Literature Survey

1) **Liberatore, M.J. and Nydick, R.L., 2008. The analytic hierarchy process in medical and health care decision making: A literature review. *European Journal of Operational Research*, *189*(1), pp.194-207.**

The United States continues to devote ever-increasing amounts of its resources to health care. The most recent statistics published by the US government indicate that health care spending was projected to reach $1.7 trillion or 15.3% of its gross domestic product (GDP) in 2003. In addition, this percentage is projected to increase to 18.7% in 10 years (Centers for Medicare and Medicaid Services and US Bureau of the Census, 2004). Total national health expenditures increased by 7.7% in 2003, four times the rate of inflation (Smith et al., 2005). Given the magnitude of these numbers and expenditures, improvement in health care and medical decision making can reap substantial benefits for both patients and health care providers alike. A variety of decision making methods and tools are available to support health care and medical decision making. The purpose of this paper is to review and assess the application of a well-known and widely used decision making methodology, called the analytic hierarchy process (AHP), to important problems in medical and health care decision making.

2) **Rojas, E., Munoz-Gama, J., Sepúlveda, M. and Capurro, D., 2016. Process mining in healthcare: A literature review. *Journal of biomedical informatics*, *61*, pp.224-236.**

The provision of quality hospital services depends on the suitable and efficient execution of processes. Healthcare processes are a series of activities aimed to diagnose, treat and prevent any diseases in order to improve a patient's health. These processes are supported by clinical and non-clinical activities, executed by different types of resources (physicians, nurses, technical specialists, dentists, clerks) and can vary from one organization to another . It is known that healthcare processes are highly dynamic, complex, ad-hoc, and are increasingly multidisciplinary , making them interesting to analyze and improve. Healthcare processes improvement might have a high impact on the quality of life of patients. However, improving them is not an easy task and several challenges are always present. There is always the need to reduce the cost of services and

improve capabilities to meet the demand, reduce patient's waiting times, improve resources productivity, and increase processes transparency.

3) **Schluter, J., Winch, S., Holzhauser, K. and Henderson, A., 2008. Nurses' moral sensitivity and hospital ethical climate: A literature review. *Nursing ethics*, *15*(3), pp.304-321.**

   Increased technological and pharmacological interventions in patient care when patient outcomes are uncertain have been linked to the escalation in moral and ethical dilemmas experienced by health care providers in acute care settings. Health care research has shown that facilities that are able to attract and retain nursing staff in a competitive environment and provide high quality care have the capacity for nurses to process and resolve moral and ethical dilemmas. This article reports on the findings of a systematic review of the empirical literature (1980 — February 2007) on the effects of unresolved moral distress and poor ethical climate on nurse turnover. Articles were sought to answer the review question: Does unresolved moral distress and a poor organizational ethical climate increase nurse turnover? Nine articles met the criteria of the review process. Although the prevailing sentiment was that poor ethical climate and moral distress caused staff turnover, definitive answers to the review question remain elusive because there are limited data that confidently support this statement.

4) **Devaraj, S. and Kohli, R., 2000. Information technology payoff in the health-care industry: a longitudinal study. *Journal of management information systems*, *16*(4), pp.41-67.**

In this study, we examine monthly data collected from eight hospitals over a recent three-year time period. We specify propositions that relate investments in IT to performance, and the combined effect of technology and BPR on performance. We draw upon the literature in health-care management to incorporate appropriate control variables in the analyses. Our results provide support for the IT—performance relationship that is observed after certain time lags. Such a relationship may not be evident in cross-sectional or snapshot data analyses. Also, results indicate support for the impact of technology contingent on BPR practiced by hospitals.

5)Wang, Y., Kung, L. and Byrd, T.A., 2018. Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. *Technological forecasting and social change*, *126*, pp.3.

To date, health care industry has not fully grasped the potential benefits to be gained from big data analytics. While the constantly growing body of academic research on big data analytics is mostly technology oriented, a better understanding of the strategic implications of big data is urgently needed. To address this lack, this study examines the historical development, architectural design and component functionalities of big data analytics. From content analysis of 26 big data implementation cases in healthcare, we were able to identify five big data analytics capabilities: analytical capability for patterns of care, unstructured data analytical capability, decision support capability, predictive capability, and traceability. We also mapped the benefits driven by big data analytics in terms of information technology (IT) infrastructure, operational, organizational, managerial and strategic areas. In addition, we recommend five strategies for healthcare organizations that are considering to adopt big data analytics technologies. Our findings will help healthcare organizations understand the big data analytics capabilities and potential benefits and support them seeking to formulate more effective data-driven analytics strategies.

6) **Nanibaa'A, G., Sathe, N.A., Antommaria, A.H.M., Holm, I.A., Sanderson, S.C., Smith, M.E., McPheeters, M.L. and Clayton, E.W., 2016. A systematic literature review of individuals' perspectives on broad consent and data sharing in the United States. *Genetics in Medicine*, *18*(7), pp.663-671.**

We systematically searched the literature on broad consent and data sharing for biobank research using the following databases: MEDLINE via the PubMed interface, Web of Science, National Reference Center for Bioethics Literature databases (EthxWeb, GenETHX), and Dissertation Abstracts International. Search strategies used subject heading terms appropriate for each database and key words relevant to biobanking, consent, and data sharing (**Supplementary Table S1** online). Searches were limited to the literature published since 1990 to capture current views about biobanking. We also manually searched the reference lists of included studies and of recent narrative and systematic reviews addressing the topic. Our initial searches were done between October and December 2013 and were updated in March 2015. All citations were imported into DistillerSR systematic review software.

7) **Guerriero, F. and Guido, R., 2011. Operational research in the management of the operating theatre: a survey.** ***Health care management science*****,** ***14*****(1), pp.89-114.**

Operating theatre represents one of the most critical and expensive hospital resources since a high percentage of the hospital admissions is due to surgical interventions. The main objectives are to guarantee the optimal utilization of medical resources, the delivery of surgery at the right time, the maximisation of profitability (i.e., patient flow) without incurring additional costs or excessive patient waiting time. The operating theatre management is a process very complex: the use of mathematical and simulation models, and quantitative techniques plays, thus a crucial role. The main aim of this paper is to provide a structured literature review on how Operational Research can be applied to the surgical planning and scheduling processes. A particular attention is on the published papers that present the most interesting mathematical (optimization and simulation) models and solution approaches developed to address the problems arising in operating theatres. Directions for future researches are also highlighted.

8) **Aboelela, S.W., Larson, E., Bakken, S., Carrasquillo, O., Formicola, A., Glied, S.A., Haas, J. and Gebbie, K.M., 2007. Defining interdisciplinary research: Conclusions from a critical review of the literature.** ***Health services research*****,** ***42*****(1p1), pp.329-346.**

Existing literature from several fields did not provide a definition for interdisciplinary research of sufficient specificity to facilitate activities such as identification of the competencies, structure, and resources needed for health care and health policy research. This analysis led to the proposed definition, which is designed to aid decision makers in funding agencies/program committees and researchers to identify and take full advantage the interdisciplinary approach, and to serve as a basis for competency-based formalized training to provide researchers with interdisciplinary skills.

9) **Günal, M.M. and Pidd, M., 2010. Discrete event simulation for performance modelling in health care: a review of the literature.** ***Journal of Simulation*****,** ***4*****(1), pp.42-51.**

Discrete Event Simulation (DES) is one of many different tools and methods used in the analysis and improvement of health-care systems. There are many applications of non-simulation techniques, such as heuristic optimization, but their review is outside the scope of this paper. Likewise, there are simulations other than discrete event approaches, such as system dynamics (SD) and agent-based modelling. Occasional references to these other approaches are made in

this paper, but the main focus is DES modelling of patient flows through hospital facilities.

10) Giacomini, M.K., Cook, D.J., Evidence-Based Medicine Working Group and Evidence-Based Medicine Working Group, 2000. Users' guides to the medical literature: XXIII. Qualitative research in health care A. Are the results of the study valid?. *Jama, 284*(3), pp.357-362.

Quantitative research is designed to test well-specified hypotheses, determine whether an intervention did more harm than good, and find out how much a risk factor predisposes persons to disease. Equally important, qualitative research offers insight into emotional and experiential phenomena in health care to determine what, how, and why. There are 4 essential aspects of qualitative analysis. First, the participant selection must be well reasoned and their inclusion must be relevant to the research question. Second, the data collection methods must be appropriate for the research objectives and setting. Third, the data collection process, which includes field observation, interviews, and document analysis, must be comprehensive enough to support rich and robust descriptions of the observed events. Fourth, the data must be appropriately analyzed and the findings adequately corroborated by using multiple sources of information, more than 1 investigator to collect and analyze the raw data, member checking to establish whether the participants' viewpoints were adequately interpreted, or by comparison with existing social science theories. Qualitative studies offer an alternative when insight into the research is not well established or when conventional theories seem inadequate.