Using utilization data to estimate future demand for medical internists: the impact of demographic demand driver in Thailand

Health Informatics-Building a healthcare
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Background

- Thailand has had lack of health professional for many decades; implementing the UC system has caused more difficulties in health professional management
- An increase in health needs: an increase in the prevalence of chronic diseases; aging society; people’s expectation
- The government needs to understand and be aware of the demand for the health professionals to prepare human health resource production and managing provision of care more efficiently.
- Developing a dynamic data system to help allocating health workforce is needed to improve health workforce performance and people’s quality of life
Objectives

• To estimate future demand for medical internists in 2021 working at secondary and tertiary care levels
  o Community hospitals
  o General (provincial) hospitals
  o specialty hospitals
  o university hospitals
• To develop a dynamic health workforce model helping us estimate demand for GPs and specialists
Study framework

Health needs
- Treated patients
- Untreated patients
- Demographics
- Hospital types

Doctors in practice
- Working hours
- Work loads
- Work processes
- Availability/ Productivity of clinical time
- Demographic profile

Enter
- Certification

Exit
- Retirement
- Private company
- Migration

Case mix utilization in 2009

Population pyramid of 2021

- Geographic distribution
Data collection and analysis

• An excel-based demand model was developed to estimate the current demand for internists

• Population demand for Inpatient and outpatient services were identified separately
  – For inpatient care, we specified health needs by disease related groups (DRG) version 5
  – The first four digits of DRG (MDC and DC) were used to classify the number of patients in each disease group
  – The total number of outpatient visits collected from the Ministry of Public Health were used to indicate a requirement of outpatient care.

• We assumed that there were 8% of patients who were untreated; this ratio was from the Health and Welfare Survey conducted in 2009
Supply of doctor; the service requirement for outpatients and inpatients translated into doctor working time requirement using FTE concept

The time requirement for health services was compared with an average working time of each physician in Thailand, 2,600 hours per year, to identify current demand for internists

Future demand:

- We map the current demographic structure with age-sex specific utilization rates by DRG to identify physician demand index
- The physician demand index directly applied to the population pyramid of 2021 to clarify future demand of Thai medical doctors
Results
Current and future requirements for internists

The number of required internists

Age groups

- Males 2009
- Female 2009
- Males 2021
- Females 2021
### Number of internists needed to take care of adult and elderly in 2009 and 2021

<table>
<thead>
<tr>
<th>Population group</th>
<th>2009</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Early adult</td>
<td>1,600</td>
<td>22</td>
</tr>
<tr>
<td>Adult</td>
<td>2,300</td>
<td>32</td>
</tr>
<tr>
<td>Early elderly</td>
<td>2,100</td>
<td>29</td>
</tr>
<tr>
<td>Elderly</td>
<td>1,300</td>
<td>18</td>
</tr>
<tr>
<td>All</td>
<td>7,300</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: Early adult means 15-39 years; adult 40-59 years; early elderly 60-74 years and elderly 75 years and above
Discussion: Limitations

• **Data**: untreated patients; physician workload; and completion of DRG dataset

• The studies included some parameters estimated using expert opinions
  – The majority of the interviewed specialists were predominantly from Phitsanulok province and Bangkok

• **Methodology**: The estimated future demand for medical specialists only based only age-sex structure of population and existing utilization patterns
  – Other factors: Asian economy, the medical hub policy, the growth of private hospitals and demand for health workers in developed countries excluded
  – The technology advances were captured with the utilization patterns in 2009 and assumed that the advances remained unchanged
Conclusion and recommendation

• Stimulate the idea of developing a data system obtaining workload of health workforce and health needs
• Able to develop an indicator such as population per a specialist ratio (8,000 in 2009 and 6,600 in 2021)
• The results show that Thailand should have 10,000 internists in 2021. Compared with the capacity of residency training in internal medicine of 268 a year, excluding retired internists and ones working for private hospitals, Thailand is going to have lack of internists by more than 50%.
• Future policy research is needed for managing production and distribution of the required medical specialists according to needs in different geographical areas.
Thank you