

### **Health Economics - An essential armamentarium to the present day clinician.**

#### **Abstract:**

Given the present financial climate, increased spending on the healthcare by the system has become a challenge leaving it embroiled in a state of disarray. With this background, clinician's decision-making ability comes with having the knowledge of the economic framework in order to provide the best care for our patients. Health economics (HE) thus has become an emerging discipline which is an essential armamentarium for today's clinician. In this paper, we look at the essentials of the economics as well as the internal and external shocks that has influenced the services. We also discuss the economic evaluation parameters which is essential for planning the future of the services thus highlighting the importance of HE with a strong argument to be incorporated into the medical curriculum in future.

#### **Introduction:**

Health economics (HE) is a sub-discipline of economics focussing on the study of utilisation of the scarce resources within the healthcare to meet its wants and needs. HE looks at the health and healthcare as a economic commodity/good within the society. It scrutinises the use of the resources to meet the needs in order to achieve the best possible outcome which is good health for all. Given the NHS infrastructure, there is a need for the clinicians to be constantly aware of the scarcity in resources thus aiding in providing solutions when encountered with the question of its utilisation in order to meet the demands.

#### **Economics- Basics for a clinician**

As with fundamentals of economics which looks at the demand and supply, HE also looks at the fundamental questions which include i) what services needs to be produced, ii) how to produce these services and finally iii) who shall be the recipients.<sup>1</sup> Especially within the healthcare system equal distribution is a key factor to be borne in mind which poses a challenge to the health economists. As noted below in Fig 1.<sup>3</sup>, the point of market equilibrium where the curve of demand (D) and supply (S) intersect marks an ideal healthcare system, but this can dynamically shift to right or the left depending on the variations in the market regarding the availability of resources and the need of services.

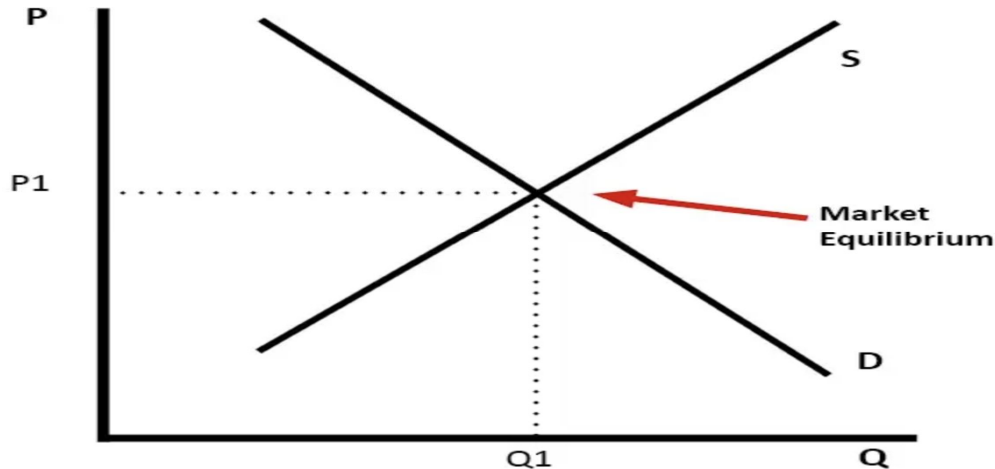


Fig 1. Market equilibrium model ( P-Price, Q-Quantity, P1-Initial Price, Q1-Initial Quantity, S-Supply, D-Demand)

### Challenging situation within the NHS healthcare system

With the present environment of escalating demands and lack or constraints of resources, the discipline of health economics has shown to have changed the scene by revealing explicit evidence-based frameworks or decision trees to support in making tough decisions. The aim of the paper is to highlight the importance of health economics to every clinician's armamentarium as it can affect clinical decision-making ability thus impacting patient care. Market failures can alter the market equilibrium either due to internal or external shocks.

COVID pandemic being the external shock, has had positive influence on healthcare labour market, by recognising the shortfall in the workforce planning. This indirectly resulted in an increased intake of medical students reinforcing the workforce of the future.

Two key negative influencers recognised in COVID were the increasing demand of healthcare services and lack of resources. In this unprecedented situation, the demand for healthcare professionals in an already overstretched environment was further fuelled by some contracting the virus and going off work reducing the supply leaving the market in disarray. Medical schools have been affected with increased demand due to governmental policy which again is an externality given the scenario. This points out to how one externality has ripple effect triggering off a series of externalities causing disequilibrium in the market.

Hospitals have faced severe staff shortages due to increased healthcare needs in select disciplines. In the above scenario demand increases shifting the curve to the right thus shifting the equilibrium point where there is an increase in quantity of labour required and the wages. With risk of healthcare professionals contracting the virus then the supply curve gets affected with a shift to the left establishing a new equilibrium point.

Brexit, being the external shock led to many foreign nurses leaving the workforce due to red tape in the visa regulations and impacting new recruitment, thus causing a severe shortfall along the supply chain with the demand being the same or increased during the pandemic.

With a shortage in supply of nurses and increasing demand of the ageing population, the market is set to be out of the equilibrium point in this scenario. Key factors are again increasing labour demand with lack of resources to fulfil this demand. Labour shortage factors such as attrition of nurses and Brexit have acted as deterrents causing lack of supply though the demand has been on a steady increase. With market failures such as geographical immobility and lack of retention, the healthcare labour market workforce planning is always challenging given the ever-changing dynamics within the market itself.

Due to Brexit, there was a shift of the supply curve to the left with fewer nurses available due to possible exodus and difficulty in new recruitment from Europe due to various deterrents. This results in an increase in the labour demand which causes the demand curve to shift to the right thus establishing a new equilibrium point which ideally may be higher than the present point based on the assumption of both the shifts to be of equal proportion. Prior to Brexit both the demand and supply curve shifts could have been to the right, hypothetically.

Clinical decision-making ability in an ideal world solely rests on the clinicians as noted over the years. But in the present world, with that responsibility comes the importance of awareness of availability of the resources. This shift or addition in the clinician's responsibility has been possibly impacted by various factors such as the amount of government spending on health care, availability of doctors and nurses and the needs of the population which is changing with people living longer. Given this background, the remit of the clinician's decision has wide and far-reaching effects in providing the optimum care to patients which can be skewed at times. Hence understanding of an economic model provides an insight to every clinician on how the scarce resources can be managed within the given financial domain to address these shortcomings. It is important to note that continuous organisational changes such as changes from CCG to ICB has led to more challenging times delaying the decision-making abilities.

### **Health Economists -Who are they?**

As health economists, the primary aim is to design a healthcare model which can withstand the internal and external shocks due to the variables within the system but still provide the best health care as a commodity to all without any discrimination. They also look at what are the influences outside the healthcare system, reason behind the change in demand and supply as well as the alternative ways of provision if available. Aspects of planning, budgeting and monitoring and economic evaluation falls within their remit of responsibilities. Primarily, the backbone analysis lies in the ratio of costs to benefits for the health economists. During this process they face challenges since comparisons happen with the healthcare systems delivery across the world. This in turn has the scope of evolving a system of delivering this commodity effectively across all strata of the population. The health economists score the cost as negative consequence in relation to the benefits which is a positive consequence with a given healthcare intervention in an economic model. It is but obvious that the positive consequence should outweigh the benefits that are foregone. <sup>1</sup>

With this background, this paper leads to the next most essential part of the process which is called as economic evaluation (EE). There are institutions like NICE which scrutinise the healthcare technology assessments (HTA), which does form a part of the economic evaluation process. But as a clinician it would be more pertinent having the background knowledge of the local demographics, if with a background of health economics, it gives more confidence to argue the advantages of any new intervention for the betterment of the health within the local community. Economic evaluation have been increasingly gaining recognition as it has become essential tool to support the evidence in publicly financed health care systems such as the NHS since the early 1990's.<sup>3</sup>

### **Economic evaluation (EE)**

EE focuses on estimating and presenting the expected costs and outcomes of alternative course of healthcare interventions. The analytical parameters are divided into four categories: cost-minimisation analysis (CMA), cost-effectiveness analysis (CEA), cost-utility analysis (CUA) and finally the cost-benefit analysis (CBA) as mentioned in the book by Drummond et al.<sup>4</sup>

#### **I) Cost-minimisation analysis (CMA)**

This parameter compares alternatives to the present in terms of expected costs and outcomes, but since the outcomes are similar, they mainly focus on the costs. This tool has been with criticism due to the premise that if a certain intervention is considered equivalent then comparison from a Bayesian statistical point of view is rarely valid. Ideally if the outcomes between the present and the alternative is at a 5% level of significance then it is statistically not significant which in turn will deduce that there is no difference between treatments in terms of outcomes.<sup>5</sup>

#### **II) Cost-effectiveness analysis (CEA)**

This was the commonly used tool in the health care field previously. Here the alternatives are compared and calculated in terms of costs and the outcome for the proposed healthcare intervention. In scenarios where one treatment has a higher expected cost and has a lower expected outcome, then the treatment is dominated by the alternative treatment. In cases of trade-offs, where one treatment costing more provides improved outcomes then here incremental cost-effectiveness ratio (ICER) comes into play which depicts the difference in mean expected costs divided by the difference in the mean expected outcomes, thus providing a measure of the expected cost needed to gain a unit of effect.

#### **III) Cost-utility analysis (CUA)**

In this parameter, the expected costs and outcomes for each intervention are calculated, with the outcome measure expressed as quality adjusted life years (QALYs).<sup>5</sup> Some economists consider this to be similar to CEA in view of QALY become another outcome measure. But QALY is a composite outcome measure, in that it combines various outcomes or impacts from a disease or intervention into a single measure which then helps the decision maker. One QALY equates one year in perfect health. QALY scores range from 1(perfect health) to 0 (Death). Again if an intervention comparison results in a trade-offs between higher costs and greater QALYs, then the results will be further scrutinised in terms of incremental cost-utility ratio. Since CUA functions with a common

denominator to allow the comparison of interventions with different outcomes, it allows the decision makers to make a better-informed decision whilst comparing the interventions across the services.

#### IV) Cost-benefit analysis (CBA)

In this tool, as usual the costs are measured in monetary terms, but the outcomes are measured in natural units and then valued in monetary terms, thus providing a clear positive or negative value for a proposed intervention which is the net monetary value. Challenges with CBA is that if the monetary value of the benefits outweighs the costs, then intervention should be funded, thus ignoring the fact that all the interventions if  $CBA > \text{€}0$  cannot be funded since there ethical and societal factors needing to be considered.<sup>6</sup> Another challenge using this parameter is measuring of the health benefits monetarily and the ethical issues arising from valuing them.

The above discussed parameters are implemented through various channels such as trial-based EEs in clinical trials and modelling-based EEs<sup>6</sup> using a cohort group. These economic evaluations are directly impacting decision making based on the four factors: safety, efficacy, value for money (cost effectiveness) and budgetary impact (affordability). Thus, for any new intervention to be implemented it should be safe, effective, cost-effective and also affordable.

Recent literature is looking into developing decision models with the help of patient and public involvement thus removing possibly the bias of behavioural economics.<sup>7</sup> Healthcare being a demanding commodity, there are trade offs such as utilisation of resources for a specific task which could have been used elsewhere thus leading to the term called "opportunity cost".<sup>8</sup> With the opportunity cost of making selective or specific choices comes the value of the next best alternative that is foregone. For example utilisation of occupational therapist to lead a clinical rehabilitation service for stroke patients has led to the lost opportunity of possibly using them elsewhere such as in the care of the elderly and fragile, thus coming at a value that is foregone. There is a clear distinction between the financial costs vs the economic costs. Financial costs related are ideally the financial expenditure paid towards a particular good or service which ideally does not reflect the true economic worth such as for instance, the salary paid in the case of healthcare professionals. On the other hand, the economic costs reflects the full value of utilisation of that particular healthcare professional's time in providing a specific intervention rather than amount paid as salary, which is the economic idea widely used across in the NHS.<sup>8,9,10,11,12</sup>

#### Conclusion:

As a frontline clinician with the present-day challenges, the need to be literate in health economics is essential as it will give every clinician a systematic and as a sound foundation of framework for allocating health care resources against a challenging budget and increasing demands of the society. Another interesting fact though at the macro levels such in political circles and local levels, the importance of health economics and economic evaluation is well understood, the role of EE at the micro level is still debatable. Using EE could bias decision makers in a clinical setting which can be regarded as unethical. As per Lessard et al<sup>13</sup> "the real cost of any health decision is the health benefits achievable in some other patient which have been foregone by committing the resources in question to the first patient". As frontline clinicians take challenging decisions in a dynamic environment, it becomes imperative to have a better understanding of health economics, to assist

policy and decision makers in identifying the areas of scarcity in resources and utilising the available resources in the best possible way to provide an efficient health care system. Hence incorporating this into the medical curriculum and as part of continuous professional development program will help in making the present and future clinicians more confident in decision making process which ultimately results in efficient patient care.

UNDER PEER REVIEW

## **References:**

- 1.Kernick DP. Introduction to health economics for the medical practitioner. *Postgrad Med J* 2003; 79:147-150.
- 2.<https://www.economicshelp.org/microessays/equilibrium/market-equilibrium/>  
Updated on 5/12/19 by Pettinger T. Accessed on 18/5/23.
- 3.Hutton J, *Health Econ*, Vol.21,2012,13-18.
- 4.Drummond MF, Sculpher MJ, Torrance GW, Stoddart GL. *Methods for the economic evaluation of health care programmes*, 2005, Oxford University Press, Oxford.
- 5.A.H. Briggs, *Health Econ*, Vol. 10, 2001, 179-184.
- 6.Goeree Ron MA, Vakaramoko D.Introduction to health economics and decision-making: Is economics relevant for the frontline clinician?.*Best Practice & Research Clinical Gastroenterology* 2013;Vol.27 (6):831-844.
- 7.Harvard, S., Winsberg, E. Patient and Public Involvement in Health Economics Modelling Raises the Need for Normative Guidance. *PharmacoEconomics* 41, 733–740 (2023).  
<https://doi.org/10.1007/s40273-023-01274-7>
8. Culyer AJ. Cost, context, and decisions in health economics and health technology assessment. *Int J Technol Assess Health Care*. 2018;34:434–41.
- 9.Miners A. Estimating 'costs' for cost-effectiveness analysis. *Pharmacoeco- nomics*. 2008;26:745–51.
- 10.WHO-CHOICE. *Making choices in health: WHO guide to cost-effective- ness analysis*. Geneva: World Health Organization; 2003.
- 11.Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL. *Methods for the economic evaluation of health care programme*. 3rd ed. Oxford: Oxford University Press; 2005.
- 12.Turner, H.C., Sandmann, F.G., Downey, L.E. et al. What are economic costs and when should they be used in health economic studies?. *Cost Eff Resour Alloc* 21, 31 (2023).  
<https://doi.org/10.1186/s12962-023-00436-w>
- 13.Lessard C, Contandriopoulos AP, Beaulieu MD. *Soc Sci Med*, Vol. 70, 2010, 1948-1956.