



Research Article

Healthcare Rationing and Economic Evaluation in Health Care

Sulaman ALMesned¹, Ali A. Alakhfash^{2*}, Fahd S. Almesned³, Abdurrahman Almesned⁴

¹Assistant Professor Department of Surgery, Medical College, Qassim University, Saudi Arabia

²Consultant Pediatric Cardiologist, Pediatric cardiology department, Prince Sultan Cardiac Centre-Qassim, Ministry of Health, Saudi Arabia. Ph.D. researcher, Sapienza University, Rome, Italy

³General Practitioner, Prince Sultan Cardiac Center - Qassim, MOH, KSA

⁴Consultant Pediatric Cardiologist, University of Alberta Fellowship of Pediatric Cardiology and Center Director Prince Sultan Cardiac Center - Qassim, MOH, KSA

***Corresponding Author:** Ali A. Alakhfash MD, S.F.Ped.(Card). Consultant Pediatric Cardiologist, Pediatric cardiology department, Prince Sultan Cardiac Centre-Qassim, Ministry of Health, Kingdom of Saudi Arabia

Received: 08 October 2021; **Accepted:** 14 October 2021; **Published:** 20 December 2021

Citation: Sulaman ALMesned, Ali A. Alakhfash, Fahd S. Almesned, Abdurrahman Almesned. Healthcare Rationing and Economic Evaluation in Health Care. Journal of Environmental Science and Public Health 5 (2021): 536-543.

Abstract

Economic issues facing healthcare leaders are significant and challenging. There are increasing demands, limited budgets, and rising costs. There is an ethical, political, and social dilemma of rationing healthcare. Economic evaluation is a powerful tool in healthcare rationing and can be implemented at different levels in the decision-making framework of healthcare organizations. This review article aims to discuss what is economic evaluation and rationing and

how to ration healthcare. Rationing healthcare is inevitable; hence nations should do it explicitly.

We presented in this review the definition of economic evaluation and rationing and levels or types of healthcare rationing.

Keywords: Economic evaluation; Healthcare; Healthcare economics; Healthcare rationing; Cost analyses

Abbreviations

CADTH: Canadian Agency for Drugs and Technologies in Health; CBA: Cost-benefit analysis; CEA: Cost-effectiveness analysis; CMA: Cost-minimization analysis; CUA: Cost-utility analysis; EE: Economic evaluation; ICER: Incremental Cost-Effectiveness Ratio; MOH: Ministry of Health; NHS: National Health Service; NICE: National Institute for Health and Care Excellence; ROI: Return-on-investment; UK: United Kingdom; US: United States; WHO: World Health Organization

1. Background

Economic issues facing healthcare authorities are significant and challenging. These challenges include but are not limited to, increasing demands, limited budgets, and rising costs [1]. Defining and measuring health care rationing is difficult [2]. Economists have described rationing as the way society allocates resources to competing desires. Health spending has risen faster than national income in most countries [3]. Healthcare needs financial as well as human resources. This reality means that certain changes are necessary to make healthcare sustainable in the long run. Nations might not be willing to allocate all their resources to healthcare and leave nothing for education, security, or infrastructure. Health professionals, on the other hand, are often insufficient and must balance their personal needs with their work. Rationing might be confused with prioritization. Some researchers argue that rationing healthcare is the action, and priority setting is the tool. There is an ethical, political, and social dilemma of rationing healthcare [4]. Unfortunately, rationing healthcare is achieved implicitly (under the table or

bedside) with many drawbacks such as jeopardized horizontal equity and ethical concerns in leaving decisions entirely to physicians [5, 6]. Economic evaluation (EE) may help to make the healthcare rationing explicit and transparent.

Rationing healthcare is unavoidable and has many roles in healthcare delivery though it is not easy to be implemented. Developing countries with limited resources are in special need to explore and find ways to ration their healthcare [7]. This article discussed some of the types of rationing and explore their practical usage though it was not meant to be a complete guide to this vital topic. In this article, we attempted to address the following question: How does EE help in rationing health care resources? The article starts by defining EE and rationing in a healthcare context, along with its importance and types. Then we discussed how economic evaluation can aid in health care resource rationing.

2. Economic Evaluation

EE is a way to identify, measure, value, and compare the costs and results of programs and policies. EE is not and will not be a magic pill to healthcare's looming concerns however it should be part of the building blocks of healthcare financing, this review article is an effort to raise awareness and build the desire among healthcare professionals to explore EE further [8].

In the United Kingdom, for example, the National Institute for Health and Care Excellence (NICE) sets coverage requirements for the National Health Service (NHS), which is funded and operated by the

government [9]. Healthcare rationing in the United States is largely accomplished through market forces, though major government programs e.g. Medicare, Medicaid, Veterans Affairs, and the Indian Health Service [10]. EE is a complex issue that cannot be established solely at the local institutional level as it needs specialized experience and skills. It is recommended to have international collaborative work as well as learning the experience of others like the UK and USA healthcare institutions. [8].

It is perhaps best to start by asking in the first place what economics is. The concept of economics frequently used in textbooks is that it is the analysis of the distribution of scarce resources between competing ends [8]. The hallmark of this definition is resource scarcity. Without scarcity, there would be no position for economics. Scarcity, defined in the Oxford Dictionary as if anything is scarce, there is not enough of it. Scarcity is especially important in the context of healthcare. One of the most widely used definitions of EE is the one provided by Drummond M. F. et. al., [11]: “Economic evaluation is the comparative analysis of alternative courses of action in terms of both their costs and consequences.” This description is generally recognized as encompassing the entire pyramid of EE: cost, outcomes, and comparison of two alternative actions. There are efforts for the Standardization of health economic evaluation methodology [12].

3. Types of Economic Evaluation

EE helps to maximize outcomes and minimize costs especially in conditions with limited resources in which taking decisions which way to go might be

difficult. It will allow us to evaluate the return-on-investment (ROI) (how much value we get from our spending) [13]. There are many ways for health economists to assess EE. Guidelines on health economic evaluation distinguish four different types of evaluation methods: cost-minimization analysis (CMA), cost-benefit analysis (CBA), cost-utility analysis (CUA), and cost-effectiveness analysis (CEA). A brief overview will be provided for certain types or methods:

3.1 Cost Minimization Analysis (CMA)

This method comprises the least costly alternative interventions under the assumption that the outcome is the same, such as dental filling at a hospital or a private clinic. This method is useful when comparing two equivalent drugs, after a randomized controlled trial studying both drugs. Some scholars suggest that this method should not be used in an EE. To decide about cost-minimization or outcome-maximization type analysis, a study should be designed and conducted to show the equivalence of treatments (in terms of costs or effects) [14].

3.2 Cost-Effectiveness Analysis (CEA)

This method calculates the cost and effect of dissimilar interventions for the same condition. It looks at the outcome by clinical endpoints such as the number of years obtained or free interval of symptoms. Rudmik and Drummond [6] summed up the advantages of this method. It is readily understood by doctors since it uses common clinical endpoints and is simpler to describe, but the main downside is the inability to compare various diseases. Another inherent flaw in the CEA is that clinical trials are used

to assess the outcome with its established limitations, and the explanation of these limitations goes beyond the scope of this article. However, CEA is the most commonly used EE method.

The World Health Organization (WHO), in an attempt to generalize this method across nations, has released a comprehensive cost-effectiveness analysis guide [15].

3.3 Incremental Cost-Effectiveness Ratio (ICER)

Is defined by the difference in cost between two possible interventions, divided by the difference in their effect. This helps to quantify the potential cost of implementing a new intervention [16].

3.4 Cost-Utility Analysis (CUA)

Like in CEA, CUA focuses on quality of life rather than just the number of years obtained by limited action. This was often expressed thru Quality-Adjusted Life Year (QALY). CUA has the potential to compare various diseases with a constraint of how different societies, and even different patients, can address the question of quality [17].

3.5 Cost-Benefit Analysis (CBA)

CBA quantifies the costs and benefits of particular healthcare service in monetary terms. CBA is less commonly used in clinical settings because of difficulties in monetizing benefits.

Some authors disagree and contend that CBA can be useful in economic assessment because it is possible to identify all impacts on costs and benefits in a "balance sheet" and then respond accordingly [18].

4. Rationing

Oxford Dictionary describes rationing as, the policy of limiting the amount of food, fuel, etc. that people are allowed to have when there is not enough for everyone to have as much as they want. Some economists have described rationing as the way society allocates resources to competing desires [19]. Healthcare rationing in politics is often described as withholding necessary medical services [20]. This definition has a potential drawback as it is difficult to specify what is a necessary medical service. A more appropriate proposed definition describes healthcare rationing as denying a potentially beneficial treatment to a patient on the grounds of scarcity [20].

Why is healthcare rationing needed? There is no simple answer to this challenging question. Yet one might disagree and ask the question: Are health care resources scarce to mandate rationing? Healthcare is a valuable commodity that needs not only financial but also human resources. Any given country has limited resources and therefore limited budgets. Nations or citizens might not be willing to allocate all their resources to healthcare and leave nothing for education, security, or infrastructure. Health professionals, on the other hand, are often insufficient and must balance their personal needs with their work. For these reasons, many scholars believe healthcare rationing is unavoidable [21].

5. Levels or Types of Rationing

Breyer [22] described rationing types as follows: pricing and non-pricing rationing, where he argued, there would be little point in debating rationing in case the healthcare is entirely financed by an

individual. He then differentiated non-pricing rationing into primary and secondary. Primary is categorized into implicit rationing where he indicates that it is given to doctors or explicit rationing where it is distributed by a specific policy. On the other hand, secondary rationing is a result of primary rations like the rationing of ICU beds or other scarce resources such as donor organs.

As discussed earlier, rationing means some benefits to certain patients will not be provided. This is why rationing is regarded as a taboo in political debate [22], but every nation in the world does some sort of rationing because it spends its income on various services, including healthcare. There is another potential concern that health spending has risen faster than national income in most countries [21]. So rationing decisions have always been with us, and will always be [23]. When governments and institutions need to ration healthcare, the most challenging aspect will be the best way to go about it. This is achieved behind closed doors in many developing countries but in many countries, lawmakers and politicians try to avoid the subject.

EE is a valuable modern tool that can be used in this case. However, before explaining how it is worth considering that EE is not the only tool that can be used to ration healthcare services. Other techniques or tools such as “shroud waving” which is defined by the oxford dictionary as the practice of focusing on the potentially negative effects of a particular policy to influence public opinion are used by certain doctors in the allocation of breast cancer resources [23]. Or use of a concept of need such as the rescue principle

which assumes somehow that death might be avoided, not just postponed, as a consequence of health care interventions. These alternative criteria do not include any economic rationale, since they do not account for the relative effectiveness of the intervention nor its costs.

EE can help in rationing healthcare in the following ways:

6. Government

EE can be used in several ways at the level of ministers depending on how the government functions. In Saudi Arabia, for instance, a new office called the Strategic Spending Efficiency Center was opened where the Minister of Health or his delegates had to make their case, mostly using economic means, in demanding budget increases or project support. For several other countries, independent organizations using EE for their methods (NICE in the United Kingdom) are formed to publish recommendations to help the government efficiently distribute resources [9].

7. Ministry of Health (MOH)

Following government discussion, the health budget is handed over to the health ministry in most countries around the world. EE may have been used to discuss whether to fund the construction of new hospitals, to buy new machines, or to sponsor new health care programs. It can also be used to determine which services are to be included in universal insurance [24].

EE can then be used to measure the performance of the entire healthcare system in comparison with other

countries or regions to attract more or fewer healthcare resources [13]. The MOH could use EE to evaluate the disease burden concerning others and use this information to prepare their budget.

8. Institutions

Despite not being followed in most countries, EE may have introduced the option of which procedures or types of services to finance at an institutional level such as private hospitals.

9. Role of Economic Evaluation in Adopting New Technology

In 2006, the Canadian Agency for Drugs and Technologies in Health (CADTH) released recommendations for EE of health innovations to test emerging technologies as well as post-marketing surveillance and reviews of economic information centered on the "real world" application of technology [25]. Whether or not it supports the evaluation of emerging eHealth innovations, EE is a valuable resource [26].

10. Economic Evaluation in Pricing Decisions

Drummond et al. published an article about "The Role of Economic Evaluation in the Pricing and Reimbursement of Medicines" while analyzing the experiences of countries such as Canada and Australia where EE is part of the pricing process. They concluded that the potential function of EE could be greatly enhanced, especially in the case of new medicines [19].

11. Implementation and Improvement of Science

Roberts et al. performed a comprehensive analysis of EE usage in enhancing patient care and implementing clinical practice study results and proposed that EE become an integral part of any development initiatives to guide choices on which options are most likely to produce cost-effective resource usage [8].

12. Priority Setting

As discussed above, medical officials tend to avoid using the word rationing and sometimes use the word prioritizing assuming they are the same but they are not [8]. Some researchers argue that rationing healthcare is the action, and priority setting is the tool [13]. In particular, priority setting can be set through EE to ration healthcare [27].

13. Explicit Vs. Implicit Rationing

As discussed earlier, rationing healthcare is inevitable and is unfortunately achieved in an implicit manner (bedside) with many drawbacks such as horizontal equity being jeopardized and ethical concerns in leaving decisions entirely to physicians. EE may help to make the healthcare rationing explicit and transparent [22].

14. Conclusions

Expenditure on healthcare is steadily rising making it difficult for countries to cope with. Rationing healthcare is inevitable; hence nations should do it explicitly. EE is a powerful tool in healthcare rationing and can be implemented at different levels in the decision-making frameworks of healthcare organizations. Countries and the WHO should work together to explore the use of EE to ration healthcare. The authors recommend further studies to elaborate

on the ethical, political, and social dilemma of rationing healthcare as they were not presented in this article.

Declarations

Ethical Approval and Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Availability of Data and Materials

Not applicable.

Competing Interests

All authors have no conflicts of interest to declare.

Funding

No financial support was received for the production of this manuscript.

Authors' Contributions

All authors contributed to the review of literature and writing and review of this manuscript.

Acknowledgments

Not applicable.

References

1. Hurst J. Challenges for health in member countries of the organisation for economic co-operation and development. *Bull World Health Organ* 78 (2000).
2. Bauchner H. Rationing of Health Care in the United States. *JAMA* 321 (2019): 751.

3. Dieleman JL, Baral R, Birger M, et al. US Spending on Personal Health Care and Public Health, 1996-2013. *JAMA* 316 (2016): 2627.
4. Winkler E. Rationalization, rationing, prioritization: Terminology and ethical approaches to the allocation of limited resources in hematology/oncology. *Onkologie* 34 (2011).
5. Mechanic D. Dilemmas in rationing health care services: the case for implicit rationing. *BMJ* 310 (1995): 1655-1659.
6. Persson E, Andersson D, Back L, et al. Discrepancy between Health Care Rationing at the Bedside and Policy Level. *Med Decis Mak* 38 (2018).
7. Olweny C. Bioethics in developing countries: ethics of scarcity and sacrifice. *J Med Ethics* 20 (1994): 169-174.
8. Rudmik L, Drummond M. Health economic evaluation: Important principles and methodology. *Laryngoscope* 123 (2013): 1341-1347.
9. National Institute for Health and Care Excellence (NICE). <https://www.nice.org.uk/guidance>.
10. From Wikipedia the free encyclopedia. Healthcare rationing in the United States. [https://en.wikipedia.org/wiki/Healthcare_rationing_in_the_United_States#:~:text=Healthcare are rationing in the United States exists in various forms, price, and ability to pay.&text=Health maintenance organizations \(HMOs\)%2C financial and clinical access limit](https://en.wikipedia.org/wiki/Healthcare_rationing_in_the_United_States#:~:text=Healthcare%20are%20rationing%20in%20the%20United%20States%20exists%20in%20various%20forms%2C%20price%2C%20and%20ability%20to%20pay.&text=Health%20maintenance%20organizations%20(HMOs)%2C%20financial%20and%20clinical%20access%20limit).

11. Drummond MF. Economic evaluation and the rational diffusion and use of health technology. *Health Policy* 7 (1987): 309-324.
12. Drummond M, Brandt A, Luce B, et al. Standardizing Methodologies for Economic Evaluation in Health Care: Practice, Problems, and Potential. *Int J Technol Assess Health Care* 9 (1993): 26-36.
13. Angevine PD, Berven S. Health Economic Studies. *Spine (Phila Pa 1976)* 39 (2014): S9-S15.
14. Briggs AH, O'Brien BJ. The death of cost-minimization analysis? *Health Econ* 10 (2001):179-184.
15. Chisholm D, Evans DB. Economic evaluation in health: Saving money or improving care? *J Med Econ* 10 (2007).
16. No Title. In: *Encyclopedia of Public Health*. Dordrecht: Springer Netherlands 721 (2008): 721-721.
17. Kepler CK, Wilkinson SM, Radcliff KE, et al. Cost-utility analysis in spine care: a systematic review. *Spine J* 12 (2012): 676-690.
18. Neumann PJ, Sanders GD. Cost-Effectiveness Analysis 2.0. *N Engl J Med* 376 (2017): 203-205.
19. Drummond M, Jönsson B, Rutten F. The role of economic evaluation in the pricing and reimbursement of medicines. *Health Policy (New York)* 40 (1997): 199-215.
20. Scheunemann LP, White DB. The Ethics and Reality of Rationing in Medicine. *Chest* 140 (2011): 1625-1632.
21. Keliddar I, Mosadeghrad AM, Jafari-Sirizi M. Rationing in health systems: A critical review. *Med J Islam Repub Iran* 31 (2017).
22. Michael D Frakes, et al, *The Economics of Healthcare Rationing*, in *The Oxford Handbook of U.S. Healthcare Law*, I. Glenn Cohen et al eds., (2017).
23. Maynard A, Bloor K. Help or hindrance? The role of economics in rationing health care. *Br Med Bull* 51 (1995).
24. Costanzo C Di. Healthcare Resource Allocation and Priority-setting. A European Challenge. *Eur J Health Law* 27 (2020).
25. Karen M, Lee MA, et al. Guidelines for the Economic Evaluation of Health Technologies: Canada. 4th edition. Canadian Agency for Drugs and Technologies in Health (CADTH) released recommendations for EE of health innovations to test emerging technologies.
26. Roberts SLE, Healey A, Sevdalis N. Use of health economic evaluation in the implementation and improvement science fields-a systematic literature review. *Implement Sci* 14 (2019): 72.
27. Sanyal C, Stolee P, Juzwishin D, et al. Economic evaluations of eHealth technologies: A systematic review. Kuziemy C, ed. *PLoS One* 13 (2018): e0198112.



This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC-BY\) license 4.0](https://creativecommons.org/licenses/by/4.0/)