

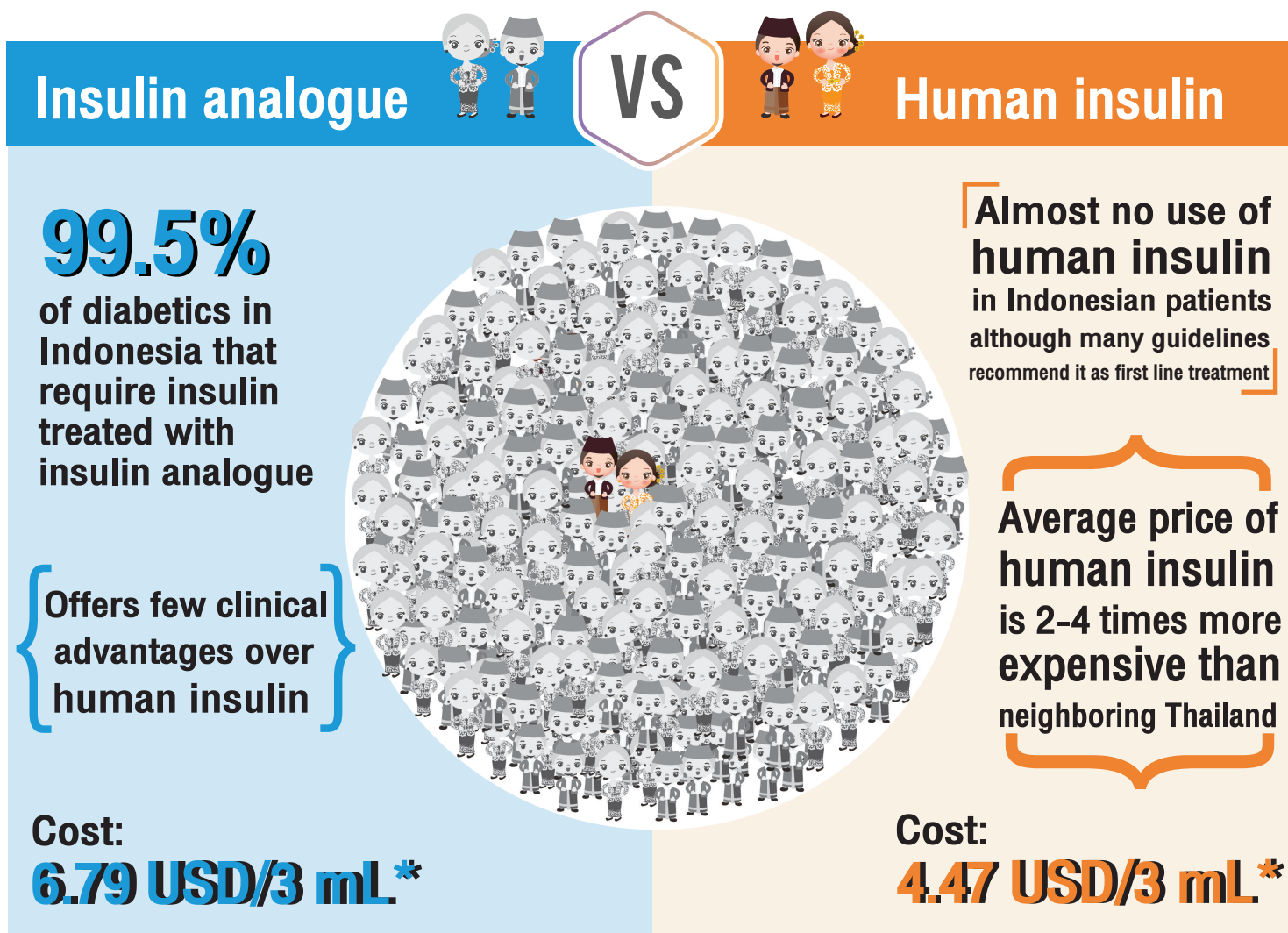
# POLICY BRIEF

## Health Technology Assessment on Insulin Analogue as Treatment for Type 2 Diabetes in Indonesia

Almost every diabetic patient in Indonesia that requires insulin to control their blood sugar is treated with the newer generation insulin analogue, despite internationally recognized guidance<sup>1,2</sup> that low and middle-income countries (LMICs) should aim to use the less costly human insulin, the first generation of man-made insulin, as a first line treatment.

After examining the costs and clinical benefits of insulin analogue compared with human insulin for Indonesia, our study revealed Indonesia could save 9 million USD annually by switching from insulin analogue to human insulin, which studies have shown does not have substantially better outcomes; and in conjunction negotiating the same prices agreed by neighbouring Thailand<sup>3</sup>.

We recommend clinical practice guidelines are introduced that state human insulin is the first line treatment for type 2 diabetics in Indonesia. The Indonesian Ministry of Health should explore negotiating with pharmaceutical companies for more globally competitive prices.



<sup>1</sup> NICE. Type 2 diabetes in adults: management. NG28. April 2016. Available from <https://www.nice.org.uk/guidance/ng28> [accessed: 27 March 2018].

<sup>2</sup> American Diabetes Association. Standards of Medical Care in Diabetes-2017. Diabetes Care. 2017 Jan; 40 (Supplement 1): S4-S5.

<sup>3</sup> This is based 2017 volume data.

\* This is based exchange rate on 1 August 2018 (Data from <https://www.imf.org>), 1 USD = 14,442 IDR

## Background to the study and evidence used

With the rising burden of non-communicable diseases in Indonesia will come an increasing need for Insulin. It is predicted that 21 million Indonesians will be living with diabetes by 2030 and 10-15% of these patients will require insulin to control blood glucose and prevent other severe complications.<sup>4</sup>

BPJS, the Indonesian National Health Insurance System, currently runs an annual budget deficit, so it is vital Indonesia uses resources effectively – especially in its quest to achieve Universal Health Coverage.

We examined studies included in a systematic review by Sabirin and Rahim (2012) on the effectiveness of analogue versus human insulins for type 2 diabetes patients; we then systematically searched and reviewed all studies published from January 2012-April 2017. 14 randomised

controlled trials were identified that were suitable to compare clinical outcomes between insulin analogue and human insulin.

We looked at volume data from 2016 for Indonesia<sup>5</sup> and from 2017 in Thailand<sup>6</sup>; and used 2018 prices of insulin under UHC schemes<sup>7</sup> to forecast potential budget savings supposing Indonesia could negotiate better prices. Our analysis assumed that administrative form (vials/pens/cartridges) did not change, only whether the insulin was human or analogue.

“  
**It is predicted that 21 million Indonesians will be living with diabetes by 2030.**  
”

## Key findings

### Treating 11 and 8 patients with insulin analogue

can avert one additional case of symptomatic and nocturnal hypoglycaemia respectively. Treating 20 with analogue can lead one additional patient to achieve HbA1C target. Analogue has no advantage in reducing mean HbA1c or severe hypoglycaemia.

### High prices of human insulin in Indonesia

Indonesia uses insulin analogue to treat approximately 99.5% of patients who require insulin, whereas Thailand treats just 3% of patients with insulin analogue.

**A**nalogue has no advantage in reducing mean HbA1c or severe hypoglycemia.

Insulin analogue and human insulin are similarly priced in Indonesia. Compared to Thailand, Insulin analogue is 20% cheaper in Indonesia, but human insulin is much more expensive with vials costing four times as much, and pens/cartridges twice as much. Human insulin in Thailand is significantly cheaper than any insulin available in Indonesia.

### Budget savings

Indonesian health insurance can save 14% of current spending on insulin if human insulin is used to treat 97% of patients, as it was in Thailand in 2017. It can save 65% of current spending if human insulin is also procured at Thai prices. 65% of current spending on insulin is equivalent to 9,074,885 USD annually.

<sup>4</sup> World Health Organization. Country and Regional Data on Diabetes 2017 [Internet]. 2017 [cited 27 March 2018]. Available from: [http://www.who.int/diabetes/facts/world\\_figures/en/index5.html](http://www.who.int/diabetes/facts/world_figures/en/index5.html)

<sup>5</sup> BPJS Kesehatan, Indonesia

<sup>6</sup> National Health Security Office, Thailand

<sup>7</sup> E-Katalog, Indonesia: Available from: <https://e-katalog.lkpp.go.id/>;

Drug and Medical Supply Information Center, Ministry of Public Health, Thailand [Internet]. 2018 [cited 5 April 2018]. Available from:

<http://dmsic.moph.go.th/dmsic/index.php?p=1&id=1>; Royal Thai Government Gazette on National List of Essential Medicines, Thailand; 2018 Jan

# What does this mean for Indonesia?

The high use of insulin analogue in Indonesia is concerning given that it is more expensive and has limited clinical benefits. Its prevalent use also disregards World Health Organization (WHO) and UK guidelines and global trends, particularly amongst LMICs<sup>8</sup>. We propose Indonesia use human insulin as first line treatment, and analogue for patients who struggle to control hypoglycaemic events through human insulin or other means.

The Indonesian Ministry of Health should tackle these issues in order to make considerable budget savings and move toward achieving Universal Health Coverage.

**We propose Indonesia use human insulin as first line treatment, and analogue for patients who struggle to control hypoglycaemic events through human insulin or other means.**



## POTENTIAL SAVING FROM

### THE USE OF HUMAN INSULIN

**USE IN 0.5%**  
of cases  
(current situation in Indonesia)  
at Thai price



**60,000 USD  
SAVED ANNUALLY**  
(0.5% of current  
spending on insulin)

**USE IN 97%**  
of cases at current price in Indonesia



**2 MILLION USD  
SAVED ANNUALLY**  
(14% of current  
spending on insulin)

**USE IN 97%**  
of cases at Thai price



**9 MILLION USD  
SAVED ANNUALLY**  
(65% of current  
spending on insulin)

<sup>8</sup> Wirtz VJ. Insulin market profile. Amsterdam: Health Action International. April 2016.

## Policy recommendations

- The Indonesian Ministry of Health should work with professional associations to establish clinical practice guidelines, specifying detailed medical indications to target the use of insulin analogues to patients who struggle to manage blood glucose, or symptomatic and nocturnal hypoglycaemia through use of human insulin or other treatment methods.
- BPJS should only reimburse insulin analogue for those patients who meet the criteria, and should monitor utilization patterns to ensure appropriate prescription occurs.
- The Indonesian Ministry of Health should work with local and international pharmaceutical companies to ensure availability of human insulin and at a lower price. This may require taking legal action if anti-competitive market collusion is confirmed.

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For more information on this study, please go to [www.globalhitap.net/projects/idsi-indonesia](http://www.globalhitap.net/projects/idsi-indonesia)

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