Learning Objectives

Upon completion of this unit, students should be able to:

1. Explain the use and benefits of flow charts in organizational management.
2. Apply a general systems flow chart to a specific medical process (or other interesting process) of your choosing.
3. Discuss the concept of time value of money (TVM) and its importance for managers and administrators.
4. Explain the specific significance of time value of money (TVM) in healthcare delivery settings.
5. Apply the concept of time value of money (TVM) to a real world medical decision scenario (or other interesting decision scenario) of your own choosing.
6. Calculate the present and future value of money in a healthcare organization.

Written Lecture

Certainly two of the most important topics presented in any quantitative analysis course are flowcharting and time value of money (TVM). Both of these are essential tools for understanding the processes and the numbers of healthcare. In this lecture, we will share some applications of each tool, demonstrating how it will be utilized in your own practice of healthcare administration.

Flowcharting

Three very good applications of flowcharting in healthcare are the establishment of:

- Patient care algorithms
- Medical billing and coding processes
- Root cause analysis for medical process improvement

The classic example of a patient care algorithm is the advanced cardiac life support protocol, commonly utilized in resuscitating patients who've experienced cardiopulmonary arrest. The advanced cardiac life support algorithms can be viewed at the website of the American Heart Association www.heart.org. These have become a standard of practice throughout the U.S. and in many other nations. They tell practitioners, step by step, how to handle the events in cardiopulmonary arrest and the successful resuscitation of the patient. Another very common clinical flow chart is the chest pain protocol utilized in many American hospitals and, with some variations, in the treatment of patients presenting to the hospital with chest pain. Each hospital develops its own chest pain protocol based upon the resources available locally and the geographic considerations for patient transfer to higher levels of care.
Considering business office applications, flowcharts can help everyone to understand the flow of information from completion of the medical record, to accurate coding of the patient’s diagnosis and level of care, to billing of the primary and secondary payers, and then to collecting for services provided. Flowcharts in the hospital or clinic business office can help staff members get things right the first time and avoid the “rework” which comes with first time errors, such as inaccurate coding or billing the wrong payer as primary. A good hospital business office will not only have these processes available in policy and procedure manuals, but also prominently posted where staff members can see them every day!

And finally, Ishikawa diagrams (which are also known as fish bone or sometimes cause-and-effect charts) are special flowcharts which show the root causes of a particular event or outcome. This approach to management and studying processes was created by Kaoru Ishikawa in Japan, and the Ishikawa diagrams are widely used in healthcare today. They allow us to carefully chart all of the inputs to a medical process, identify problems or slowdowns in the processes, and then to set about making necessary corrections and improvements. The Ishikawa diagrams receive special attention in your textbook when you reach Chapter 14, so we will simply introduce them here as an important type of flowchart. You will learn much more about them later in this course.

Why are flowcharts so popular? Simple answer…expediency. Rather than reading a three page policy and procedure statement, a one-page flowchart can tell you what you really need to know about a process, and allow you to get through the process quickly and effectively. Be sure to check out the standardized set of flowchart symbols provided in Figure 3-1 of your textbook. We have symbols for just about everything that happens in a process: Start, Stop Operations, Files, Decisions, Documents, Copies, and everyone’s favorite, the Cloud. A cloud on a flowchart is used to depict an aspect of the process that is not yet clear. Healthcare flowcharts often start out with quite a few clouds until they can be analyzed, worked through by a team, and replaced with other symbols.

**Time Value of Money**

Another very important medical management tool is time value of money or TVM. To begin, let me ask you a simple question. Would you rather have me give you a check for $100,000 today, or the same check 10 years from now? I am pretty sure that you answered, “Give me the check today.” That tells me that you already grasp the basic concept of time value of money. Time gives you opportunity to increase the value of investments. Even in the current depressed U.S. economy, there are things you can do with money over time that increases the value of the funds invested. Perhaps your savings account or checking account today is earning very low interest, but if you can commit that $100,000 check that I gave you for a 10 year period, you can purchase an A-rated bond that will earn 6% compound interest, and 10 years from now your investment will be worth almost $180,000!

The Rule of 72 comes to mind here, so let us introduce it. Take the number 72 and divide it by the compound interest rate which you can earn on an investment. Let us use the above example and take 72 divided by 6% annual interest earnings. 72/6 = 12. The 12 here reflects the number of years necessary for our initial investment to double in value. So if you can invest that $100,000 which I gave you, and leave it alone for 12 years, it will be worth $200,000, it works.
How does this apply to decisions in healthcare management? Let us put you back in the CFO chair this week. Your hospital needs a new CT Scanner. The current scanner is only four years old and is actually functioning well, no major problems or down time, but the unit has become outmoded. New technology has come along that makes the images produced by your old scanner obsolete, below the medical standard of care. So your doctors speak up, the CEO concurs, and the Board approves a new CT Scanner…price tag $600,000.00, and you are the person who has to find some way to fund that! Here are some of the considerations that come into play:

- Market value of the old CT scanner on trade or in the used equipment market
- Funded depreciation account balance (how much money you have in savings for such anticipated purchases)
- Return rate on your current investments
- Capital lease rates available to you
- Acceptable term for financing of CT scanners
- Likely useful life of the new CT scanner (you probably didn’t expect to be replacing the old scanner after just four years!)
- Grant funding available for technology upgrades

There are lots of things to consider before making this decision, but time value of money is one important piece of the puzzle. For example, if you have your funded depreciation money in long term bonds earning 5% or 6%, and you can find a capital lease over a reasonable term for 4% (which is very likely today), then you certainly will leave your investments where they are and do the capital lease. Adding into that decision is the consideration that the Medicare cost report may actually give some favorable consideration to your cost of financing the new CT scanner. The most challenging decision may be how long of a term to finance the new CT scanner over. Will this brand new scanner actually be obsolete in just a few years? In the world of modern medicine, that is entirely possible. Perhaps you are now looking at a three-year capital lease instead of the five-year capital lease that textbooks might recommend.

Lots of things to consider, and that is why you are taking this course, to learn quantitative analysis and work your way through such challenging decisions as a member of the healthcare management team!

**Supplemental Reading**

Click [here](#) to access a PDF of the Chapter 3 Presentation.

Click [here](#) to access a PDF of the Chapter 4 Presentation.


**Learning Activities (Non-Graded)**

**Evaluate Flowcharts**

Find flowcharts provided in your organization. Review and evaluate the flowcharts to determine if they are effective or ineffective. If you are the person who creates the flowcharts, how can you improve them?
Reflection Papers

For this activity, you are asked to prepare two reflection papers. One is for Chapter 3 “Flowcharting,” and one is for Chapter 4 “Time Value of Money.” After you finish the reading assignment, reflect on the concepts and write about them. What do you understand completely? What did not quite make sense? How will you apply the concepts from this unit to real situations? The purpose of this assignment is to provide you with the opportunity to reflect on the material you finished reading and to expand upon those thoughts. If you are unclear about a concept, either read it again or ask your professor. Can you apply the concepts toward your career? How?

This is not a summary. A reflection paper is an opportunity for you to express your thoughts about the material by writing about it. Reflection writing is a great way to study because it increases your ability to remember the course material. Use these guidelines as you reflect on the course material:

• Write at least one page for each chapter.
• Include your thoughts about the main topics of the chapters.
• How does it apply to your career?
• How does it apply to your personal life?

Format your reflection paper using APA style. Use your own words and include citations and references as needed to avoid plagiarism. This is a non-graded activity, so you do not have to submit it.