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Challenges in Applying Pharmacoeconomics at Hospital Level: Expert Based Approach

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***Abstract*— Background:** Pharmacoeconomics (PE) is a useful tool that aid decision makers in evaluating the affordability of and access to rational drug use. ¬ Despite the potential value of PE there are several challenges with the application of this concept. In this article we enlisted various stakeholders involved in pharmaceutical expenditure decision making at various levels of the healthcare sector to identify the challenges associated with PE application and help with recommendations to overcome these challenges at the hospital level. **Method:** A team of experts with extensive clinical, administrative and PE experience was assembled. A framework analysis method was used to identify the challenges. The panelist discussed and categorized the involved areas into specific groups. Potential action steps for each group were listed and grouped into categories. **Results:** The panelists identified and categorized the challenges and the potential actions for each stakeholder. **Conclusion:** Panelists recommendations are a guide for individuals and entities approaching PE application. Considering the role of each stakeholder listed in this article will assure better utilization of these recommendations.

Keywords: Pharmacoeconomics, healthcare, challenges, cost, value, HTA

1. Introduction

Healthcare expenditures including medications have been on the rise dramatically worldwide. During the past decades, new specialty drugs with extremely high cost have been continuously introduced at a staggering rate to the market. As a result of the approval of many successful treatment options, the mortality rates of the associated diseases have declined substantially. The cost of such medications has become an important issue for governments, third party-payers, patients and caregivers. The approach focusing mainly on pharmaceutical expenditure is considered inappropriate. Healthcare outcomes are multidimensional that include economic, humanistic and clinical outcomes. Hospitals administrators, decision makers and third-party payers focus mostly on the economic outcome. Patients on the other hand focus on the humanistic outcomes of treatment, whereas clinicians concerned the most with clinical outcomes of therapy. Any healthcare facility/organization should consider and measure the three most important elements of a successful healthcare system: cost, access and quality of care and health services provided to each single patient to ensure prime patient care.

Pharmacoeconomics (PE) describes and analyzes the cost and consequences of drug therapy to healthcare systems. It is a useful tool that aid decision makers in evaluating the affordability of and access to rational drug use. When PE guidelines are developed appropriately their utility can include, but is not limited to, decision making of which drugs should be added to the formulary, comparison between two different therapy options based on different PE evaluations, develop a cost effective guidelines for a particular disease and identify the cost per quality adjusted year of life extended by a drug.[1] PE introduces various strategies to ensure the continued provision of innovative and affordable drugs to gain greater value of money from pharmaceutical expenditure.[2] It analyzes costs and benefits of improving patterns of resource allocation.[3] Efficiency is the key concept of PE.

Despite the potential value of PE, there are several challenges with the application of this concept worldwide and especially in developing countries. In this article we enlisted various stakeholders involved in pharmaceutical expenditure decision making at various levels of the healthcare sector to identify the challenges associated with PE application and help with recommendations to overcome these challenges at the hospital level.

2. Materials and Methods

A team of experts with extensive clinical, administrative and PE experience was assembled included senior clinical pharmacists (Nagwa Ibrahim, Fouad Alnajjar) and senior

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pharmacoeconomists (Abdulaziz Altowaijri, Hana Alabdulkarim, and Mai AlSaqa'aby).

A framework analysis method was used to identify the challenges in PE application at the hospital level.

The team of experts/ panelist responded to three open ended questions:

1. What are the possible challenges in applying PE at a hospital level?
2. Who are the stakeholders involved in the application of PE?
3. What are the potential actions that these stakeholders can take to improve the application of PE?

The panelist discussed and categorized the involved areas into specific groups. Potential action steps for each group were listed and grouped into categories. Then the panelists received the final recommendations. Although the information was collected from the experts based on their own institution experience, the supporting evidence from the literature was sought subsequently.

3. RESULTS

The panelists identified the following Challenges in the application of the PE at a hospital level:

1. Lack of nationally recognized body responsible for commissioning and funding of pharmacoeconomic.
2. Lack of national guidelines on Health Technology Assessment (HTA).
3. Lack of local PE guidelines and clearly defined set of criteria and standards to guide decision making. The guidelines can help in defining values of willingness to pay (WTP) threshold per unit of health gained, identified discount rates and acceptable level of budget impact. Establishment of a nonprofit independent regulatory body is essential. This will help in designing studies and develop guidelines for PE locally.
4. PE discipline is relatively new compared to other concepts and sciences. Lack of knowledge about PE concept and the role of HTA among healthcare professionals and decision makers.
5. PE is a new concept to most of the healthcare providers and so interpreting the results of the analysis (CEA). Experts in the field are needed to help decision makers to ease the process of formulary enlisting and management.
6. Decision makers are less comfortable than pharmacoeconomists with the methods for calculating quality adjusted life-year (QALYs) and WTP. Generally, the concept of value versus cost is not utilized in clinical practice.
7. Shortage in qualified and experienced personnel to conduct, interpret and use pharmacoeconomics evidence in the kingdom.
8. Absence of national/local registry that contain patient's demographics, clinical data and socioeconomic status. This significantly negatively impact the number of local pharmacoeconomics studies.
9. Absence of national detailed cost database / claims. PE researchers often struggle with limited local cost data. Most of the healthcare is provided by governmental hospitals. The real cost of services used in governmental hospitals is hard to identify while cost in private sectors is inflated and not reflective to the real cost. In addition, the local data about burden of disease is unknown.
10. Lack of efficacy and patient reported outcomes (PROs) data: lack of local health related quality of life (HRQOL) tariff and service utilization such as number of visits and patient's satisfaction in regard to healthcare services.
11. Lack of funding for PE research and resources used to perform and build economic models, e.g.: offices/labs equipped with computerdevices carrying the necessary software.
12. Lack of applicability of pharmacoeconomic analysis at hospitals.
13. Barriers to use economic evaluations:

- It is assumed in economic evaluation that resources from the substituted alternatives can be used to pay for the new technology but financial budgets in health care are fixed and it is difficult to shift from one alternative to another or between different health care sectors. Short term savings were only a fraction of the anticipated savings in the long run. E.g., insurers of medical care in the US have been shown to focus on the immediate costs of acquiring technologies rather than any future savings. The perspective of economic evaluation generally takes a longer-term view and assumes that it does not matter when savings occur as long as they are sufficiently large when discounted.
- National policies can restrict use of economic evaluation. E.g. Government targets reducing patients' waiting times to see a specialist or gain access to certain treatments which have no proven evidence of clinical or cost-effectiveness, yet drive decision-makers' actions. Economic evaluation may be a source of evidence that has to compete with current treatment guidelines. Decision-makers generally do not feel that evidence from economic evaluation should have an influence on decisions made and they feet that government mandates were of far greater importance to them clinically.
- Amongst clinicians and pharmacists, evidence of effectiveness has been found to be more important than cost-effectiveness. Clinicians are mainly interested in the effect of a new treatment than how much it costs. Cost is an important factor for pharmacists when consider using a new product but in the form of acquisition cost rather than the hospital or societal cost that is considered in economic evaluation.
- Ethical and moral issues in rationing care based on economic evaluation. Clinicians typically base their decisions on the individual patient and hesitate to take the population perspective employed in economic evaluation. They can't refuse lifesaving treatment based on cost-effective evidence.
- Decisions often need to be made quickly in reaction to immediate problems, while economic evaluations required some time to become available. It is likely therefore that information on economic evaluation might not be available when setting new priorities.
- Some decision makers are reluctant from using economic evaluation because they feel that the studies have been poorly conducted. They feel economic

evaluation is biased because of its reliance upon assumptions (regarding quality of life, timing of costs and benefits, the discount rate, and so on). There also a doubt in trusting pharmaceutical industry funded studies.
- Inability to realize savings in clinical practice. For example, pharmacy expenditures may have increased. But whether "value" has also increased may not be so visible.

All the potential actions are listed and summarized below.

Stakeholders and their potential actions:

Hospital leadership:

Hospital leadership strategy should optimize the allocation of resources and budget management. Their aim should be to provide the best care to patients while saving money.

Pharmacy and therapeutic committee:

The pharmacy and therapeutic committee (P&T) are responsible for many tasks including:

1- Hospital formulary:
- Careful evaluation of new drugs prior to addition to the hospital formulary. Proper drug evaluation must involve efficacy, safety, quality and cost using the best available evidence. Pharmacoeconomic evaluation should be a requirement when making formulary decision. PE principles when applied appropriately will be useful to determine the therapy that provides the most benefits at the least cost.[4]
- Proper selection of therapy compared to drugs available.
- High cost medications recently added to the formulary should be evaluated 6-12 months after their addition especially if there is potential for inappropriate use.
- Consider biosimilar and generics.
- Regular formulary review for possible delisting.
- Sub-committees may be needed to evaluate high-tech or expensive specialty drugs for example oncology drugs and biologics.

2- Education:
- Conduct awareness programs for healthcare professionals and executives as the concept of PE is relatively new and not well understood by practitioners.
- More training and education to decision makers (healthcare professionals, hospital administrators and P&T committee members) should be conducted to facilitate the use of pharmacoeconomics.

3- Guidelines:
- Development / approval of pharmacoeconomic guidelines that provide guidance on the key concepts to consider or use when conducting pharmacoeconomic analysis as part of evaluation process for listing / delisting a drug in/out of the hospital formulary.
- Development / approval of disease management guidelines.
- Ensure guidelines and policies implementation.

4- PE application:
- Ensure involvement of qualified and experienced staff in PE application.
- Identify consumers of PE.

5- Value versus cost:
- Establish / approve the concept of value versus cost concept.

Pharmacy/pharmacoeconomic center:

PE is a pharmacy subspecialty. Accordingly, PE providers will be pharmacists with PE subspecialty (pharmacoeconomists) either working under the umbrella of pharmacy department or drug policy and economic center if available. The key points to enhance application of PE are:

1- Awareness:
- Create awareness plan about PE to practitioners and executives.
- Conduct workshops, seminars, conferences.

2- Qualifications & experience:
- Recruitment of healthcare professionals with pharmacoeconomics expertise to help and manage limited health resources in the best way available.
- Encourage / support pharmacists to enroll in PE programs/degrees.
- Ensure qualification and experience of staff applying PE while evaluating therapy.
- Apply "train the trainers" concept

3- Research:
- Conduct PE research funded by institutions to avoid bias.
- Request for research fund from hospital leaders.
- More investments in the collection of epidemiological and demographic data, plus data on clinical practice patterns, resource use, costs, and health state evaluation is required.

4- Drug evaluation:
- Incorporate PE concept to clinical evaluation of medicines [5,6,7].
- Apply pharmacoeconomics to new drugs evaluation to inform negotiations about pricing especially for innovative high cost drugs. PE could help in determining the required price reduction to achieve cost effectiveness and to evaluate risk sharing agreement [8,9,10].
- Create guidelines for proper drug evaluation.

5- Drug utilization monitoring: [11,12]
- Implement and adhere to clinical guidelines.
- Ensure staff access to policies and guidelines.
- Capture and report deviation to leadership.
- Implement quality projects to minimize waste.

4. CONCLUSION

Pharmacoeconomics application requires a multilevel, multidiscipline approach to optimize and maximize the outcomes. This article will serve as a guide for these

individuals and entities approaching PE application. The role of each stakeholder is listed and having a comprehensive approach will assure better utilization of these recommendations.

5. Recommendations

The expert panel recommends entities approaching PE application / implementation to assemble a team from stakeholders and decision makers listed in this article to review all suggestions and adopt what is appropriate to their own setting and circumstances. It is essential to have key performance indicators to assure improvement.

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References

1. American Society of Health-System Pharmacists. ASHP guidelines on the pharmacy and therapeutics committee and the formulary system. Am J Health-Syst Pharm. 2008; 65:1272–83. https://www.ashp.org/-/media/assets/policy-guidelines/docs/guidelines/gdl-pharmacy-therapeutics-committee-formulary-system.ashx. Accessed November 11, 2018.
2. Alsultan, M. The role of pharmacoeconomics in formulary decision making in different hospitals in Riyadh, Saudi Arabia. Saudi Pharm J. Jan;19(1):51-6. doi: 10.1016/j.jsps.2010.10.005.
3. Odedina FT, Sullivan J, Nash R, Clemmons CD. Use of pharmacoeconomic data in making hospital formulary decisions. Am. J. Health Syst. Pharm. 2002;59:1441–1444 Accessed November 13, 2018.
4. Motheral BR, Grizzle AJ, Armstrong, EP, Cox E, Fairman K. Role of pharmacoeconomics in drug benefit decision-making: results of a survey. Formulary. 2000;35(5):412–442. https://arizona.pure.elsevier.com/en/publications/role-of-pharmacoeconomics-in-drug-benefit-decision-making-results. Accessed November 20, 2018.
5. Späth HM, Charavel M, Morelle M et al. A qualitative approach to the use of economic data in the selection of medicines for hospital formularies. Pharm World Sci 2003, 25: 269-275. https://doi.org/10.1023/B:PHAR.0000006523.22131.69.
6. Sanchez LA. "Pharmacoeconomics and formulary decision making." Pharmacoeconomics. 1996;9 Suppl 1:16-25. DOI: 10.2165/00019053-199600091-00005.
7. Al Aqeel SA, Al-Sultan M. The use of pharmacoeconomic evidence to support formulary decision making in Saudi Arabia: Methodological recommendations. Saudi Pharm J. 2011;20(3):187–194. doi:10.1016/j.jsps.2011.12.006.
8. Wang Z, Salmon JW, Walton SM. Cost-effectiveness analysis and the formulary decision-making process. J Manag Care Pharm. 2004 Jan-Feb;10(1):48-59. DOI: 10.18553/jmcp.2004.10.1.48.
9. Al-Jazairi AS1, Al-Qadheeb NS, Ajlan A. Pharmacoeconomic analysis in Saudi Arabia: an overdue agenda item for action. Ann Saudi Med. 2011; 31(4):335-41. doi: 10.4103/0256-4947.83201.
10. Jazieh AR, Ibrahim N, Abdulkareem H, Maraiki F, Alsaleh K, Thill M. Expert-Based strategies to improve access to cancer therapeutics at the hospital level. Glob J Qual Saf Healthc 2018;1:6-12. DOI: 10.4103/JQSH.JQSH_4_18.
11. Ibrahim N. Global initiative to establish and implement dose rounding policy for expensive cancer therapy. J Pharma Care Health Sys 2018, 5:1: e147. DOI: 10.4172/2376-0419.1000e147.
12. Ibrahim N. Impact of dose rounding of cancer therapy on cost avoidance: a pilot study. Farmeconomia. Health economics and therapeutic pathways 2013; 14(4): 169-172. https://journals.seedmedicalpublishers.com/index.php/FE/article/view/658/1024. Accessed December 5, 2018.