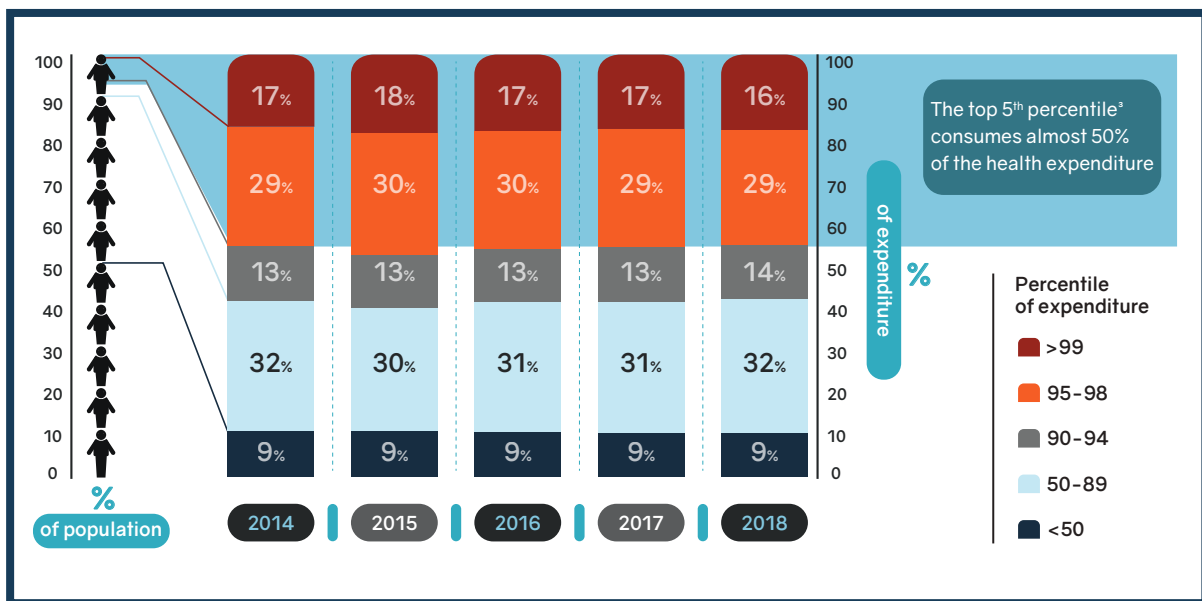




# Who are the high cost users in Thailand's Universal Coverage Scheme and how can we help?

With an increasing emphasis on sustainability of the health care system, various approaches have been created in the hope of finding ways to strengthen our system. Literature has shown that health spending is often concentrated in a small proportion of the population known as high cost users (HCUs) in many countries around the world.<sup>1,2</sup> Similar to existing literature on this phenomenon, the hospitalisation data from Thailand's Universal Coverage Scheme (UCS), over a 5-year period with almost 30 million records, have shown that health spending is concentrated in the top 5% of hospitalised population (the HCUs).



During 2014 – 2018, the top 5<sup>th</sup> percentile<sup>3</sup> (percentile  $\geq$  95<sup>th</sup>) consumes almost 50% of the health expenditure each year. Subsequently, there is a need for understanding the characteristics of HCUs who are in highest need and the underlying factors that may be driving costs. With a better understanding of HCUs, the health care system would be more equipped to identify these patients, which, in turn, could lead to more tailored and appropriate care including interventions to the patients.

<sup>1</sup> Rosella LC, Fitzpatrick T, Wodchis WP, Calzavara A, Manson H, Goel V. High-cost health care users in Ontario, Canada: demographic, socio-economic, and health status characteristics. BMC health services research. 2014;14(1):532.

<sup>2</sup> Calver J, Brameld KJ, Preen DB, Alexia SJ, Boldy DP, McCaul KA. High-cost users of hospital beds in Western Australia: a population-based record linkage study. The Medical Journal of Australia. 2006;184(8):393-7.

<sup>3</sup> These patients had health care costs more than 95% of hospitalised patients.

# Characteristics and Expenditure Patterns

## High Cost Users (HCUs)

VS

## Low Cost Users (LCUs)<sup>4</sup>

Top 5% of hospitalised patients using the most amount of health care resources

During 2014-2018<sup>5</sup>

Bottom 50% of hospitalised patients using the least amount of health care resources

**55% Male**  
55-56 years old

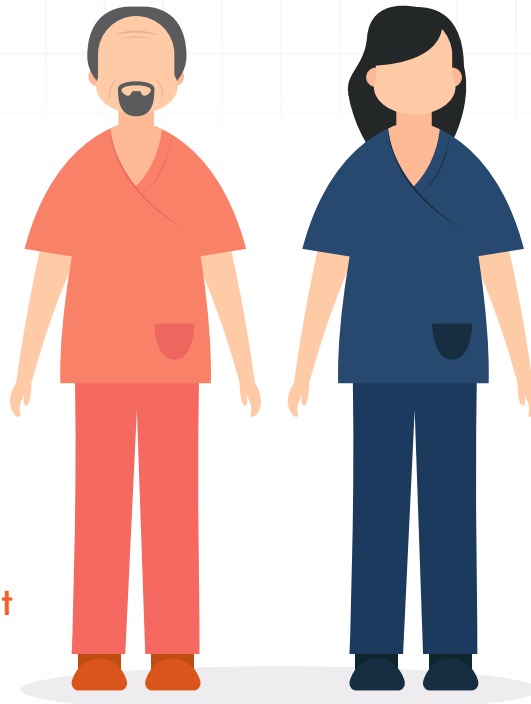
**55-56% Female**  
23-25 years old

**45-48%**  
of total hospital cost was used by HCUs

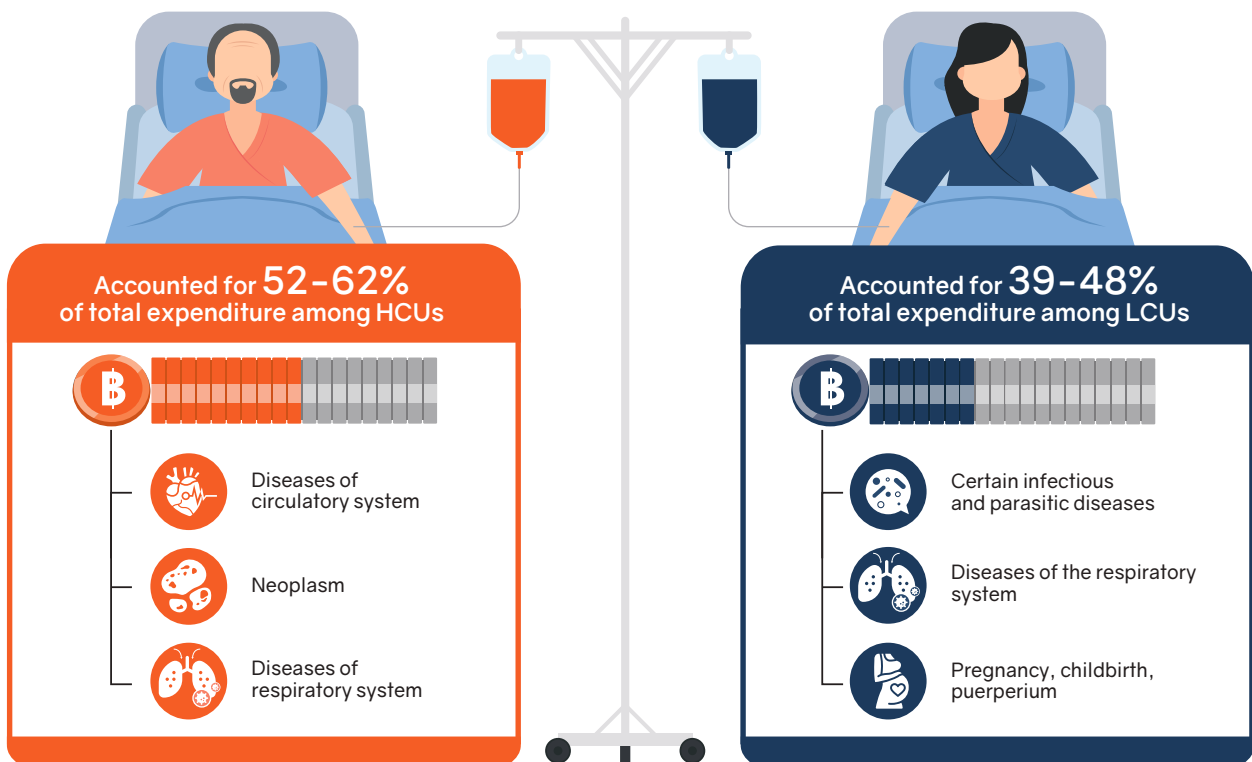
**9%**  
of total hospital cost was used by LCUs

Average cost  
**> 100,000 baht**  
per year per patient

Average cost  
**< 3,000 baht**  
per year per patient



## Top 3 Primary Diagnoses



<sup>4</sup> Low Cost Users (LCUs) are patients in the lowest cost group (< 50<sup>th</sup> percentile of cost).

<sup>5</sup> The findings were generated year by year, and the numbers represent the range over five years.

# Potential Factors Increasing the Chance of Becoming an HCU

Patients with any of the following characteristics have higher chance of becoming an HCU\*

- Being male
- Older
- Being admitted to larger hospitals
- Being admitted to hospitals in Bangkok
- Having primary diagnosis as neoplasm, diseases of the circulatory system, injury, or poisoning and certain other consequences of external causes
- Having comorbidity
- Having more than one hospitalisation per year

\*This analysis was conducted using a multivariate logistic regression model to identify potential predictors of HCUs. All factors were found to be statistically significant ( $p < 0.05$ ).

## Implications and recommendations for policy and practice

The HCU phenomenon exists in the Thai health care system. Although some HCUs will require several hospitalisations, some may not if the right care can be provided at the right place and at the right time as experienced in other countries.<sup>6,7</sup> The study of HCU in Thailand could benefit various groups. For example, the findings on HCUs could be used to:

- monitor the magnitude and trend of HCUs in Thailand and support the planning of policies such as the UCS reimbursement policy to reduce avoidable hospitalisations and the reimbursement policy for high-cost interventions;
- improve the quality and management of existing routinely collected data for identifying HCUs and potential predictors that increase the chance of any patients to become an HCU;
- support tertiary hospitals to establish a mechanism to detect HCUs and develop measures to help this population so their needs are met; and
- facilitate the development of measures/interventions to prevent HCUs in the long term through various channels such as prevention & promotion (P&P) program, optimal referral system, and palliative care management.

The findings reported the existence of high cost users in a hospital setting, and future work could expand to examine other types of services such as outpatient services and high-cost interventions. From data perspective, this analysis highlighted a few important points to consider for future work. These data were primarily collected for other reasons (i.e., not for research); and thus, there is potential for additional variables to be included. When using existing administrative databases, data-related issues (e.g., conflicting data, missing data, incomplete data) exist and they could benefit from further investigation and including research on how to appropriately deal with them. In today's society where data play a crucial part in our lives, data privacy is another significant and important topic to consider. This study is an example of how collaboration between policy and research communities could make possible a health economic analysis without jeopardising the data privacy while answering a policy-relevant question to support decision-makers in health care.



<sup>6</sup>Graven PF, Meath TH, Mendelson A, Chan BK, Dorr DA, McConnell KJ. Preventable acute care spending for high-cost patients across payer types. *Journal of Health Care Finance*. 2016;42(3).

<sup>7</sup>Figueroa JF, Frakt AB, Lyon ZM, Zhou X, Jha AK. Characteristics and spending patterns of high cost, non-elderly adults in Massachusetts. In *Healthcare*. 2017;5(4): 165-170.

## About this study

This study has used an existing administrative database (with de-identified individual-level hospitalisation data) from the National Health Security Office (NHSO) to better understand high cost users in Thailand. Our retrospective analyses were conducted in Thailand to examine hospitalisation cost (from inpatient department) over a 5-year period from October 2014 to September 2019 in the public health care system covered by UCS.

The findings were found in the study “**High-cost health care users in Thailand: The search for those in need**” with the objectives to answer the following policy-relevant questions: who are the high cost users, what are common primary diagnoses among high cost users, and what are hospitalisation and expenditure patterns of high cost users?

This paper is a part of a research project entitled

### High-cost health care users in Thailand: The search for those in need by

1. Dr. Wanrudee Isaranuwachai<sup>1</sup>
2. Dr. Rukmanee Butchon<sup>1</sup>
3. Waranya Rattanavipapong<sup>1</sup>
4. Dr. Wang Yi<sup>2</sup>
5. Nitichen Kittiratchakool<sup>1</sup>
6. Dr. Yot Teerawattananon<sup>1,2</sup>

<sup>1</sup> Health Intervention and Technology Assessment Program (HITAP), Ministry of Public Health, Thailand

<sup>2</sup> Saw Swee Hock School of Public Health, National University of Singapore, Singapore

## Authors



Dr. Wanrudee Isaranuwachai

HITAP



Waranya Rattanavipapong

HITAP

HITAP is a semi-autonomous research unit under Thailand's Ministry of Public Health. HITAP's core mission is to appraise a wide range of health technologies and programs, including pharmaceuticals, medical devices, interventions, individual and community health promotion, and disease prevention as well as social health policy to inform policy decisions in Thailand. HITAP also works at the global level with overseas development aids, international organizations, non-profit organisations, and overseas governments to build capacity or health technology assessment, e.g., International Decision Support Initiative (iDSI).

HITAP would like to thank the National Health Security Office for providing the data and support for this study.

## Contact Information

Health Intervention and Technology Assessment Program (HITAP)  
6<sup>th</sup> Floor, 6<sup>th</sup> Building, Department of Health, Ministry of Public Health,  
Tiwanon Rd., Muang, Nonthaburi 11000, Thailand

Tel: +662-590-4549, +662-590-4374-5

Fax: +662-590-4369

E-mail: [hitap@hitap.net](mailto:hitap@hitap.net)



HITAPTHAILAND



HITAP\_THAILAND



HITAP THAI



HITAP.NET



For more information,  
please contact

[wanrudee.i@hitap.net](mailto:wanrudee.i@hitap.net)



Subscribe for electronic version  
of HITAP research brief by  
e-mailing us at

[comm@hitap.net](mailto:comm@hitap.net)



Attribution-NonCommercial-NoDerivatives 4.0 International  
(CC BY-NC-ND 4.0)

