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Implementasi Farmakoekonomi dalam HTA

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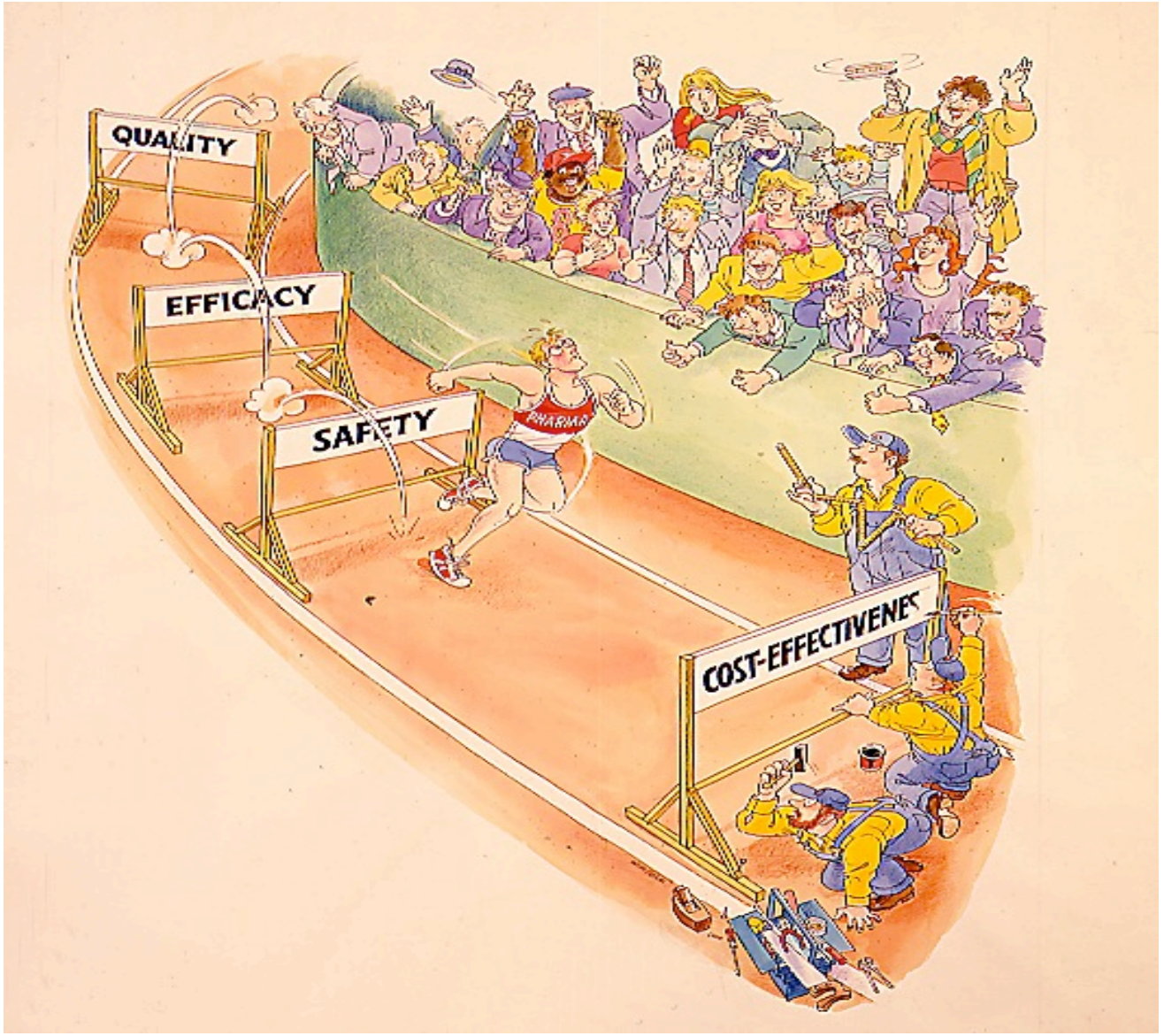
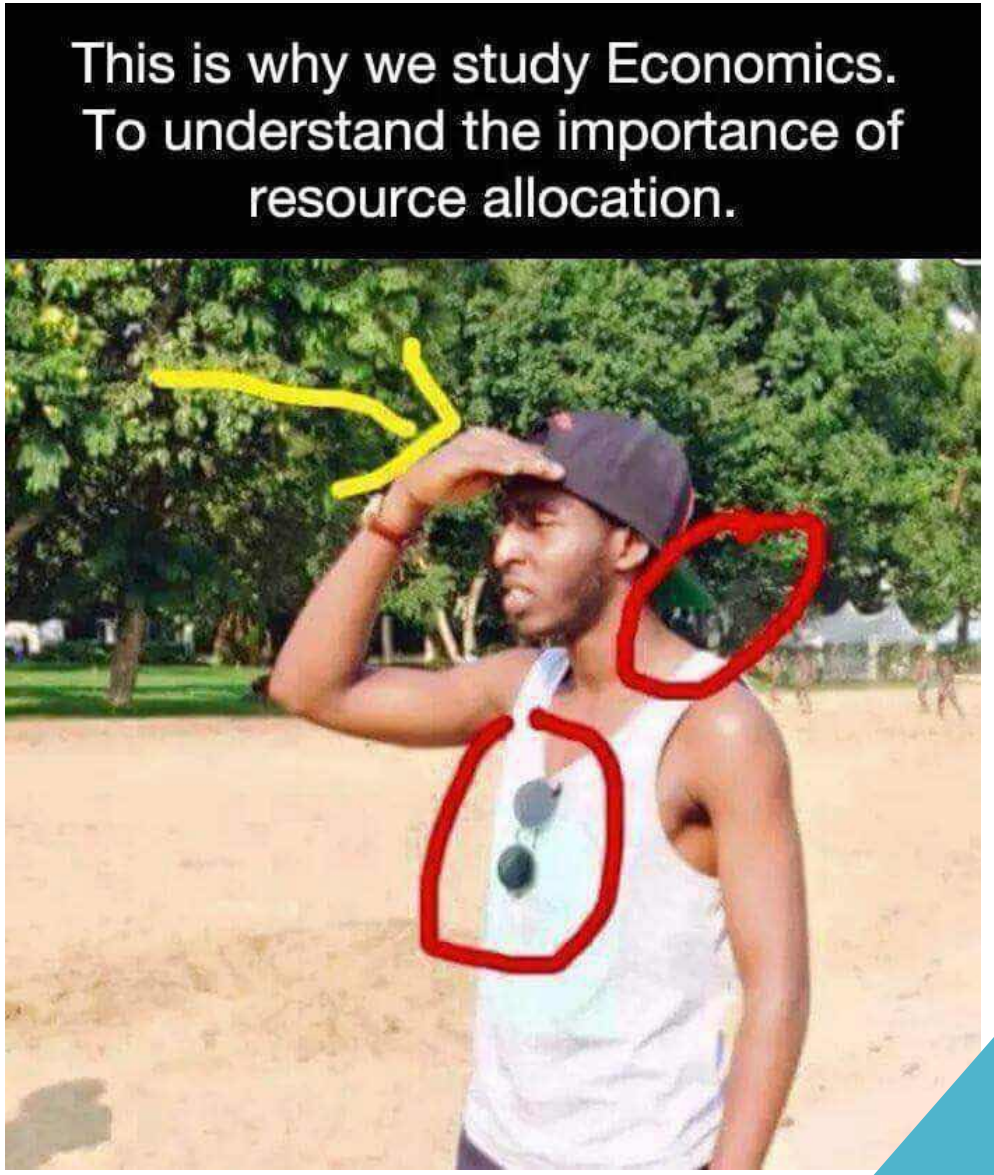
Presentation Outline

- Peran Evaluasi Ekonomi dalam HTA
- Analisis Minimalisasi Biaya
- Analisis Manfaat Biaya
- Analisis Efektivitas dan Utilitas Biaya
- *Key Takeaways*

Peran Evaluasi Ekonomi dalam HTA


QUALITY
EFFICACY
SAFETY
PHARMA
COST-EFFECTIVENES


This is why we study Economics.
To understand the importance of
resource allocation.

Evaluasi Ekonomi

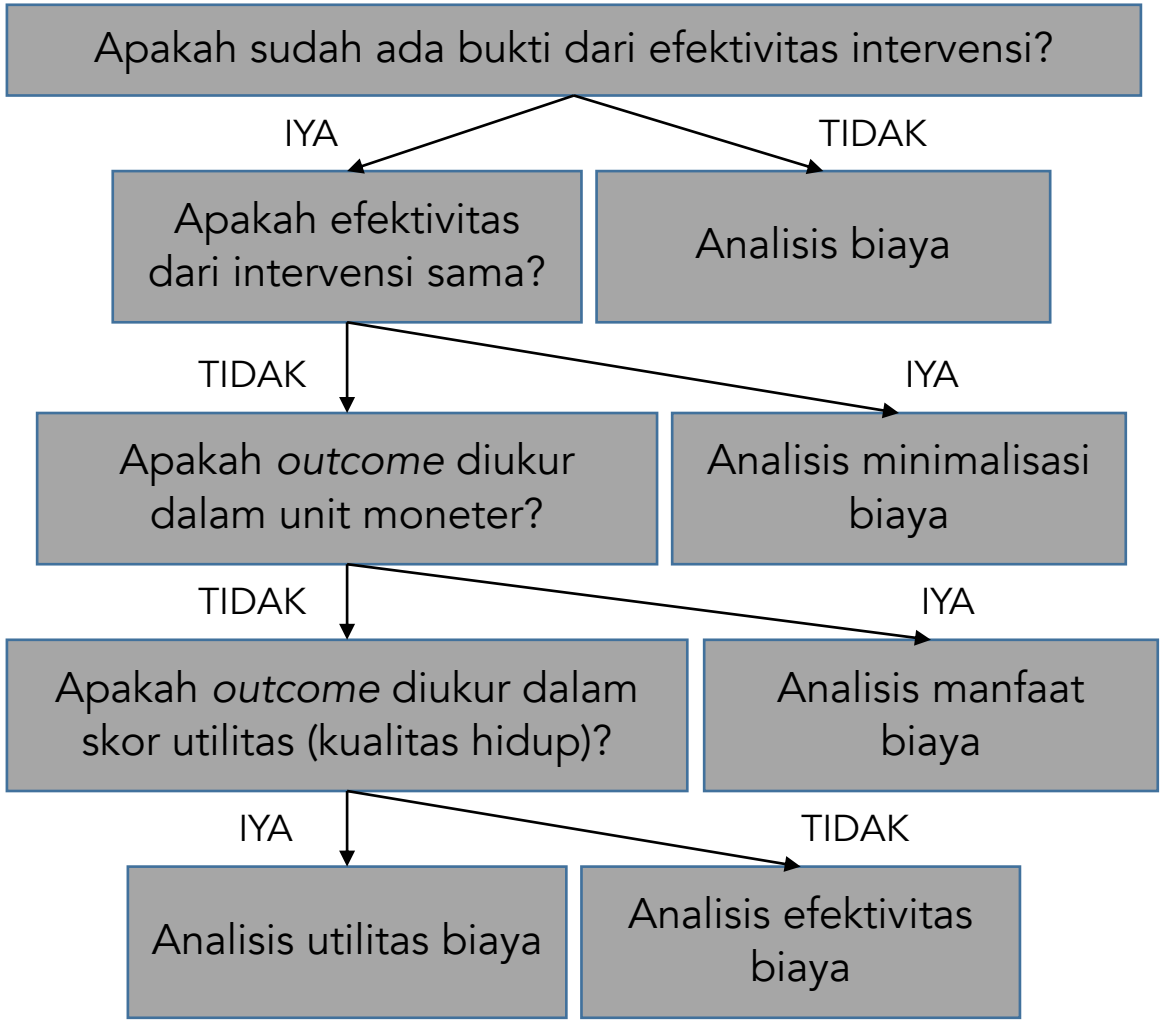
Analisis minimalisasi biaya	Analisis manfaat biaya	Analisis efektivitas biaya	Analisis utilitas biaya
$C	$B/$C	$ΔC/ΔE	$ΔC/ ΔQALY
Berapa biaya yang harus dikeluarkan untuk masalah atau intervensi?	Apakah layak berinvestasi dalam hal ini atau tidak?	Pendekatan mana yang memberikan nilai terbaik dalam peningkatan indikator klinis?	Pendekatan mana yang memberikan nilai terbaik dalam hal utilitas?

Tipe Analisis dalam Evaluasi Ekonomi

$$\frac{\Delta \text{ Biaya (Rp)}}{\Delta \text{ Efektivitas}} = \frac{\text{Biaya}_{\text{intervensi baru}} - \text{Biaya}_{\text{intervensi lama}}}{\text{Efektivitas}_{\text{intervensi baru}} - \text{Efektivitas}_{\text{intervensi lama}}}$$

Tipe Analisis	Biaya	Efektivitas	Hasil
Minimalisasi biaya	Unit moneter	Efektivitas dianggap sama	Intervensi dengan biaya paling minim
Efektivitas biaya	Unit moneter	Efektivitas tidak dianggap sama	Biaya per unit efektivitas
Utilisasi biaya	Unit moneter	Utilitas, misalnya kualitas hidup	Biaya per unit utilitas
Manfaat biaya	Unit moneter	Unit moneter	Rasio manfaat biaya

Alur dalam Evaluasi Ekonomi



Resistensi Antibiotik Disebut Silent Pandemic, Begini Dampak dan Bahayanya pada Tubuh

Kompas.com - 13/06/2021, 16:05 WIB

BAGIKAN:

Komentar

Ilustrasi antibiotik (SHUTTERSTOCK/ESB Professional)

KOMPAS.com - Resistensi **antimikroba** (AMR), yang salah satunya merupakan akibat sembarangan mengonsumsi antibotik cukup mengkhawatirkan dan disebut *silent pandemic*.

"Resistensi **antibiotik** merupakan krisis kesehatan dunia, bahkan disebut sebagai *silent pandemic*," kata Vida Parady dari Yayasan Orangtua Peduli (YOP).

Hal ini disampaikannya dalam diskusi daring bertajuk *Kemitraan Sektor Swasta dan Peran Masyarakat Dalam Mempromosikan Penggunaan **Antibiotik** Secara Rasional dan Tuntas*, Kamis (10/6/2021).

Baca juga: **Mengenal Resistensi Antibiotik, dari Dampak hingga Pencegahan**

Penggunaan antibiotik yang tidak sesuai dengan rekomendasi dokter, baik kekurangan ataupun berlebihan merupakan salah satu penyumbang terbesar angka **resistensi antimikroba** (AMR) di dunia kesehatan.

Berdasarkan data Organisasi Kesehatan Dunia (WHO), penggunaan antibiotik meningkat 91 persen secara global dan meningkat 165 persen di negara-negara berkembang pada periode 200-2015.

Hal ini menjadikan AMR salah satu dari 10 ancaman kesehatan global yang paling berbahaya di dunia.

https://www.kompas.com/sains/read/2021/06/13/160500323/resistensi-antibiotik-disebut-silent-pandemic-begini-dampak-dan-bahayanya?page=all

Prevalence and determinants of inappropriate antibiotic dispensing at private drug retail outlets in urban and rural areas of Indonesia: a mixed methods study

Original research

BMJ Global Health

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Astri Ferdiana [7,8] Yusuf Ari Mashuri [7,9] Ari Probandari [7,9]
Tri Wibawa [7,10] Neha Batura [11] Gill Schierhout [12] John Kaldor [1]
Rebecca Guy [1] Matthew Law [1] Richard Day [13] Johanna Hanefeld [3,14]
Harry Parathon,[15] Stephen Jan [12] Shunmay Yeung [16] Virginia Wiseman [1,3]

ABSTRACT

Introduction The aim of this mixed-method study was to determine the extent and determinants of inappropriate dispensing of antibiotics by licensed private drug retail outlets in Indonesia.

Methods Standardised patients (SPs) made a total of 495 visits to 166 drug outlets (community pharmacies and drug stores) between July and August 2019. The SPs presented three clinical cases to drug outlet staff: parent of a child at home with diarrhoea; an adult with presumptive tuberculosis (TB); and an adult with upper respiratory tract infection (URTI). The primary outcome was the dispensing of an antibiotic without prescription, with or without the client requesting it. We used multivariable random effects logistic regression to assess factors associated with the primary outcome and conducted 31 interviews with drug outlet staff to explore these factors in greater depth.

Results Antibiotic dispensing without prescription occurred in 69% of SP visits. Dispensing antibiotics without a prescription was more likely in standalone pharmacies and pharmacies attached to clinics compared with drug stores, with an OR of 5.9 (95% CI 3.2 to 10.8) and OR of 2.2 (95% CI 1.2 to 3.9); and more likely for TB and URTI SP-performed cases compared with child diarrhoea cases, with an OR of 5.7 (95% CI 3.1 to 10.8) and OR of 5.2 (95% CI 2.7 to 9.8). Interviews revealed that inappropriate antibiotic dispensing was driven by strong patient demand for antibiotics, unqualified drug sellers dispensing medicines, competition between different types of drug outlets, drug outlet owners pushing their staff to sell medicines, and weak enforcement of regulations.

Conclusion This study shows that inappropriate dispensing of antibiotics by private drug retail outlets is widespread. Interventions will need to address not only the role of drug sellers, but also the demand for antibiotics among clients and the push from drug outlet owners to compete with other outlets.

What is already known?

- Increasing antibiotic resistance is a major public health concern.
- While few would dispute that drug outlets have an important role to play in reducing the overuse of antibiotics in the community, to date most antimicrobial resistance strategies and policies in Indonesia have overlooked them.

What are the new findings?

- This study shows that the dispensing of antibiotics without a prescription at drug outlets is common in the study sites, despite regulations prohibiting this.
- Dispensing antibiotics without a prescription was more likely in standalone pharmacies and pharmacies attached to clinics compared with drug stores, with an OR of 5.9 (95% CI 3.2 to 10.8) and OR of 2.2 (95% CI 1.2 to 3.9); and more likely for tuberculosis and upper respiratory tract infection SP-performed cases compared with child diarrhoea cases, with an OR of 5.7 (95% CI 3.1 to 10.8) and OR of 5.2 (95% CI 2.7 to 9.8).
- Interviews revealed that inappropriate antibiotic dispensing was driven by strong patient demand for antibiotics, unqualified staff dispensing medicines, competition between different types of outlets, drug outlet owners pushing their staff to sell medicines, and weak enforcement of regulations.

Wulandari LPL, Khan M, Liverani M, et al. Prevalence and determinants of inappropriate antibiotic dispensing at private drug retail outlets in urban and rural areas of Indonesia: a mixed methods study. BMJ Global Health 2021;6:e004993.

Naylor et al. Antimicrobial Resistance and Infection Control (2018) 7:58
https://doi.org/10.1186/s13756-018-0336-y

Antimicrobial Resistance and Infection Control

RESEARCH Open Access

Estimating the burden of antimicrobial resistance: a systematic literature review

Nichola R. Naylor[1*], Rifat Atun[3,1], Nina Zhu[1], Kavian Kulasabanathan[2], Sachin Silva[3], Anuja Chatterjee[1], Gwenan M. Knight[1] and Julie V. Robotham[4,1]

Abstract

Background: Accurate estimates of the burden of antimicrobial resistance (AMR) are needed to establish the magnitude of this global threat in terms of both health and cost, and to paramaterise cost-effectiveness evaluations of interventions aiming to tackle the problem. This review aimed to establish the alternative methodologies used in estimating AMR burden in order to appraise the current evidence base.

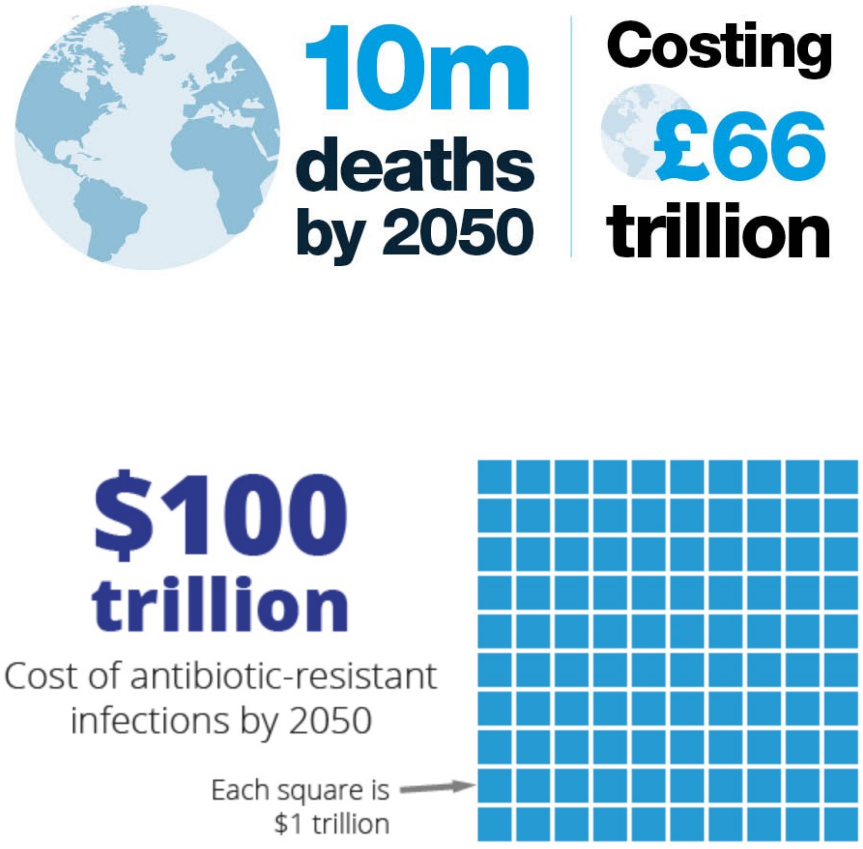
Methods: MEDLINE, EMBASE, Scopus, EconLit, PubMed and grey literature were searched. English language studies evaluating the impact of AMR (from any microbe) on patient, payer/provider and economic burden published between January 2013 and December 2015 were included. Independent screening of title/abstracts followed by full texts was performed using pre-specified criteria. A study quality score (from zero to one) was derived using Newcastle-Ottawa and Philips checklists. Extracted study data were used to compare study method and resulting burden estimate, according to perspective. Monetary costs were converted into 2013 USD.

Results: Out of 5187 unique retrievals, 214 studies were included. One hundred eighty-seven studies estimated patient health, 75 studies estimated payer/provider and 11 studies estimated economic burden. 64% of included studies were single centre. The majority of studies estimating patient or provider/payer burden used regression techniques. 48% of studies estimating mortality burden found a significant impact from resistance, excess healthcare system costs ranged from non-significance to $1 billion per year, whilst economic burden ranged from $21,832 per case to over $3 trillion in GDP loss. Median quality scores (interquartile range) for patient, payer/provider and economic burden studies were 0.67 (0.56-0.67), 0.56 (0.46-0.67) and 0.53 (0.44-0.60) respectively.

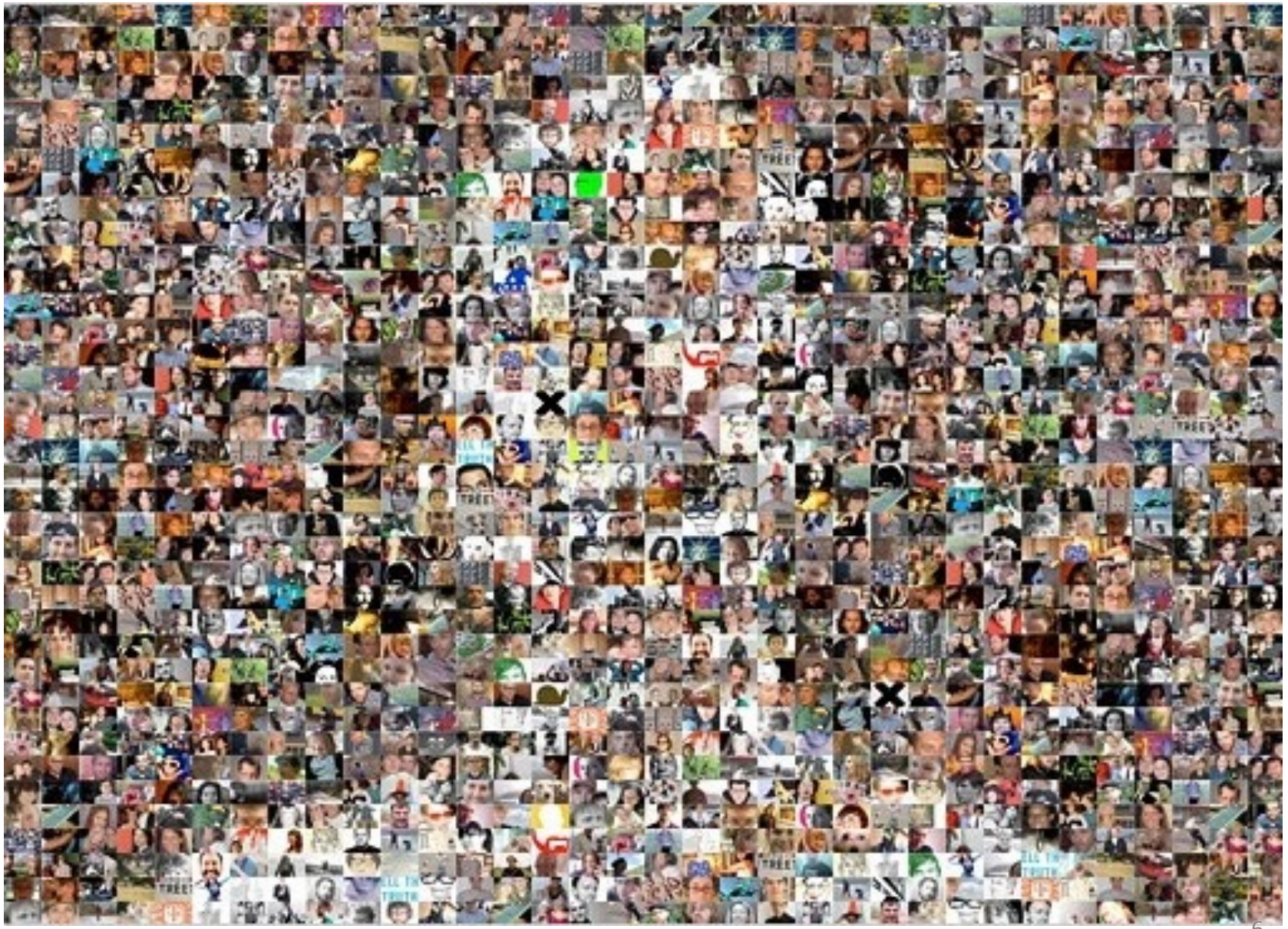
Conclusions: This study highlights what methodological assumptions and biases can occur dependent on chosen outcome and perspective. Currently, there is considerable variability in burden estimates, which can lead in-turn to inaccurate intervention evaluations and poor policy/investment decisions. Future research should utilise the recommendations presented in this review.

Trial registration: This systematic review is registered with PROSPERO (PROSPERO CRD42016037510).

Keywords: Antimicrobial resistance, Antibiotic resistance, Burden, Cost



Naylor NR, Atun R, Zhu N, Kulasabanathan K, Silva S, Chatterjee A, Knight GM, Robotham JV. Estimating the burden of antimicrobial resistance: a systematic literature review. Antimicrob Resist Infect Control. 2018 Apr 25;7:58.
https://scienceogram.org/blog/2016/05/antibiotic-resistance-global-100-trillion/
http://www.pmlive.com/pharma_news/uk_launches_subscription-style_payment_pilot_to_incentivise_pharma_antibiotics_r_and_d_1294141?SQ_DESIGN_NAME=2



The politics of evidence-based policymaking: maximising the use of evidence in policy

Editor: Professor Paul Cairney (Professor of Politics and Public Policy, Division of History and Politics, University of Stirling, UK)

Scope: Many academics, in areas such as health and environmental policy, bemoan the inevitability of 'policy based evidence' rather than 'evidence-based policy'. Some express the naïve view that policymakers should think like scientists and/or that evidence-based policymaking should be more like the ideal of evidence-based medicine in which everyone supports a hierarchy of evidence. Others try to work out how they can improve the supply of evidence or set up new institutions to get policymakers to pay more attention to it.

Yet, a more pragmatic solution is to work out how and why policymakers demand information, and the political and complex policymaking context in which they operate. Only then can we produce evidence-based strategies based on how the world works rather than how we would like it to work. This new strategy requires new skills, such as the ability to turn a large amount of scientific evidence into simple and effective stories that appeal to the biases of policymakers, and to form alliances with key actors operating in many levels and types of government. It also requires scholars of policy to turn their scientific understanding of how policymaking works into a practical understanding of how to operate effectively within it.

https://www.nature.com/collections/xhxktjgpjc

Analisis Minimalisasi Biaya

Biaya Perawatan Kesehatan

Biaya langsung *(direct cost)*

- Biaya yang terkait langsung dengan perawatan kesehatan.
- Biaya langsung medis, seperti biaya obat, konsultasi dokter, biaya jasa perawat, penggunaan fasilitas RS (kamar rawat inap, peralatan), dan uji laboratorium.
- Biaya langsung non-medis seperti biaya transportasi pasien/ambulan.

Biaya tidak langsung *(indirect cost)*

- Sejumlah biaya yang terkait dengan hilangnya produktivitas akibat menderita suatu penyakit.
- Biaya tidak langsung lainnya adalah biaya transportasi keluarga pasien dan biaya pendamping (anggota keluarga yang menemani pasien).

Identifikasi Biaya

Sumber data biaya dapat diperoleh dari :

1. Tagihan biaya *(billing)* pasien dari bagian keuangan
2. Data klaim dari penyelenggara asuransi kesehatan
3. Kuesioner pasien
4. Daftar gaji/UMR untuk menghitung hilangnya biaya produktivitas
5. Standar tarif pelayanan kesehatan (INA-CBGs)

Direktorat Jenderal Kefarmasian dan Alat Kesehatan. *Buku Pedoman Farmakoekonomi*. Kemenkes RI, Jakarta: 2012.

Metodologi dalam Identifikasi Biaya

Cost component	Methodology	Data requirements	Calculations
Direct costs			
Staff	Bottom-up micro-costing	Staff salary for staff involved in care for specific disease Productive working hours staff Minutes spent per patient with specific disease	1) Yearly staff salary/yearly productive work minutes = staff costs per minute 2) Minutes spent per patient with specific disease × staff costs per minute
	Top-down micro-costing	Staff costs for specific disease Total number of activities (e.g. consultation for CVD prevention care)	Total staff costs for specific disease/total number of patients with specific disease
Equipment	Bottom-up micro-costing	Equipment prices (purchasing value) Interest rate Life years Maintenance costs Total yearly equipment utilization all patients Utilization per patient with specific disease	1) PMT[a] = (equipment prices, life years, interest rates) 2) (Annuity + maintenance costs)/total yearly equipment utilization = equipment cost per test 3) Equipment cost per test × utilization per patient with specific disease
	Top-down micro-costing	Equipment prices Interest rate Life years Maintenance costs Total number of patients	1) PMT[a] = (equipment prices, life years, interest rates) 2) (Annuity + maintenance cost)/total number of patients

Hendriks ME, Kundu P, Boers AC, Bolarinwa OA, Te Pas MJ, Akande TM, Agbede K, Gomez GB, Redekop WK, Schultsz C, Swan Tan S. Step-by-step guideline for disease-specific costing studies in low- and middle-income countries: a mixed methodology. Glob Health Action. 2014 Mar 28;7:23573.

Metodologi dalam Identifikasi Biaya

Cost component	Methodology	Data requirements	Calculations
Drugs and Consumables	Bottom-up micro-costing	Unit prices per drug/consumable Utilization per patient with specific disease	Unit prices per drug and consumable × utilization per patient with specific disease
	Top-down micro-costing	Total drug and consumable costs for specific disease Total number of patients with specific disease	Total drug and consumable costs for specific disease/ total number of patients with specific disease
Indirect costs			
Building and overhead	Mark-up	Total direct costs hospital Total indirect costs hospital	Total direct costs hospital/total indirect costs hospital
	Inpatient day	Total indirect costs hospital Total number of inpatient days	Total indirect costs hospital/total number of inpatient days

Hendriks ME, Kundu P, Boers AC, Bolarinwa OA, Te Pas MJ, Akande TM, Agbede K, Gomez GB, Redekop WK, Schultsz C, Swan Tan S. Step-by-step guideline for disease-specific costing studies in low- and middle-income countries: a mixed methodology. Glob Health Action. 2014 Mar 28;7:23573.

Nugraha *et al. Health Economics Review* (2022) 12:45
https://doi.org/10.1186/s13561-022-00392-w

Health Economics Review

RESEARCH Open Access

Predicting the cost of COVID-19 treatment and its drivers in Indonesia: analysis of claims data of COVID-19 in 2020-2021

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Abstract

Background: Recent Coronavirus Disease-19 (COVID-19) pandemic shows that health system, particularly hospital care, takes the highest toll on COVID-19. As hospital gets to manage the surge of COVID-19 cases, it is important to standardize treatment standard and package for COVID-19. Until recently, in Indonesia, COVID-19 curative package in hospital is paid using a retrospective payment system (claims system) using a per-diem rate. Quantifying standard cost using an established retrospective claims dataset is important as a basis for standard formulation for COVID-19 package treatment, should COVID-19 be accommodated into the benefit package for Universal Health Coverage (UHC) under the National Health Insurance.

Methods: We estimated a standard cost for COVID-19 treatment using provider's perspective. The analysis was conducted retrospectively using established national COVID-19 claims dataset during January 2020 until 2021. Utilizing individual-or-patient level analysis, claims profile were broken down per-patient, yielding descriptive clinical and care-related profile. Estimate of price and charge were measured in average. Moreover, indicators were regressed to the total charged price (in logarithmic scale) so as to find the predictors of cost.

Results: Based on the analysis of 102,065 total claims data received by MOH in 2020-2021, there is an average claim payment for COVID-19 in the amount of IDR 74,52 million (USD$ 5175). Significant difference exists in hospital tariffs or price to the existing claims data, indicating profit for hospital within its role in managing COVID-19 cases. Claim amount predictors were found to be associated with change of claim amount, including high level of severity, hospital class, intensive care room occupancy and ventilator usage, as well as mortality.

Conclusion: As COVID-19 pandemic shifts towards an endemic, countries including Indonesia need to reflect on the existing payment system and move towards a more sustainable payment mechanism for COVID-19. The COVID-19 payment system needs to be integrated into the existing national health insurance allowing bundled payment to become more sustainable, which can be achieved by comprehensively formulating the bundled payment package for COVID-19.

Keywords: Claim payment, Retrospective payment, Medical cost, COVID-19, Indonesia

$$Y = A + B - C$$

Y	Total claims
A	Hospital charge
B	Top-up (i.e., funeral service)
C	Deductibles (i.e., missing confirmation test & government aid)

Fig. 1 Claims Formula

Nugraha RR, Pratiwi MA, Al-Faizin RE, Permana AB, Setiawan E, Farianty Y, Komaryani K, Thabrany H. Predicting the cost of COVID-19 treatment and its drivers in Indonesia: analysis of claims data of COVID-19 in 2020-2021. Health Econ Rev. 2022 Aug 31;12(1):45.

Table 3 COVID-19 hospital tariff breakdown

N = 102.605		
Components[a]	**Average**[b]	**SD**
Medical Procedures	**2839**	**13,616.15**
Non-Surgical Procedures	2427.92	13,345.05
Surgical Procedures	311,84	2527.01
Blood Transfusion	83,91	768.13
Rehabilitation	15,77	455.29
Healthcare Workers' Fee	**4731.06**	**11,407.14**
Doctors' visit	2109.6	6192.04
Expert consultation (i.e., specialist)	209.11	2043.59
Nursing fee	2412.34	9205.66
Tests & Examinations	**3862.21**	**6266.31**
Supporting Examination	480.58	2716.18
Radiologic Exam	498.70	1133.375
Laboratorium Exam	2882.92	4657.25
Accommodations	**7422.04**	**13,786.09**
Isolation Room	6787.27	12,819.96
Intensive Care Unit (ICU)	634.78	4954.45
Medical Devices	**2676.35**	**9708.08**
Medical Devices	2134.16	8431.70
Rented Devices	542.19	3140.50
Consumables	**2776.98**	**8111.84**
Drugs	**5789.30**	**15,100.04**
Regular Medicines	5772.55	15,091.28
Chronic & Other Drugs	16.75	450.28

[a] Costs were incurred per-diem (daily)

[b] All in,000 IDR (thousands, Indonesian Rupiah), with conversion rate of 1US$ = IDR 14,400

Table 2 Length of stay of COVID-19 patients

	Mean (days)	SD
Length of Stay (LOS)	8.90	± 5.88
LOS in ICU	0.53	± 2.28

Table 4 Average tariff and total claim charges

N = 102.605		
Claim Component	**Average**[a]	**SD**
Hospital Claims	77,142.72	54,672.49
Top-up Funeral	320.70	941.62
Deductibles	1205.92	686.51
Total Claim	74,572.18	54,963.42
Hospital Tariff	30,098.59	38,797.3
Difference Between Av. Claim and Tariffs	44,473.6	45,313.26

[a] All in,000 IDR (thousand Rupiah)

Nugraha RR, Pratiwi MA, Al-Faizin RE, Permana AB, Setiawan E, Farianty Y, Komaryani K, Thabrany H. Predicting the cost of COVID-19 treatment and its drivers in Indonesia: analysis of claims data of COVID-19 in 2020-2021. Health Econ Rev. 2022 Aug 31;12(1):45.

?

Apa yang dapat Anda interpretasikan dari hasil *costing analysis* tentang pengobatan COVID-19 di Indonesia?

Perspektif Biaya

Komponen biaya	Perspektif			
	Masyarakat *(societal)*	Pasien *(individu)*	Kelembagaan *(institutional)*	
			Penyedia layanan	Pembayar layanan
	Biaya langsung medis			
Pelayanan kesehatan	+	+	+	+
Pelayanan lainnya	+	±	-	±
Cost sharing patient	-	+	-	-
	Biaya langsung non-medis			
Transportasi	+	±	-	±
Pelayanan Informal	+	-	-	-
	Biaya tidak langsung			
Hilangnya produktivitas	+	+	-	-

Direktorat Jenderal Kefarmasian dan Alat Kesehatan. *Buku Pedoman Farmakoekonomi*. Kemenkes RI, Jakarta: 2012.

Analisis Minimalisasi Biaya

- Teknik analisis ekonomi untuk membandingkan dua pilihan intervensi atau lebih yang memberikan *outcome* kesehatan setara untuk mengidentifikasi pilihan yang menawarkan biaya lebih rendah.
- Menentukan kesetaraan *(equivalence)* dari intervensi/obat yang akan dikaji.
- Membandingkan obat dengan bahan kimia sejenis dan telah dibuktikan kesetaraannya melalui uji bioavailabilitas/ bioekuivalen (BA/BE).
- Membandingkan obat standar dengan obat baru yang memiliki efek setara.

Analisis Minimalisasi Biaya Pemberian Antibiotik X *(split dose)* Dibandingkan Antibiotik X *(full dose)* Dikombinasikan Antinausea

- Antibiotik X diberikan secara intravena (IV). Pemberiannya direkomendasikan untuk di-*split* karena dapat menyebabkan nausea, dengan interval pemberian antara dosis 1 dan 2 adalah sehari. Studi terbaru menunjukkan adanya potensi antibiotik X dabat diberikan *full dose*, namun pada saat bersamaan harus diberikan obat antinausea.
- Harga obat antibiotik X dan antinausea adalah masing-masing sebesar Rp 100.000 dan Rp 50.000, sedangkan biaya *IV administration* dan biaya dokter adalah masing-masing sebesar Rp 50.000 dan Rp 100.000 per dosis pemberian.

?

Jika membandingkan pemberian antibiotik X *(split dose)* dengan pemberian antibiotik X *(full dose)* dikombinasikan dengan antinausea, intervensi manakah yang menunjukkan biaya lebih rendah?

Analisis Minimalisasi Biaya Pemberian Antibiotik X *(split dose)* Dibandingkan Antibiotik X *(full dose)* Dikombinasikan Antinausea

Biaya	Antibiotik X *(split dose)*	Antibiotik X *(full dose)* + antinausea
Harga antibiotik X	Rp 100.000	Rp 100.000
Harga antinausea	-	Rp 50.000
IV administration	Rp 100.000	Rp 50.000
Biaya dokter	Rp 200.000	Rp 100.000
Total biaya	Rp 400.000	Rp 300.000

Analisis Manfaat Biaya

Analisis Manfaat Biaya

Outcome	Metode Studi Farmakoekonomi
Klinis	Analisis Minimalisasi Biaya *(Cost Minimization Analysis)* Analisis Efektivitas Biaya *(Cost Effectiveness Analysis)*
Humanistik	Analisis Utilitas Biaya *(Cost Utility Analysis)*
Ekonomi	Analisis Manfaat Biaya *(Cost Benefit Analysis)*

- Teknik untuk menghitung rasio antara biaya intervensi kesehatan dan manfaat yang diperoleh, dimana *outcome* diukur dengan unit moneter.
- *"Dari setiap Rp 1,- yang diinvestasikan terhadap suatu intervensi kesehatan dapat mendatangkan manfaat sebesar Rp 10,-"*

Prinsip Dasar Analisis Manfaat Biaya

Net benefits = total benefits – total costs

Benefit-cost ratio = total benefits in Rp / total costs

Kelebihan	Kekurangan
Memungkinkan perbandingan dengan nilai moneter antar intervensi yang sama sekali tidak berkaitan	Menerjemahkan kondisi klinis non-moneter dan outcome kualitas hidup menjadi nilai moneter
Satu-satunya teknik yang dapat digunakan untuk membandingkan internal suatu intervensi	Jarang digunakan untuk membandingkan obat atau alternatif terapi medis karena pertimbangan etika

Analisis Manfaat Biaya dalam Keputusan Individu

- Joko akan minum kopi jika *Benefit* (B) > *Cost* (C).
- Bagi Joko, "B" dalam minum kopi adalah kepuasan rasa, sarana relaksasi, *control diet*, dan dapat meningkatkan performa bekerja.
- Sedangkan "C" adalah pengeluaran untuk membeli kopi, konsekuensi kesehatan dan waktu yang dihabiskan untuk datang ke *coffee shop*.
- Berapa cangkir kopi yang akan Joko habiskan dalam sehari akan bergantung pada *net benefits* yang akan Joko peroleh.

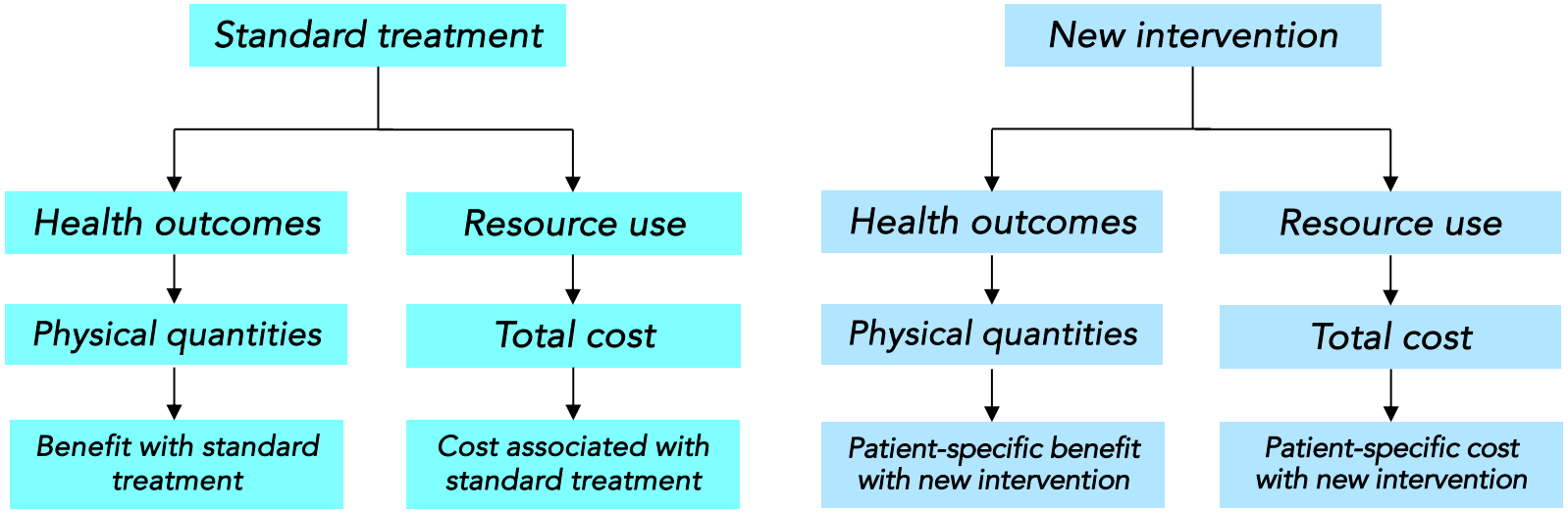
Dampak Ekonomi Pengobatan HIV dengan Zidovudine pada Wanita Hamil dan Bayinya

- Probabilitas terjadinya *maternal-to-fetal transmission* pada wanita hamil positif HIV :
  Tanpa intervensi = 25.5%
  Intervensi Zidovudine = 8.3%
- Biaya perawatan anak yang terinfeksi HIV dari lahir *(lifetime treatment cost)* = $98,915
- *Expected cost = probability of transmission x lifetime treatment costs*
  Tanpa intervensi = 25.5% x $98,915 = $25,223
  Intervensi Zidovudine = 8.3% x $98,915 = $8,210
- *Expected benefit = Expected costs averted by intervention* = $25,223 - $8,210 = $17,013
- Biaya pengobatan Zidovudine = $1,045
- *Net Benefit* = $17,013 - $1,045 = $15,968 per *HIV-positive pregnant woman*
- *Benefit-cost ratio* = $17,013 / $1,045 = 16.3
- Dari setiap $1 yang diinvestasikan akan mendatangkan manfaat sebesar $16.3

JAMA 276: 2, 132-8, July 10, 1996.

Analisis Efektivitas dan Utilitas Biaya

Analisis Efektivitas Biaya



- Membandingkan biaya dan konsekuensinya dari dua atau lebih alternatif.
- Menghitung biaya per unit efektivitas.
- Intervensi dengan biaya per unit yang lebih rendah adalah yang lebih baik.

?

Berikut ini adalah matriks biaya dan efektivitas dari antibiotika pengobatan pneumonia di suatu RS. Dari kelima alternatif yang ada, antibiotik manakah yang paling *cost-effective* untuk digunakan?

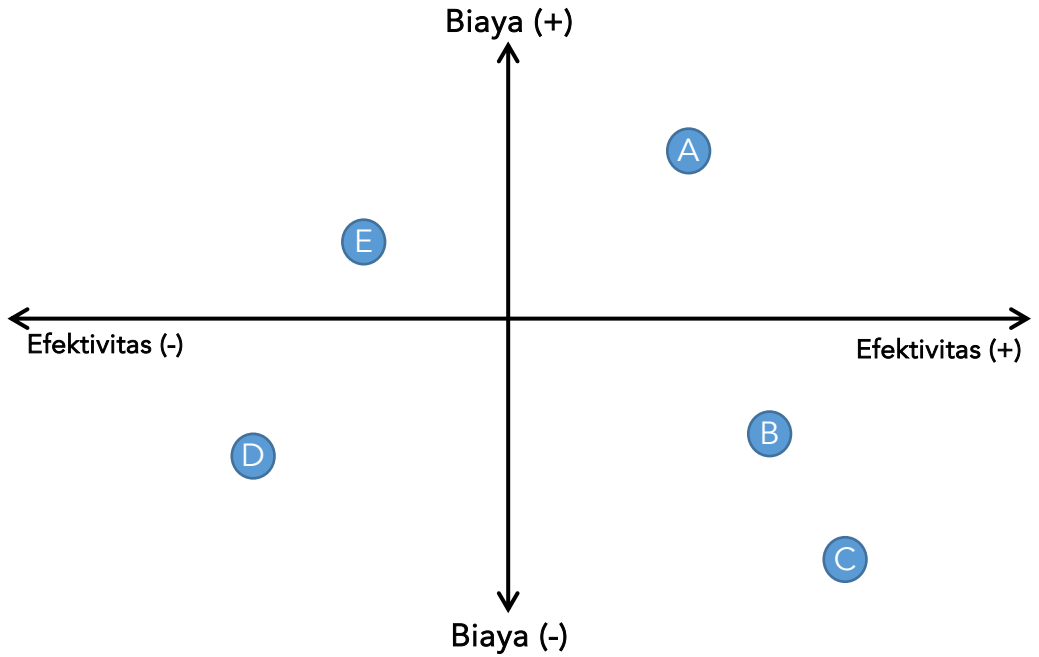
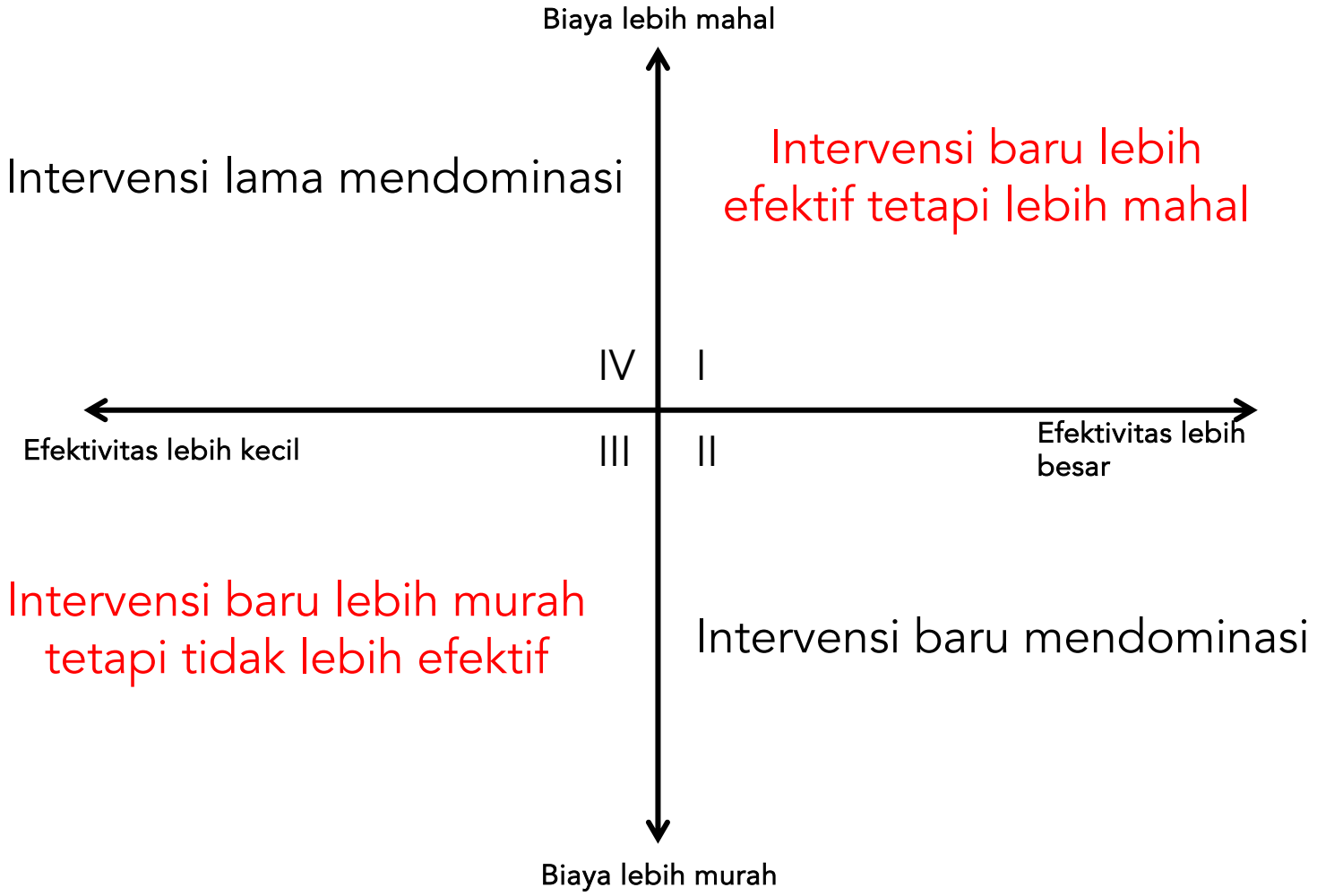
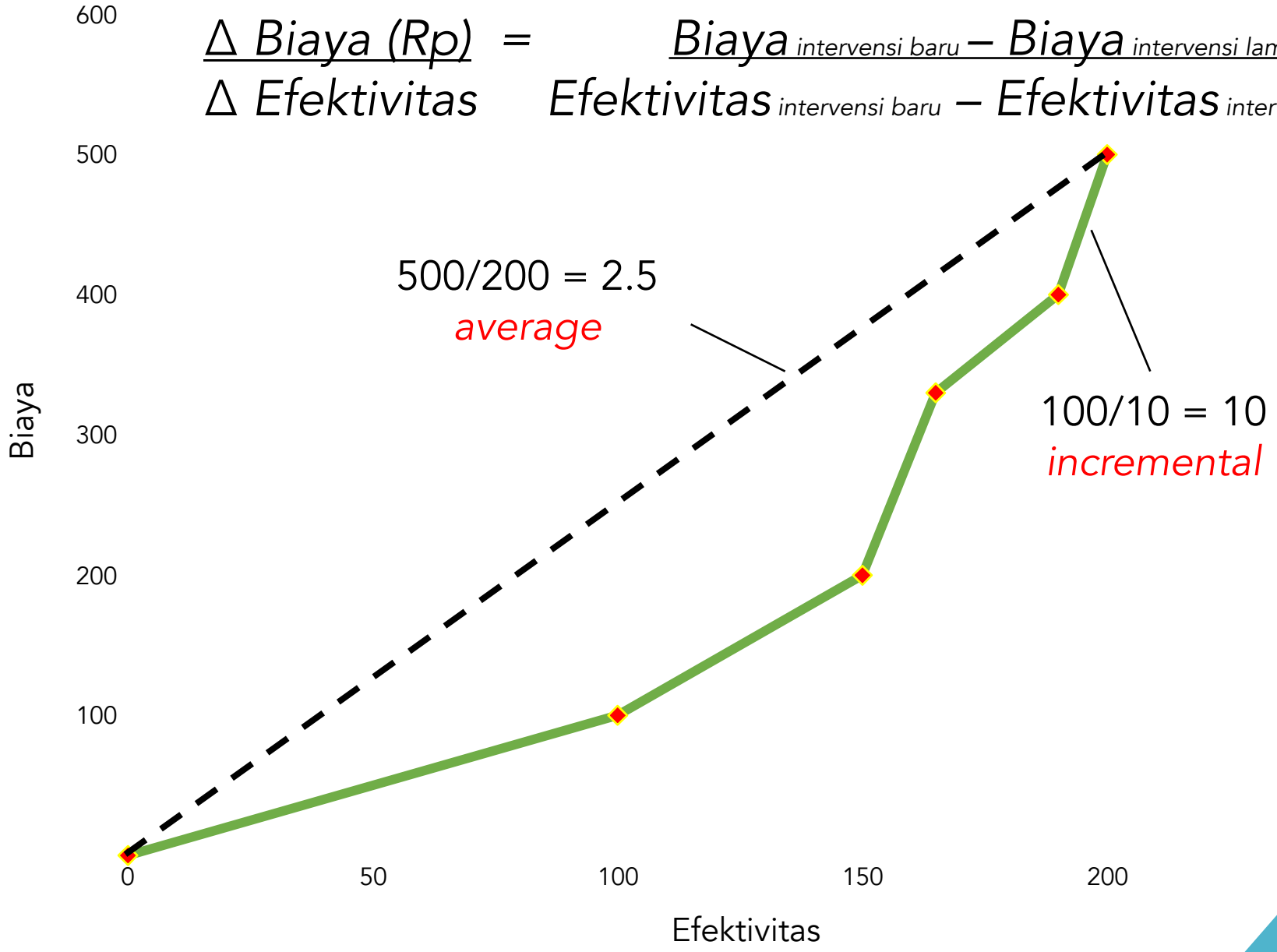


Diagram Efektivitas Biaya



Incremental Cost-Effectiveness Ratio (ICER)

$$\frac{\Delta \text{ Biaya (Rp)}}{\Delta \text{ Efektivitas}} = \frac{\text{Biaya}_{\text{intervensi baru}} - \text{Biaya}_{\text{intervensi lama}}}{\text{Efektivitas}_{\text{intervensi baru}} - \text{Efektivitas}_{\text{intervensi lama}}}$$



ICER dalam Analisis Efektivitas Biaya

Untuk terapi sebuah penyakit dapat digunakan tiga macam intervensi yang masing-masing memiliki kinerja sebagai berikut:

- Intervensi yang sekarang digunakan (A) membutuhkan biaya Rp 6.000.000 per 100 pasien dengan tingkat survival 3%
- Alternatif intervensi baru (B) membutuhkan biaya Rp 20.000.000 per 100 pasien dengan tingkat survival 5%
- Alternatif intervensi baru lainnya (C) membutuhkan biaya Rp 30.000.000 per 100 pasien dengan tingkat survival 6%

Jika intervensi yang sekarang digunakan (A) akan dialihkan ke intervensi baru, intervensi manakah yang seharusnya dipilih (B atau C)?

?

Jika intervensi yang sekarang digunakan (A) akan dialihkan ke intervensi baru, intervensi manakah yang seharusnya dipilih (B atau C)?

Obat	Biaya (per 100 pasien)	Kematian dihindarkan (per 100 pasien)
A	6.000.000	3
B	20.000.000	5
C	30.000.000	6

ICER $_{A \rightarrow B}$ = (20.000.000 – 6.000.000) / (5 – 3)

= Rp 7.000.000 per 1 kematian yang dicegah

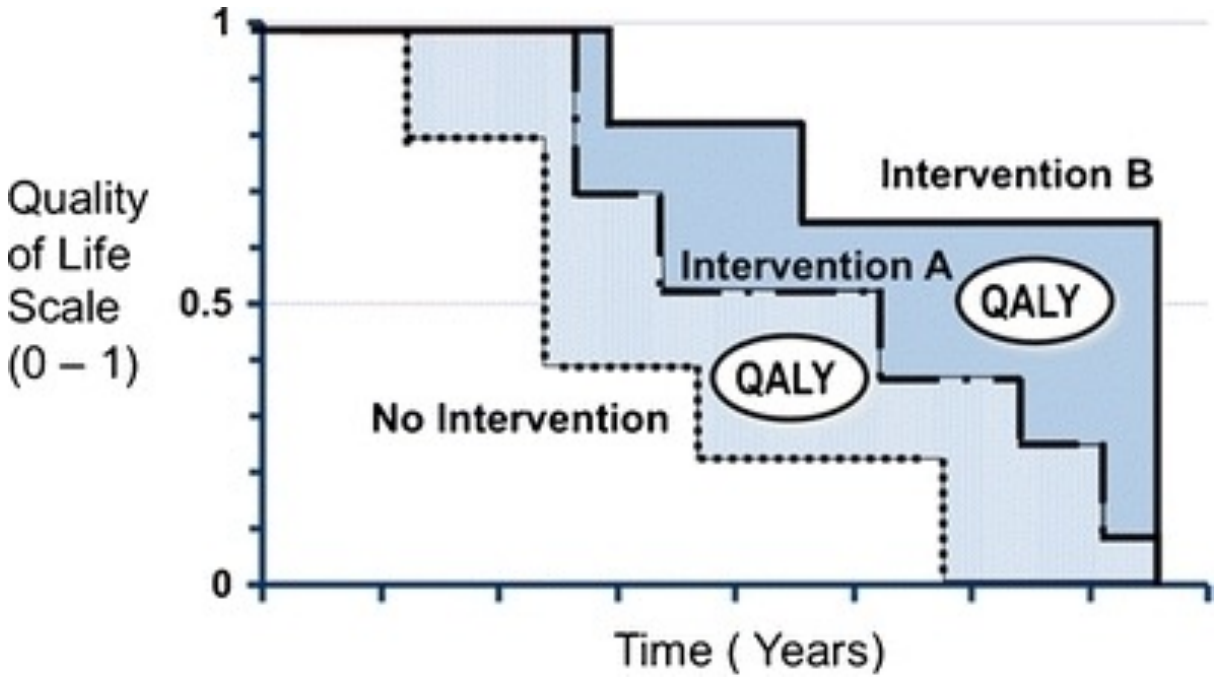
ICER $_{A \rightarrow C}$ = (30.000.000 – 6.000.000) / (6 – 3)

= Rp 8.000.000 per 1 kematian yang dicegah

Analisis Utilitas Biaya

Outcome	Metode Studi Farmakoekonomi
Klinis	Analisis Minimalisasi Biaya *(Cost Minimization Analysis)* Analisis Efektivitas Biaya *(Cost Effectiveness Analysis)*
Humanistik	Analisis Utilitas Biaya *(Cost Utility Analysis)*

Quality-Adjusted Life Years (QALYs)



QALYs mencerminkan besarnya manfaat yang diperoleh dari pemberian suatu intervensi, yaitu kualitas hidup.

QALYs = number of years life x utility

ICER =	$\frac{\text{(Biaya terapi A – Biaya terapi B)}}{\text{(QALY terapi A – QALY terapi B)}}$

Alat untuk Mengukur Kualitas Hidup

Generik	Spesifik
EQ5D5L	*Arthritis Impact Measurement Scale*

5 dimensi 5 level = 3.125 *health states*

Contoh:
Health state 11111 = 1.00
Health state 12111 = 0.82
Health state 11223 = 0.26

Under each heading, please tick the ONE box that best describes your health TODAY.

Levels of perceived problems are coded as follows

MOBILITY

I have no problems in walking about	☐		
I have slight problems in walking about	☑	1 ☐ 2 ☑ 3 ☐ 4 ☐ 5 ☐	Level = 2
I have moderate problems in walking about	☐		
I have severe problems in walking about	☐		
I am unable to walk about	☐		

SELF-CARE

I have no problems washing or dressing myself	☑		
I have slight problems washing or dressing myself	☐	1 ☑ 2 ☐ 3 ☐ 4 ☐ 5 ☐	Level = 1
I have moderate problems washing or dressing myself	☐		
I have severe problems washing or dressing myself	☐		
I am unable to wash or dress myself	☐		

USUAL ACTIVITIES *(e.g. work, study, housework, family or leisure activities)*

I have no problems doing my usual activities	☑		
I have slight problems doing my usual activities	☐	1 ☑ 2 ☐ 3 ☐ 4 ☐ 5 ☐	Level = 1
I have moderate problems doing my usual activities	☐		
I have severe problems doing my usual activities	☐		
I am unable to do my usual activities	☐		

PAIN / DISCOMFORT

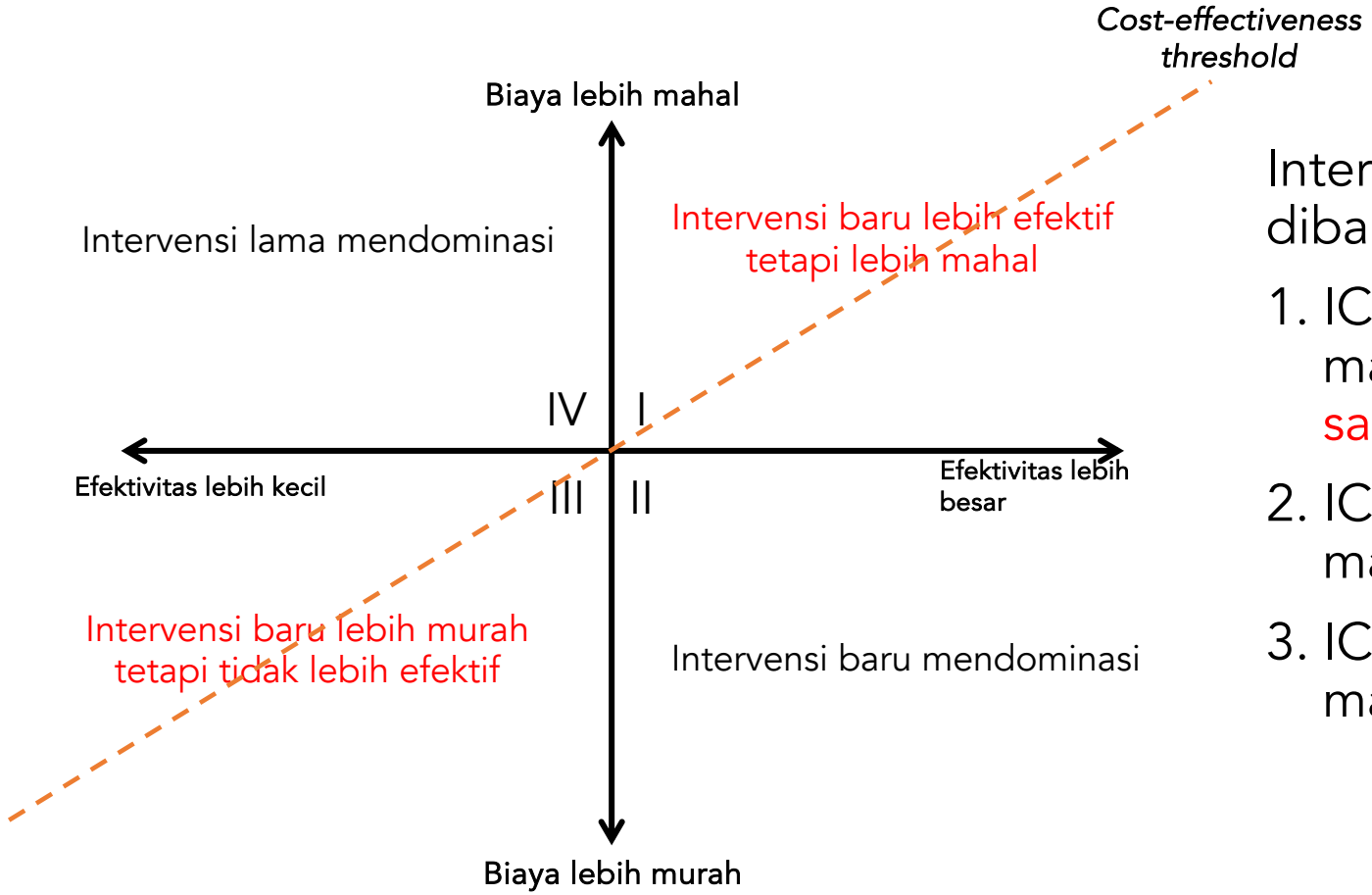
I have no pain or discomfort	☐		
I have slight pain or discomfort	☐	1 ☐ 2 ☐ 3 ☑ 4 ☐ 5 ☐	Level = 3
I have moderate pain or discomfort	☑		
I have severe pain or discomfort	☐		
I have extreme pain or discomfort	☐		

ANXIETY / DEPRESSION

I am not anxious or depressed	☐		
I am slightly anxious or depressed	☐	1 ☐ 2 ☐ 3 ☐ 4 ☑ 5 ☐	Level = 4
I am moderately anxious or depressed	☐		
I am severely anxious or depressed	☑		
I am extremely anxious or depressed	☐		

Health state 21134

Cost-Effectiveness Threshold



Interpretasi hasil nilai ICER yang dibandingkan dengan *threshold* GDP :

1. ICER per QALY < 1 GDP per kapita maka intervensi kesehatan tersebut sangat *cost-effective*
2. ICER per QALY = 1-3 GDP per kapita maka *cost-effective*
3. ICER per QALY > 3 GDP ber kapita maka tidak *cost-effective*

ICER dalam Analisis Utilitas Biaya

- Dalam pengobatan kanker malignant melanoma stadium II saat ini, intervensi yang digunakan adalah tanpa uji skrining dan tanpa pemberian interferon (intervensi A).
- Studi terbaru menunjukkan bahwa uji sentinel lymph-node biopsy yang kemudian jika ditemukan positif mikrometastase/terkena malignant melanoma stadium II akan diberikan pengobatan interferon (intervensi B) berpotensi untuk dimasukkan ke dalam program.
- Data literatur menunjukkan utilitas masing-masing program adalah:
  Intervensi A → nilai QALY = 3,06
  Intervensi B → nilai QALY = 3,37
- Biaya yang rerata yang teridentifikasi di RS X adalah:
  Intervensi A → Rp 184 juta per pasien
  Intervensi B → Rp 242 juta per pasien

Direktorat Jenderal Kefarmasian dan Alat Kesehatan. *Buku Pedoman Farmakoekonomi*. Kemenkes RI, Jakarta: 2012.

?

Jika mengacu pada *threshold* GDP per kapita Indonesia (Rp 60 juta), bagaimana intervensi baru tersebut dapat disimpulkan?

$$\text{ICER} = \frac{(\text{Biaya intervensi A} - \text{Biaya intervensi B})}{(\text{QALY intervensi A} - \text{QALY intervensi B})}$$

$$\text{ICER}_{A \rightarrow B} = (\text{Rp } 242.000.000 - \text{Rp } 184.000.000) / (3{,}37 - 3{,}06)$$
$$= \text{Rp } 187.096.774 \text{ per QALY}$$

GDP per kapita Indonesia = Rp 60 juta

Interpretasi nilai ICER dibandingkan dengan GDP per kapita :

- ICER per QALY < 1 GDP per kapita → sangat *cost-effective*
- ICER per QALY = 1-3 GDP per kapita → *cost-effective*
- ICER per QALY > 3 GDP per kapita → tidak *cost-effective*

Kelebihan Analisis Utilitas Biaya

Dapat dibuat *league table* untuk menentukan skala prioritas

Intervention	$ / QALY
GM-CSF in elderly with leukemia	235,958
EPO in dialysis patients	139,623
Lung transplantation	100,957
End stage renal disease management	53,513
Heart transplantation	46,775
Didronel in osteoporosis	32,047
PTA with Stent	17,889
Breast cancer screening	5,147
Viagra	5,097
Treatment of congenital anorectal malformations	2,778

Table 5. Cost-utility ratios obtained in different context

Disease	Cost (€, 2007)
CER Knee arthroplasty (Min)	824.87
CER Knee arthroplasty (Av)	1,275.87
CER Knee arthroplasty (Max)	2,827.17
CER Hip arthroplasty (Min)	4,231.19
Higher recommended Spain (hepatitis treatment)[a]	6,783.07
CER hip arthroplasty (Av)	7,396.12
Critical care[b]	19,756.55
Congenital anomalies[b]	25,379.13
Genito-urinary diseases[b]	28,525.71
Spanish threshold	30,000.00
CER hip arthroplasty (Max)	48,186.64
International threshold	50,000.00
Injuries/exposures[b]	66,265.79
Digestive diseases[b]	89,348.43
Cardiovascular diseases[b]	92,629.31
Malignant neoplasms[b]	152,652.84
Anemias[b]	153,988.48
Allergy/immunology[b]	214,824.95
Infectious diseases[b]	649,038.17
Hematology-non cancer[b]	3,621,573.48

[a]Source: Sacristán et al[32].
[b]Cost-utility analyses published from 1976 to 2001, with ratios converted to 2002 US dollars.

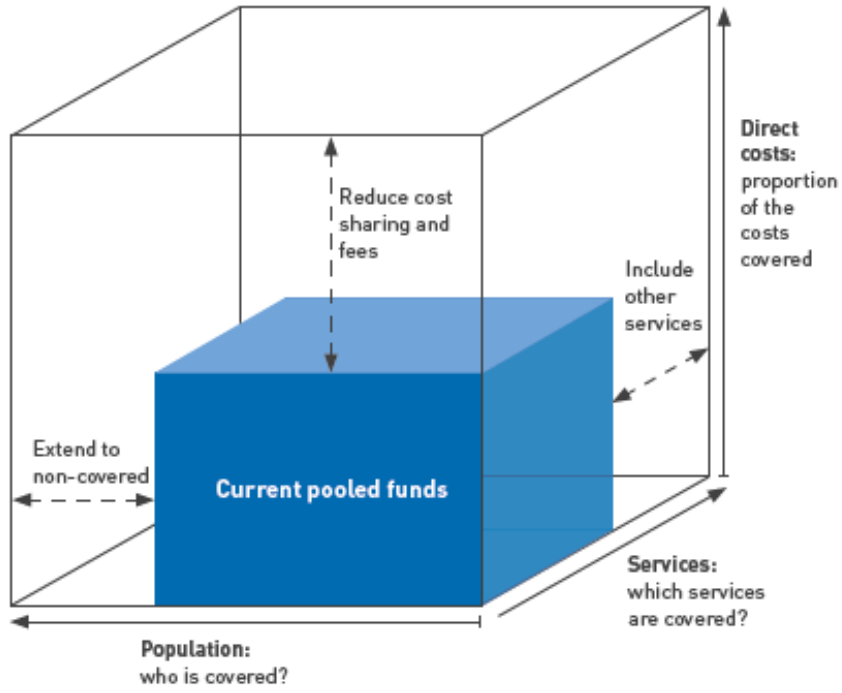
Key Takeaways

Kesimpulan

Sebagai negara dengan anggaran kesehatan terbatas, HTA dan evluasi ekonomi berperan penting dalam *priority-setting*.

Dalam konteks *universal health coverage*, *priority-setting* berperan dalam :

- Memperluas cakupan layanan → lebih dapat menjangkau masyarakat yang rentan, terpinggirkan dan sulit dijangkau
- Memperdalam cakupan layanan → memaksimalkan layanan dengan semakin meningkatkan efisiensi dalam penyediaan layanan
- Mempertinggi cakupan layanan → perbaikan dalam perlindungan risiko keuangan khususnya bagi populasi miskin dan rentan melalui pengurangan *sharing cost*



Terwindt, F., Rajan, D., & Soucat, A. (2016). Chapter 4. Priority-setting for national health policies. In Schmets, G., Rajan, D., & Kadandale, S. (Ed.). Strategizing national health in the 21st century: a handbook. Geneva: World Health Organization.

Home > Leisure > Gaya Hidup

Perawatan Pasien Covid-19 Bisa Picu Resistensi Antibiotik

Rabu 04 Aug 2021 12:05 WIB

Rep: Puti Almas/ Red: Reiny Dwinanda

Perawatan pasien Covid-19 (ilustrasi). Dokter mengkhawatirkan penggunaan antibiotik sebagai substitusi upaya pencegahan dan pengendalian infeksi di rumah sakit dapat memicu terjadinya resistensi antibiotik.

Foto: AP

?

Bagaimana tenaga kesehatan dapat berperan lebih optimal?

https://www.republika.co.id/berita/qxadhx414/perawatan-pasien-covid-19-bisa-picu-resistensi-antibiotik

Terima kasih