

“assumptions” in the narrative that you question? If data were sufficient for a Pareto diagram of problems with the appointment/scheduling process, what do you think the items would be? Please list them.

3. Draw a cause-and-effect (Ishikawa) diagram of causes for patient complaints.
4. What recommendations would you make to decrease patient waiting time?

Case Study 2

Noninvasive Cardiovascular Laboratory

The assistant vice president for operations at Barbarossa Hospital has identified a problem concerning the noninvasive cardiovascular laboratory (NCVL). First, patients have complained to their physicians about long waits and interruptions during tests. Second, the number of tests ordered increased when more LIPs joined the professional staff organization early this year, and the only NCVL technician, Loren Findley, has told his supervisor that he is overworked. Findley has threatened to resign if he does not get a full-time assistant. The hospital has no other employees who can perform the tests. The tests are not difficult; Findley could train someone to perform them in about 2 months.

Findley schedules all inpatient and outpatient tests ordered by house staff (residents) and attending physicians. Phone calls to schedule tests are received frequently during the day. On average, three of four of the tests Findley administers are interrupted by phone calls. It takes 10 minutes to return to the point in the test before the interruption (2 minutes talking on the phone and 8 minutes to restart the test).

Observing the technician and talking with him and his supervisor provided the following information. The NCVL is located on the third

floor of the hospital. It is adjacent to the stress test laboratory, which has twice the space of the noninvasive laboratory but uses only half of it. The stress test technician is productive only 60% of the time. Findley's workspace is cramped and crowded with two patient beds, a very large desk, and supplies in boxes that are stacked floor to ceiling along two walls. The room's configuration does not permit easy movement, and some equipment must be placed in the hall. Consequently, Findley spends an average of 10 minutes moving equipment into or out of the room when setting up for a test that is different from the preceding one.

Findley is qualified to administer three tests:

1. Echocardiography (ECHO): A graphic recording generated by ultrasound that is used to study the structures and motions of the heart
2. Ocular plethysmography (OPG): A test to measure changes in size and volume of the eye
3. Pulse volume recording (PVR) plethysmography: A test to measure changes in volume of a cross-section of a blood vessel over several heartbeats

Extensive observation showed the following standard times for each test (assume there is no difference for inpatients and outpatients):

Test	Standard time
ECHO	1 hour
OPG	½ hour
PVR	½ hour

Hospital records were used to compare the number of tests performed last year with the number performed in the first 3 months of the year:

Test	No. performed		
	Previous year	This year	
		First 3 months	Annualized
ECHO	800	300	1,200
OPG	200	75	300
PVR	200	75	300

The typical pattern for scheduled tests on any given day is ECHO, ECHO, OPG, ECHO, ECHO, PVR, ECHO, ECHO, OPG, and so forth.

Questions

1. Is Findley overworked? Why or why not? Should another technician be hired?
2. Assume that there is no budget to add a new technician. How should the current NCVL process be changed to improve quality and productivity?
3. Draw a cause-and-effect (fishbone) diagram of the reasons Findley's work is inefficient.
4. Draw a flow diagram showing the steps in the process(es) for Findley's work.

Case Study 3

Infections— *C. difficile* (CDI)¹⁴⁹

Your infection prevention department has reported that there is a cluster of cases of hospital-acquired CDI on the medical unit. The infection preventionists have put all the cases on contact isolation and are meeting with the manager of the unit as well as environmental services to develop a plan.