total cost. A comparative cost-effectiveness analysis of these options could then be carried out.

h. Financial Feasibility
An assessment of the need for, and potential sources of, capital financing including invested equity, mortgages, loans, conventional bonds, tax-exempt bonds, stock offerings, government grants, and fund drives. Beyond the payment of program start-up costs, the institution must also have reasonable assurances that ongoing operating costs (including interest on loans) will be covered by program revenues or funds earmarked from other operations. Various types of financial analyses (cost-of-capital calculations, ratio analysis) can be brought to bear in this part of a program design.

i. Political Feasibility
An appraisal of the probable sources and level of support for and opposition to the proposed program as a whole or to various components of it, at the launching and the operational stages. This could include an examination of the likely arguments and tactics of opponents, and the counterarguments and countertactics likely to be most effective. Insights for such an analysis could be drawn from the history of past program promotions, both successful and failed initiatives, at the proposed implementing organization or elsewhere.

j. Monitoring and Evaluation Plan
A description of how data will be gathered to determine to what extent: (a) the program is reaching the appropriate target population; (b) the delivery of services or other program activities are being undertaken in conformity with the design specifications; and (c) the program is meeting the objectives and having the desired impacts. This plan may include: criteria for assessing success, operational indicators of goal achievement, identification of information needs, and an outline of a data collection system.

6. OPERATIONS RESEARCH
   a. Problem definition
   b. Model construction
   c. Model validation
   d. Data collection
   e. Model testing and analysis
   f. Evaluation of alternatives and recommendations
      Typical title: “Algorithmic Scheduling Techniques for the Ballistics-Testing Center”

Operations research (OR) is a method of problem solving involving the use of mathematical and/or computer-based models to evaluate or predict the consequences of alternative courses of action on an operating system. OR techniques can be applied to certain well-structured decision situations in the planning and administration of health services, including cost minimization and output maximization problems, simulation exercises, scheduling and inventory control questions, and much more. Among the elements of an operations research project might be the following:
a. Problem Definition
   Precise identification of the problem and of the feasible alternative courses of action that may be effective in solving the problem. The problem may be a query of whether a particular action will have a desired result, or it may be a more general search for the results of a change in internal or external variables or for an improved or optimal result given a variety of alternative courses of action.

b. Model Construction
   Development of one or more representations of the most crucial aspects of the structure and operation of a system, and of the differences among the alternatives. These representations are in the form of mathematical models which can then be used to test hypotheses about the relationships between alternatives and measures of system performance. The type of model chosen (e.g., Markov chains, queuing models, Monte Carlo simulations, linear optimization models, etc.) will depend on the problem at hand.

c. Model Validation
   A test of the reasonableness and predictive power of the model using past data, or data from an analogous set of circumstances. This step may take the form of a literature review which analyzes the past applications of the chosen model(s).

d. Data Collection
   Collection of information relating to the parameters and variables incorporated in the chosen model(s) in the form which makes testing possible.

e. Model Testing and Analysis
   Application of the model to the data to test hypotheses or to derive optimal outcomes in a problem-solving setting. Further validation of the model(s) (e.g., sensitivity analysis) may be appropriate at this stage.

f. Evaluation of Alternatives and Recommendations
   Evaluation of the alternatives in terms of the measures of performance through the use of the model(s). In many cases the results of initial evaluation may indicate the need for refinement in the level of detail of the model (it may be too simple or too complex), adjustment of the database to support the new model, and re-evaluation of the alternatives. Recommendations for implementation of the solution(s) found should follow logically from the interpretative analysis.

7. PROGRAM EVALUATION
   a. Statement of Purpose
   b. Description of Program Inputs
   c. Description of Program Activities
   d. Performance Criteria
   e. Operational Indicators
   f. Research Design and Data Analysis
   g. Conclusions and Recommendations

Typical title: “A Program Evaluation of the WIC Program in Clayton County”