

Value or Luxury? Cost-Effectiveness of Lipid-Lowering Therapies in Indonesia: A Cost-Effectiveness Analysis

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BACKGROUND

Cardiovascular disease is the leading cause of death globally

In 2022, CVD caused over **30% of total mortality** in Indonesia

A large portion of these deaths are preventable through **proper lipid-lowering therapy**.

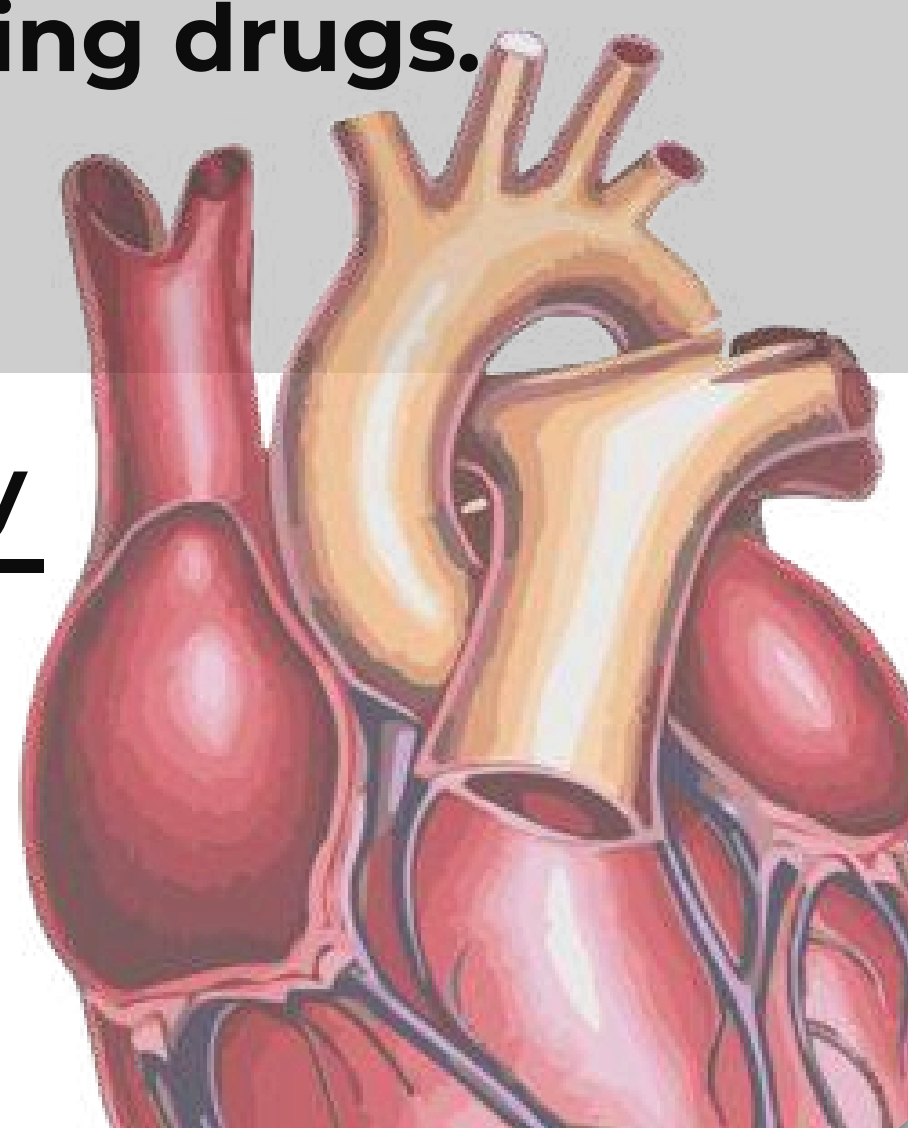
Statins are the most widely prescribed lipid-lowering drugs.

They are low-cost, effective, and the backbone of lipid therapy in global and Indonesian guidelines.

PCSK9 inhibitor has emerged as the novel therapy

PCSK9 inhibitors offer **greater LDL reduction!**

PCSK9 is included in recent global guidelines for high- and very-high-risk groups and is now being considered for Indonesia's national cardiology guidelines.



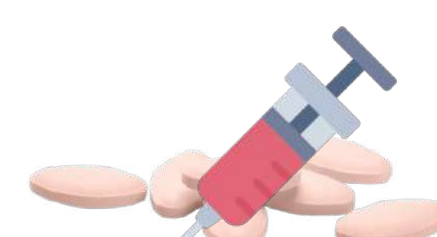
RESEARCH GAP & AIM

Standard therapy



Statins to lower cholesterol

Proposed Therapy



Combination PCSK9 inhibitor + statin



But what about affordability?

PCSK9 inhibitors are much more expensive than statins. In Indonesia, **no published cost-effectiveness analysis (CEA)** has evaluated whether the health benefits justify the cost.

This study aims to assess **whether adding PCSK9 to statins is cost-effective** in the Indonesian context.

METHODS

Model Design

We developed a **10-year cost-effectiveness model comparing two strategies** for lipid lowering in high-risk cardiovascular patients:

1. **Statin monotherapy**
2. **Statin + PCSK9 inhibitor combination therapy.**



Population

Data used was from study with high cardiovascular risk patients who received both treatment (as comparison)

Outcomes Measured

- 1 **Total Cost** (in IDR)
- 2 **Effectiveness**, measured in Quality-Adjusted Life Years (QALYs)
- 3 **Willingness-to-Pay (WTP):** Compared against 2 threshold (based on WHO-CHOICE and Indonesian GDP per capita)

Assumptions



Medication adherence were assumed equal across groups.

Costs included **drug prices and routine care** but excluded indirect costs (time off work, transportation fee, etc.)

Analysis (Software)

Analysis were generated using **R studio (ver 4.5.1)** with heemod and ggplot2 package



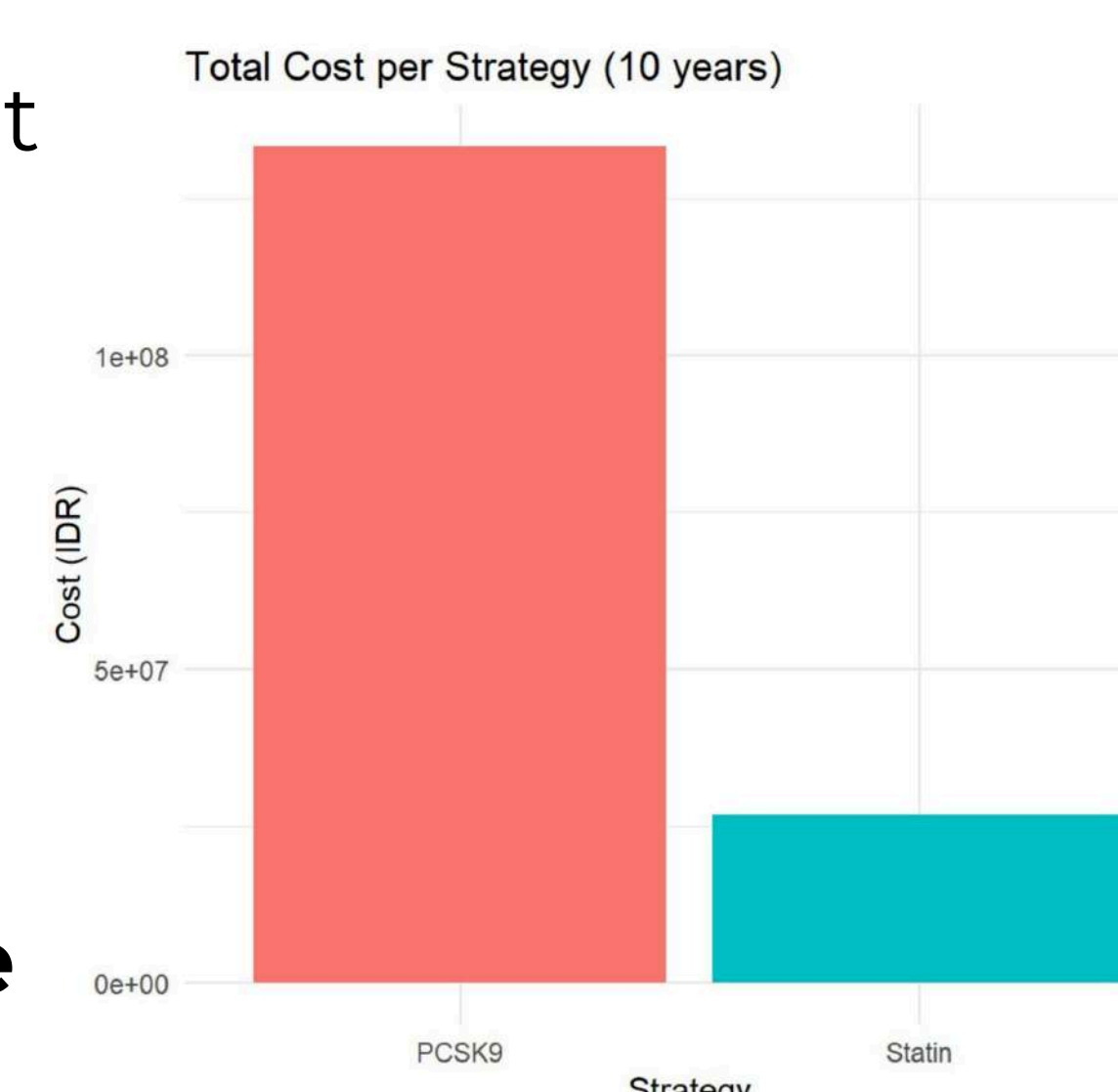
RESULT

How Much Does Each Treatment Cost?

We looked at the cost over 10 years for each treatment

Strategy	Total Cost (IDR)
Statin only	IDR 26.7 million
Statin + PCSK9	IDR 133.3 million

- PCSK9 combination therapy is **about 5× more expensive** than statin alone.



Is It Worth the Extra Cost? (ICER)

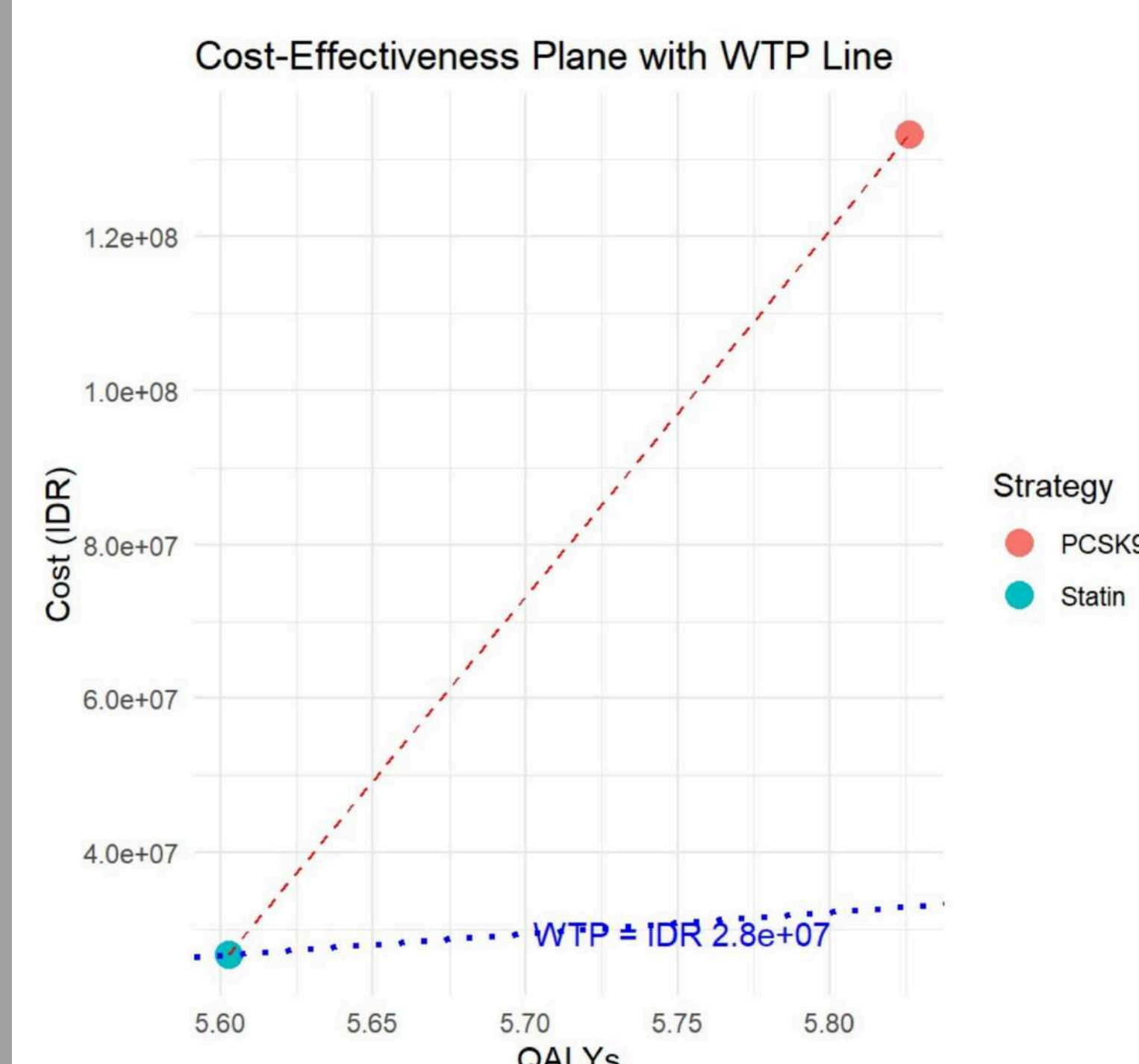
The calculated ICER (Incremental Cost-Effectiveness Ratio) for switching from statin to PCSK9 combination is

IDR 484,488,468 per QALY

Cost-Effectiveness Evaluation Against WTP Threshold

ICER is compared to two different WTP per QALY thresholds

WTP Threshold	Value (IDR)	Based on
Low	28 million	Indonesian studies for moderate disease
High	60 million	WHO-CHOICE: 1× GDP per capita



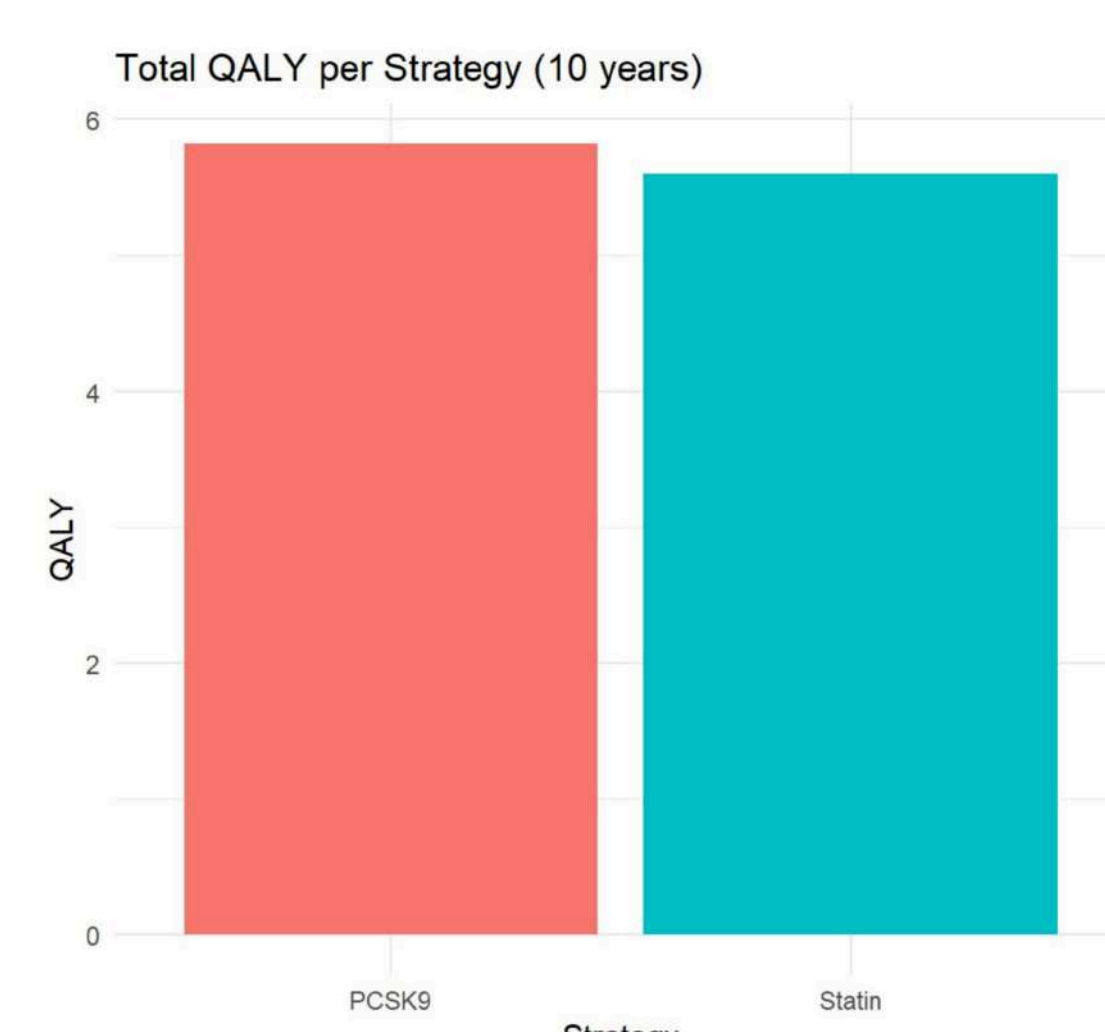
PCSK9i provides **slightly more health benefits but at a much higher cost**, exceeding what's considered affordable at **28 million/QALY**.

When we use a higher WTP threshold of **IDR 60 million** per QALY (based on WHO's guideline of 1× GDP per capita), the **ICER still above this line → PCSK9 still not cost-effective**.

How Much Health Benefit Does Each Provide?

We measured **health benefits using QALY**, a parameter that reflects both how long and how well a person lives.

Strategy	Total QALYs over 10 years
Statin only	5.60 QALYs
Statin + PCSK9	5.83 QALYs



- The PCSK9 group had a small health improvement, about **0.22 QALY more over 10 years**.

DISCUSSION

Our analysis shows:

1. PCSK9 **is not cost-effective** at current prices **under conservative estimates**.
2. It was still **not cost-effective under a more generous societal threshold**, which may apply to high-risk or life-saving contexts.

BPJS (Indonesian health insurance) covers ~270 million Indonesians but operates under tight budget constraints. A full rollout of PCSK9 at high prices could strain resources, given expensive program costs. For current condition, beside negotiation, we could **restrict use to high-risk subpopulations**.

CONCLUSION

PCSK9 offers better outcomes but is **not cost-effective at IDR 28M/QALY and at IDR 60M/QALY**.

PCSK9 may be justified for **very high-risk patients**, such as familial hypercholesterolemia or prior cardiovascular events.

REFERENCES



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