients access to care ranging from Western drugs and procedures to traditional Chinese medicine. The initiative was ahead of its time, with the World Health Assembly (WHA)—the decision-making body of the World Health Organization—passing



# Tasks of HTA office, CDE

- **New drug application**
  - Mostly about new chemical entity
  - HTA reports completed in 42 days
- **New medical device application**
  - Only for large impact applications or by requests
- **Commissioned research topics**
  - Cost-effectiveness analysis of certain (or multiple) products
  - BIA under reimbursement criteria change
- **HTA system research**
  - Worldwide HTA systems
  - Latest methodology
- **Promotion/education**



# HTA Practice in Taiwan

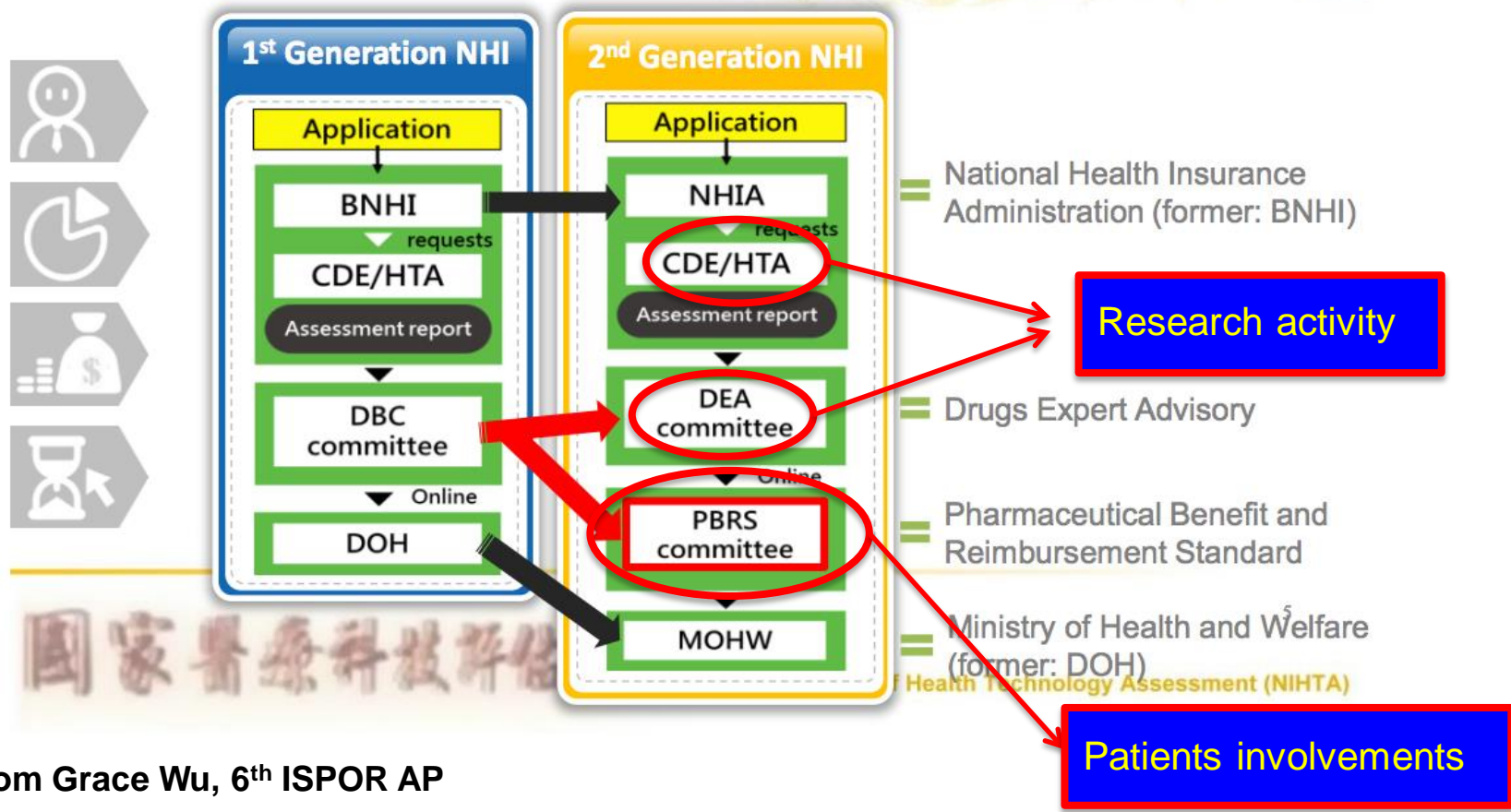
before and after 2013

- Mainly in HTA policy establishment
- HTA agency in CDE is mostly for assessment only
- Lack of academic HTA activities
- HTA dossier provided by pharma consists of unified PE model that adapting local clinical, effectiveness, cost information and local BIA
- Threshold of willingness to pay to ICER is seldom known
- Negotiated price is lack of scientific evidence
- 204 drugs, 38 breakthrough drugs, 8 medical devices evaluated (2007~2013)
- 16 HTA cases evaluated in 2013, 8 in 2014(6/30), 3 out of 24 with economical models
- Future NiHTA office to take over the HTA working group



# HTA Practice in NHIA

## New Drugs Reimbursement Process



From Grace Wu, 6<sup>th</sup> ISPOR AP





# Academic HTA Contribution

- NiHTA (NICE?)
- Academia, TaSPOR
- Bridging between research and health policy decision process
- Independent from making decision on medication and reimbursement approval
- HTA policy recommendation
- Research in various HTA methodologies
- Collaborations with HTA agency and pharma industry



# Vaccine Policy Decision Making

- ❑ Licensing Vaccine in TFDA
- ❑ HTA only applies to medication to be reimbursed under NHI Act 2<sup>nd</sup> generation, (< 5 local HTA cases)
- ❑ Marketed vaccine evaluated by TFDA
- ❑ Public vaccination evaluated by ACIP, CDC
- ❑ Unclear of HTA procedures in public vaccination policy
- ❑ Academic vaccine HTA research
- ❑ Different social impact
- ❑ Different strategic approach for pricing



# CEA Study of PCV

- ❑ *Streptococcus pneumoniae (SP)* has caused invasive pneumococcal diseases IPD and non-IPD (pneumonia, leading to high morbidity and mortality in infants and the elderly worldwide and also in Taiwan
- ❑ Three Pneumococcal Conjugate Vaccine (PCV7, PHiD-CV, and PCV13) have been developed, marketed, and seek for public vaccination in Taiwan
- ❑ CDC limited budgets, needs a HTA-like assessment to make decision
- ❑ Threshold of willingness to pay is unclear, PCV and other vaccination policy is subject to total available budgets and unit price of vaccine



# Research of PCV CEA Studies



ECONOMIC EVALUATION OF 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINE ANALYSIS OF UNIVERSITY

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JFMA235\_proof ■ 25 April 2012 ■ 1/10

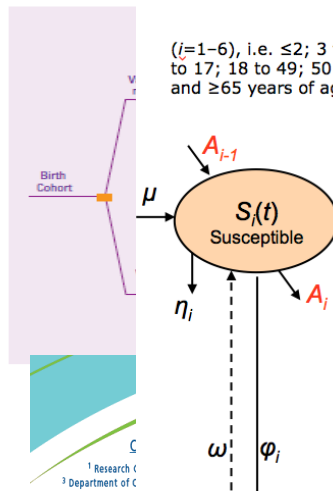
VALUE IN HEALTH 15 (2012) S15-S19

David Wu<sup>1</sup>, Fiona Rinaldi<sup>2</sup>, Yu Chering Huang, MD, PhD<sup>1</sup>  
<sup>1</sup>Division of Biostatistics, Institute of Public Health, National Yang-Ming University  
<sup>2</sup>Department of Pediatrics, Chang Gung Memorial Hospital, Tao Yuan, Taiwan

**ABSTRACT**

**Objective:** This study evaluated the clinical and economic benefits of routine infant vaccination with the 7-valent pneumococcal conjugate vaccine.  
**Methods:** A decision analytic model was populated with local age-specific incidence and seroprevalence data obtained from the National Health Insurance database to estimate the expected health outcomes resulting from universal PCV vaccination of an annual birth cohort of 400,000 children aged 0 to 6 years in Taiwan. Three outcomes were modeled: (1) cases prevented, with total direct costs associated with vaccination and (2) quality-adjusted life expectancy (QALE) gained. The relative value of PCV was assessed against the 23-valent polysaccharide vaccine (PPV23). The relative value of PCV was assessed against the 23-valent polysaccharide vaccine (PPV23). The relative value of PCV was assessed against the 23-valent polysaccharide vaccine (PPV23).

**Figure 1: Decision Analytic Model**



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SciVerse ScienceDirect

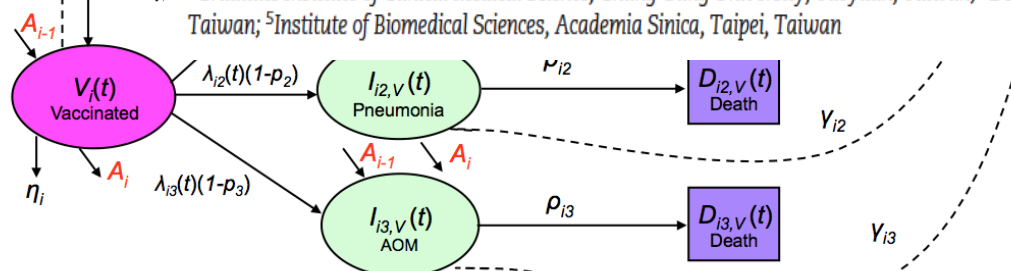
journal homepage: [www.elsevier.com/locate/jval](http://www.elsevier.com/locate/jval)



## Cost-Effectiveness Analysis of Pneumococcal Conjugate Vaccine in Taiwan: A Transmission Dynamic Modeling Approach

David Bin-Chia Wu, MSc<sup>1</sup>, Chee-Jen Chang, PhD<sup>2,3,\*</sup>, Yu-Chering Huang, MD, PhD<sup>4</sup>, Yu-Wen Wen, PhD<sup>2</sup>, Chia-Ling Wu, MSc<sup>2</sup>, Cathy Shen-Jang Fann, PhD<sup>1,5</sup>

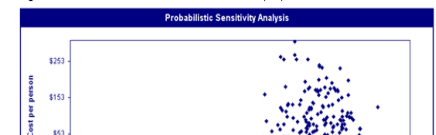
<sup>1</sup>Division of Biostatistics, Institute of Public Health, National Yang-Ming University, Taipei, Taiwan; <sup>2</sup>Clinical Informatics and Medical Statistics Research Center and <sup>3</sup>Graduate Institute of Clinical Medical Science, Chang Gung University, Taoyuan, Taiwan; <sup>4</sup>Department of Pediatrics, Chang Gung Memorial Hospital, Taoyuan, Taiwan; <sup>5</sup>Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan



probability of infection from the model with the model population, which are the QALYs of NT\$4,377,990 and NT\$11,580,142 per QALY gained.

Most of the simulated results by PSA show that we need to balance cost with effectiveness (Figure 4).

**Figure 4:** PSA Results for PCV13 vs. PCV10 from the societal perspective



Input data for base case analysis  
 The input data is shown in Table 1.

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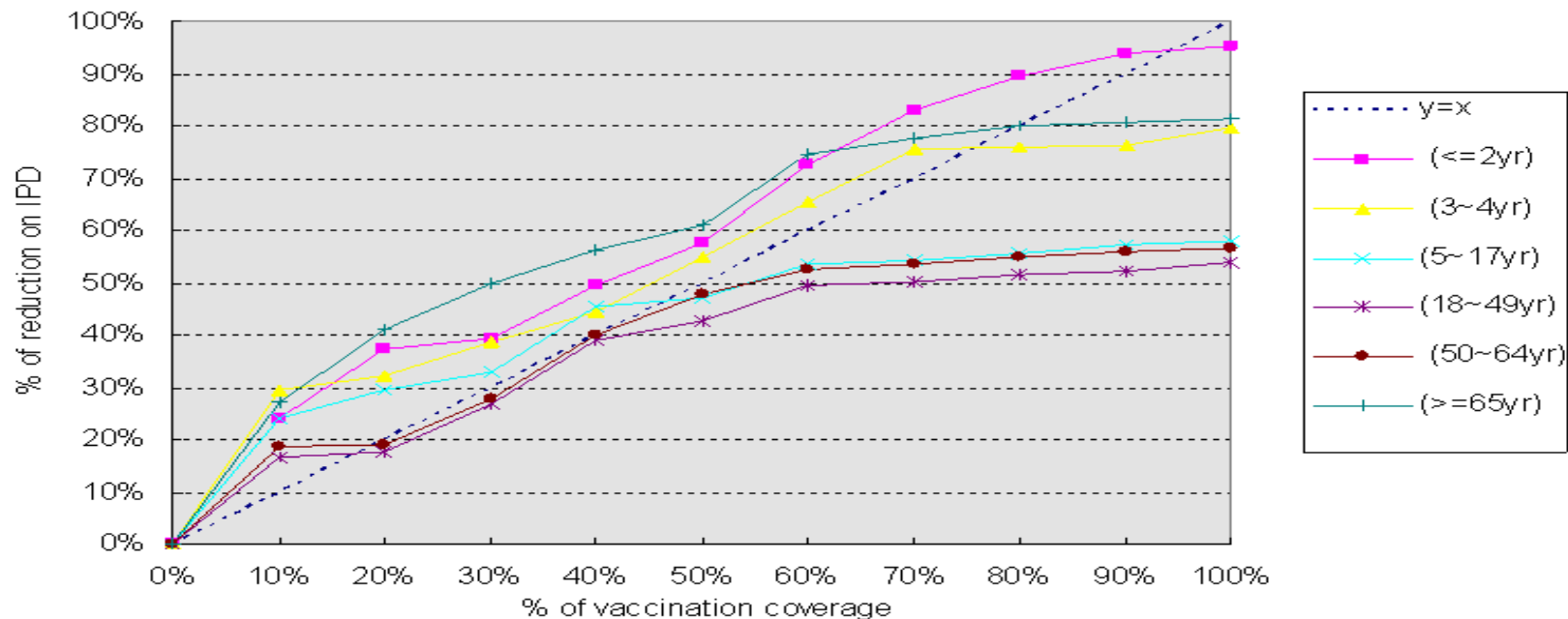
# CEA is just part of HTA

- ❑ Assessments and appraisals within CDC
- ❑ ICER threshold, still three times of GDP per capita?
- ❑ Unit price? the most sensitivity factor in sensitivity analysis
- ❑ Which outcome drives the price?
- ❑ Priority setting for public vaccination



# Researches in Model Outcomes

- % reduction on IPD vs. % vaccination coverage



## Other Researches are still on going

- Total LY saved by % coverage
- Total direct cost by % coverage and unit price
- Total LY saved by PCV in children and by PPV(PCV) in elderly
- etc.,



# Key Takeaways

- ❑ HTA is definitely a process involving different research specialties
- ❑ Health care policy establishment involves clinical, public health, medication, device, care treatment, insurance, and economics BUT policy making is politically sensitive
- ❑ Research can only bridge part of the gap
- ❑ In PBRS, care giver, recipient and policy maker need to have mutual understanding in a greater common ground



# Next Steps

- NiHTA
- More HTA educations and trainings within academic centers and to health authority
- Collaborations among academia with CDE HTA group
- Budget impact issues
- Patients involvements in exercising HTA





**Thanks for your attentions!**

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