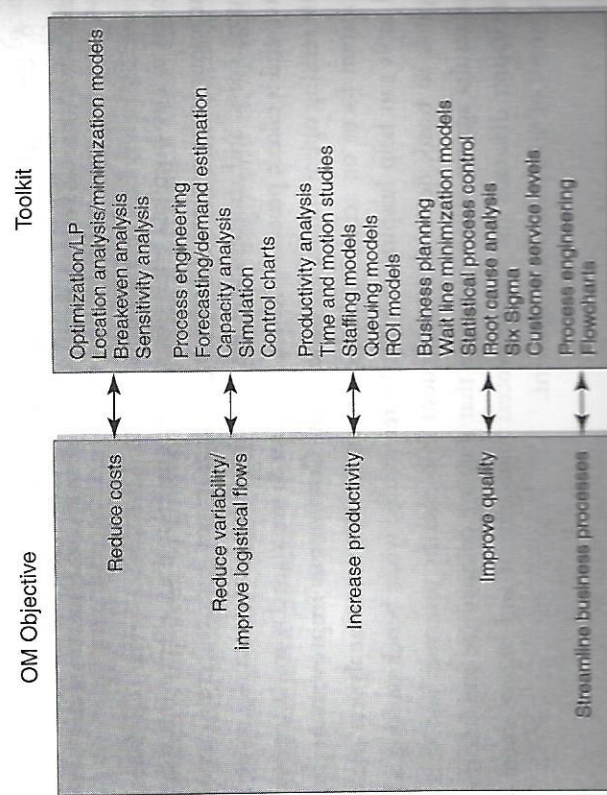


CHOICES FOR OPERATIONS MANAGEMENT: TOOLS AND TECHNIQUES

To make improvements in health care, it is important to use the right tool for the appropriate situation. Remember Abraham Maslow's famous quote: "If the only tool you have is a hammer, you tend to see every problem as a nail" (Maslow, 1998). In other words, you can't use a hammer to fix all problems. In the field of operations management, there is a large portfolio of quantitative tools and techniques that can be applied in the appropriate situation to solve problems involving operational efficiencies. For instance, if an emergency room is having trouble with wait lines, a combination of Pareto charts, wait line minimization or queuing models, and process analysis (all of which will be described in this chapter) may be applied. **Figure 4-1** matches the types of problems or objectives of operations with possible operational management tools and techniques. All of these are discussed throughout this text.

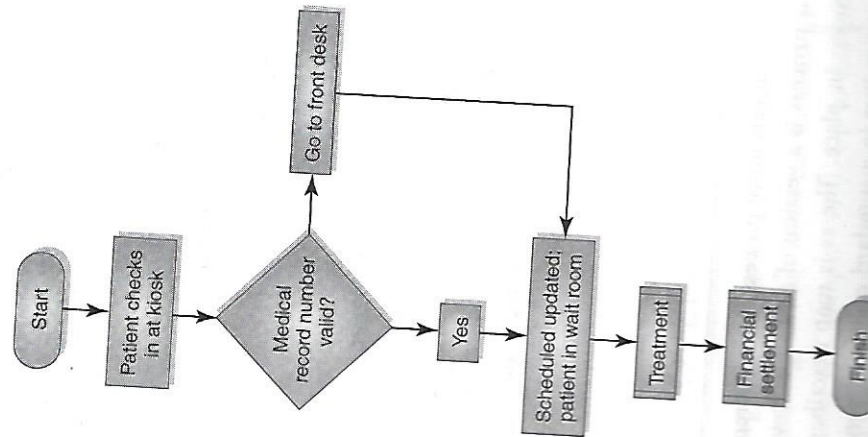
PROCESS

A **process** is a set of activities and tasks that are performed in sequence to achieve a specific outcome. A process can be administrative or clinical in nature and is usually called a *business process* by most quality improvement professionals.



A process typically has three high-level phases: inputs, outputs, and transformation. A process includes all activities, tasks, and steps that must be performed to complete something. Inputs are all resources to be used or consumed in a process, such as labor hours, staff, supplies, space or facilities, information systems, and other resources. Transformation is the conversion or change process, where the inputs are combined to deliver final results, which are the outputs. Outputs are the result of the transformation or conversion process.

For example, a patient schedules a visit; on the day of his appointment, he arrives at the clinic. Prior to receiving treatment or diagnosis (the output), the clinic uses its staff, systems, space, forms, and records (the inputs) to organize the patient, stage him in the appropriate locations, and allow the physician to provide treatment. **Figure 4-2** shows a sample process flowchart depicting these events.





A **rectangle** normally displays a specific task or activity that is to be performed.



A **circle** or oval normally represents the start and end points of the process.



A **double-lined rectangle** indicates that the activity is a predefined process that has multiple, additional activities below this, which would be depicted in a separate process flowchart.



A **diamond** or rhombus indicates a decision point, which usually has at least two lines protruding outwards, representing each of the different decision scenarios that could be reached. In many cases, decision points have at least two lines: one representing a positive "yes" answer to the decision, the other a negative "no" response.



A **parallelogram**, or rectangle on an angled plane, represents data. This data could be stored in a system, record, file, or on a manual log.

FIGURE 4-3 Flowchart Symbols

Using the flowchart symbols presented in Figure 4-3, a process map or diagram can be created to show the sequence of tasks and activities from start to finish. This is called a **process flowchart**, and it depicts the flows or activity exchanges among participants and shows the sequencing of activities from start to finish. Although this is a simple example to illustrate the concepts, real process maps can be quite detailed and run across multiple pages with dozens of interactions among departments.

PROCESS MAPS

There are two major classifications of process maps: current (or as-is) and future (or to-be). An **as-is process** is a version of a process flowchart that depicts the actual, current process in place. The as-is map describes how a process really works in practice—not just in a standard operating procedure. It is normally the starting point for process improvement efforts because it shows the roles,

The goal of documenting the current process is to find opportunities for reducing steps, interactions, decision points, reports, and the overall length of the process. There are three major opportunities for improving the current process:

1. Increasing the throughput, capacity, or volume that can flow through a process with little or no change in inputs. This requires an identification of the choke point, or bottleneck, that limits the capacity of a process to maximize results.
2. Reducing the costs, steps, waste, and resources utilized in the process. This requires scrutiny of individual steps that may be redundant, unnecessary, or do not add value overall.
3. Reducing the variation (or changes from the norm) in performance over time. This requires the use of statistical process control tools such as scatter diagrams and control charts.

Often, as-is maps are carefully designed and documented, yet users do not take the next steps to identify how to increase throughput or reduce resource consumption. In simple terms, the key to mapping as-is processes is to document the overall cycle time it takes to complete from start to finish; the number of touch points, or interactions, between different participants; and the total dollar amount of all inputs, especially labor. The as-is process should then be redesigned or reengineered to achieve a faster, more efficient, and more effective process flow.

Process engineering refers to the careful scrutiny of a current process to identify value creation opportunities, such as eliminating hand-offs or steps in the process, and it should attempt to find value through the three categories listed earlier (increasing capacity, reducing costs, and reducing variability). Each of the tasks in the current process that do not add value, or that could be replaced by automation or a process change that may reduce other steps, should be eliminated. The **to-be process** represents the future state, after all changes and improvements are designed into the current process.

PROCESS IMPROVEMENT METHODOLOGY

How does a hospital begin to address these process issues? It is important to follow a structured methodology so that issues can be discovered and engineered into the process (Hammer & Champy, 1993). Up to this point the discussion has focused on issues of efficiency, but health care cannot ignore the implications for quality or service. Sometimes a hospital can reduce steps and increase process speed yet still have low quality or do the wrong thing. Before the right things