

Using the Analytic Hierarchy Process (AHP) as a Methodology in Complex Decision-Making: Restructuring A Nursing Service Case Example

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With the complexity of today's health care environments and the increasing demands to redesign health care delivery, it has become necessary to find new ways to cope with the multiple variables that affect our ability to make efficient decisions. The analytic hierarchy process (AHP) is a multicriteria decision-making methodology used in many disciplines that uses a mathematical approach to formulating a structure and quantifying elements while imposing a discipline on a group of key stakeholders' thought processes. The purpose of this project is to simulate and demonstrate the potential application of the AHP in group multicriteria decision-making to assist in nursing service reorganization using a hypothetical case simulation.

In order to meet the needs of health care consumers, health care providers and managers are faced with difficult decisions that require multiple participants in the process. Problems such as reorganizing a particular nursing service to serve a population are commonplace in today's hospitals, and a systematic methodology such as AHP can assist the decision-makers toward efficient decisions. The problem addressed in this project will be generated via a hypothetical case example (a 550-bed teaching hospital and medical center needs to restructure its nursing services and plans to combine several units to better serve its patient population) and several decision-makers must choose the units, select the appropriate staff for the newly combined units, and analyze futures-alternatives scenarios.

The analytic hierarchy process (AHP) methodology and the computer software program Expert Choice will be used in this project to demonstrate the potential of working through a complex decision with a methodology that guides the decision-making process. The AHP is a method of breaking down a complex, unstructured situation into its component parts; arranging these parts, or variables, into a hierarchic order; assigning numerical values to subjective judgments on the relative importance of each variable; and synthesizing the judgments. Its potential is unleashed as it mathematically transforms ordinal level measurement into ratio level scale allowing further quantitative comparison and manipulation.

The participants in the project will be nurse managers who are convened for the purpose of engaging in a group decision related to the case example scenario. Each participant will be given descriptions necessary to interact with the group in the decision-making simulation. The AHP methodology will structure the multiple stages of reaching consensus and will visually present the mathematical model derived in each stage while capturing data from the group. The method used for analysis is a series of comparisons among the elements contained within the decision segments. The analysis will be presented allowing for continued evaluation and discussion of the decisions aiding in achieving consensus. In addition, the Expert Choice software will allow the participants to test alternatives in a "what-if" mode with a dynamic-visual graphic display. Ultimately, the outcome will be a series of decisions related to reorganization, staff selection and futures-alternative comparisons with empirical evidence to justify a decision and evaluation of the process.