Case 3

Panhandle Medical Practice
(Activity-Based Costing)

Panhandle Medical Practice is a group practice owned by the area’s leading hospital, Panhandle Regional Medical Center. The practice includes both primary care and specialty physicians, with an emphasis on internal medicine, obstetrics, pediatrics, and surgery. The practice has three different locations, each one staffed with a mix of primary care and specialist physicians.

Traditionally, ancillary services have been performed at the hospital. Still, some ancillary services are best performed at the practice locations for one or more of the following reasons: lower costs, increased physician efficiency, and improved patient convenience. For example, one of the practice locations now has a diagnostic imaging capability. When the scanner was moved from the hospital to the practice location, volume increased, costs decreased, and both physician and patient satisfaction improved.

The proposal now being considered is to provide ultrasound services at the practice locations. Preliminary analysis indicates that two approaches are most suitable. Alternative 1 involves the purchase of three ultrasound machines, one for each of the practice’s three locations. Patients would schedule appointments, generally at the location that they are using, during preset times on particular days of the week. Then, the full-time ultrasound technician would travel from one location to another to administer the tests as scheduled.

In Alternative 2, patient scheduling would be the same, but only one ultrasound machine would be purchased. It would be mounted in a van that the technician would drive to each of the three practice locations. Most of the operating costs of the two alternatives are identical, but Alternative 2 has the added cost of operating the van and setting up the machine after each move.

The two alternatives differ substantially in initial costs because Alternative 1 requires three ultrasound machines at a cost of $75,000 each, whereas Alternative 2 requires only one. However, Alternative 2 requires a van, which with necessary modifications would cost $40,000. Thus, the start-up costs for Alternative 1 total $75,000 * 3 = $225,000, while those for Alternative 2 amount to only $75,000 + $40,000 = $115,000.
Note, though, that because the two alternatives have different operating costs, a proper cost analysis of the two alternatives must include both initial (capital) and operating costs. The hospital’s financial staff considered several methods for estimating the operating costs of each alternative. After much discussion, they decided that the activity-based costing (ABC) method would be best. Furthermore, an ad hoc task force was assigned the task of performing the cost analysis.

To begin the ABC analysis, the task force had to develop the activities involved in the two alternatives. This was accomplished by conducting “walk-throughs” of the entire process from the standpoints of the patient, the ultrasound technician, and the billing and collections department. The results are contained in Table 1. A review of the activities confirms that all except one—machine setup—are applicable to both alternatives.

The next step in the ABC process is to detail the costs associated with each activity. This step uses financial, operational, and volume data, along with the appropriate cost driver for each activity, to estimate resource consumption. Note that traditional costing, which often focuses on department-level costs, typically first deals with direct costs and then allocates indirect (overhead) costs proportionally according to a predetermined allocation rate.

In ABC, the activities required to produce some service, including both direct and indirect, are estimated simultaneously. For example, Table 1 contains activities that entail direct costs (such as technician time) and activities that entail indirect costs (such as billing and collection). Although the ABC method is more complex and hence costlier than the traditional method, it is the only way to accurately (more or less) estimate the costs of individual services.

Activity cost detail on a per-procedure basis is shown in Table 2. In essence, each activity is assigned a cost driver that is most highly correlated with the actual utilization of resources. Then the number of driver units, along with the cost per unit, is estimated for each activity. The product of the number of units multiplied by the cost per unit gives the cost of each activity. Finally, the activity costs are summed to obtain the total cost per procedure.

Many of the activity costs cannot be estimated without a volume estimate. The best estimate is that 50 procedures would be done each week, regardless of which alternative is chosen. Assuming the technician works 48 weeks per year, the annual volume estimate is 2,400 procedures. Of course, a much greater total volume can be accommodated under Alternative 1, with three machines, than with Alternative 2, with only one machine. However, to keep the initial analysis manageable, the decision was made to assume the same annual volume regardless of the alternative chosen.
In addition to the costs mentioned thus far, some other costs are thought to be relevant to the decision. First, in addition to the obvious costs of operating the van (primarily gas expenses), it is estimated that annual maintenance costs will run about $1,000. Furthermore, annual maintenance costs on each of the three machines under Alternative 1 are estimated at $500, while the annual maintenance costs for the single machine under Alternative 2 are estimated at a higher $1,000 because of added wear and tear. Also, the manufacturer of the ultrasound machines has indicated that a 5 percent discount may be available if three machines, as opposed to only one, are purchased.

Finally, to have a rough estimate of total annual costs over the life of the equipment, it is necessary to make assumptions about the useful life of the ultrasound machines and the van. Although somewhat controversial, the decision was made to assume a five-year life for both the ultrasound machines and the van. Furthermore, the assumption was made that the value of these assets would be negligible at the end of five years.

Assume that you are the chairperson of the ad hoc task force. Your charge is to evaluate the two alternatives and to make a recommendation on which one to accept. Because the revenues are assumed to be identical for the two alternatives, the decision can be made solely on the basis of costs. As part of the analysis, it will be necessary to estimate the costs of the two alternatives on a per procedure and annual basis. In addition, any qualitative factors that are relevant to the decision must be considered before the recommendation is made.

To keep the analysis manageable, the task force was instructed to assume that operating costs remain constant over the useful life of the equipment. For comparative purposes, this assumption is not too egregious because the activities are roughly the same for both alternatives, and hence inflation would have a somewhat neutral impact on costs.

TABLE 1
Panhandle Regional Medical Center
Activities Associated with Alternatives 1 and 2

1. Appointment scheduling
2. Patient check-in
3. Ultrasound testing
4. Patient checkout
5. Film processing
6. Film reading
7. Billing and collection
8. General administration
9. Transportation and setup (Alternative 2 only)
### TABLE 2
Panhandle Regional Medical Center
Activity Cost Detail

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost Driver</th>
<th>Volume</th>
<th>Cost per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment scheduling</td>
<td>Receptionist time</td>
<td>3 minutes</td>
<td>$ .20</td>
</tr>
<tr>
<td>Patient check-in</td>
<td>Receptionist time</td>
<td>5 minutes</td>
<td>.20</td>
</tr>
<tr>
<td>Ultrasound testing</td>
<td>Technician time</td>
<td>45 minutes</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Physician time</td>
<td>1.5 minutes</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>Supplies per procedure</td>
<td>1 packet</td>
<td>9.00</td>
</tr>
<tr>
<td>Patient checkout</td>
<td>Receptionist time</td>
<td>5 minutes</td>
<td>.20</td>
</tr>
<tr>
<td>Film processing</td>
<td>Technician time</td>
<td>10 minutes</td>
<td>.40</td>
</tr>
<tr>
<td>Film reading</td>
<td>Contract terms</td>
<td>per procedure</td>
<td>40.00</td>
</tr>
<tr>
<td>Billing and collection</td>
<td>Overhead costs</td>
<td>per procedure</td>
<td>6.80</td>
</tr>
<tr>
<td>General administration</td>
<td>Overhead costs</td>
<td>per procedure</td>
<td>1.25</td>
</tr>
<tr>
<td>Transportation/setup*</td>
<td>Technician time</td>
<td>6 minutes</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Alternative 2 only

**Notes:**

1. Physician time for testing (15 minutes) is needed for one of every ten patients.
2. Supplies consist of linen, probe cover, gel, film, and print paper.
3. There are no radiologists in the practice. Films will be read by the hospital’s radiologists at a contract fee of $40 per procedure.
4. Billing and collection costs are based on an average cost per medical services bill.
5. General administration costs are based on an estimate of facilities and other administrative costs.
6. Transportation/setup is based on ten procedures per day at each location and includes vehicle operating costs, excluding maintenance.
QUESTIONS

1. Estimate the base case cost of each alternative regarding the provision of ultrasound services. (For now, ignore the discount if three units are purchased.)

2. Which alternative has the lower total cost?

3. What value for travel and setup costs would make the costs of the two alternatives the same?

4. Now consider the 5 percent discount. What impact does this discount have on the decision? What discount amount would make the two alternatives equal in costs?

5. What subjective factors would influence the decision as to which alternative to choose?

6. What is your final decision?