

## **Using a Business Case for Telehealth - a Model for Persuading Decision Makers**

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The role of the champion is frequently encountered in Telehealth literature. It is absolutely essential that a champion be present in any organization which is considering Telehealth technology. One of the problems we have often run into at the Center for Telehealth at the University of New Mexico is, however, how to convince the other decision makers in the organization that they should listen to the champion. Our primary tool for doing this is the Business Case (not to be confused with the Business Plan).

### **What Should Be Included in a Business Case?**

A business case should include “people, process, and technology changes” (Turisco 2000). The case can only be prepared after detailed discussions with the people who will be directly involved. Before preparing the business case, we have to have a thorough knowledge of the processes which will need to be changed or implemented. Even more importantly, we need to be aware of the client’s network and equipment situation. We have to know what needs to be changed and what needs to be added.

The business case should be geared specifically to its intended audience. It should be concise and answer just what the reader (or viewer) needs to know, rather than being a “landfill” of information (Pellesier et al, 2001). Knowing the audience will also guide the technological and financial sophistication of the presentation, and the level of detail.

Costs and revenue (or cost savings) are extremely important parts of a business cases. Much of the literature on business cases is geared more toward for profit enterprises, and thus there is a good deal of discussion about the relative merits of Return on Investment, Internal Rate of Return, Payback Period, and other financial approaches for evaluating projects. All of our projects at the Center for Telehealth have been with non-profit agencies, so our major concern has been to show a positive net cash flow. An analysis which takes into account the time value of money is not usually necessary with non-profits

Intangible benefits can also be important in convincing decision makers (Neumann et al., 1999, and Pellisier et al., 2001). If at all possible, benefits should be quantified in some way (Turisco, 2000). However, it’s better to simply enumerate the various intangible benefits than to go to great extremes to quantify something.

We usually present the business case using PowerPoint slides. We divide the presentation into five major segments.

### **What is Telehealth?**

Usually the audience is, at best, only marginally familiar with the concept of Telehealth. It is therefore essential to introduce and define the concept early in the case. We start with a basic definition, for those who think that Telehealth must have something to do with the telephone:

*Telehealth is the use of electronic information, imaging and communication technologies to provide and support health care when distance separates the participants.*

As an illustration, several terms which may be used in the application can be demonstrated (for instance, teleradiology or teledermatology). This would also be a good point to define “interactive video conferencing” and “store and forward”, and to compare and contrast them. Also, if a lower resolution technology is appropriate for the project, we will talk about videophones.

### **Why Telehealth?**

Now that the audience had a basic idea of what Telehealth is it’s a good time to get more specific and let them know what advantages Telehealth may have for their particular situation.

There are, of course, several general topics which can be customized to fit the application in question. Since we work in New Mexico, a rural state and the fifth largest in the country, distance is almost always an issue. New Mexico is almost 122,000 square miles in area, slightly smaller than New England and New York combined.

Corollary to this, medical services are concentrated in Albuquerque and Santa Fe, in the north central part of the state. So if we point out that, for instance, round trip driving time from Albuquerque to Hobbs is 10 hours, it makes a big impression. This is usually a good spot to show a map of the state, highlighting the potential sites which the organization is considering in relation to the medical centers in Albuquerque.

Our state also faces a shortage of providers, both primary and specialty. The number of providers per 100,000 population in New Mexico is lower than the national average (194 vs. 226). Finally, 29 of our 33 counties are full or partial Health Professional Shortage Areas (HPSA’s).

These factors can be well illustrated in bullet points:

- With a statewide average of 194 physicians per 100,000 population New Mexico falls below the national average of 226
- 64.4% of physicians practice in Bernalillo, Los Alamos and Santa Fe counties. These three counties comprise 38.7% of New Mexico’s population
- The concentration of specialists in the metropolitan centers is even more pronounced. For example, 86% of radiologists reside in Bernalillo, Los Alamos and Santa Fe counties

- 29 of our 33 counties are full or partial HPSA's as defined by the federal Department of Health and Human Services

In this section, we also try to point out some factors which are peculiar to the group to which we are presenting. For instance, in our presentation to the state Department of Corrections, we showed a graph of historical and projected trends in inmate growth. For the county Detention Center, we had a table of non-emergency transports by specialty. In our presentation to the state Medicaid authorities, we showed the CPT codes covered by Medicare and the states which were already reimbursing for Medicaid. In a presentation to the University's Department of Psychiatry, we cited studies showing the efficacy of mental telehealth.

### **Telehealth Costs and Savings**

Costs and savings are the core of the business case, the financial justification for the project. Of course a given organization may decide to go ahead with a project even if the costs exceed the returns. But being able to show savings and income which exceed the costs goes a long way toward convincing decision makers.

Here is where our legwork in the technology area comes in. For instance, with the state Department of Corrections, we proposed that they install a video conferencing system which would be available in all of their statewide facilities. We had, however, determined that their current telecommunications infrastructure would not be sufficient to support this system. There were several issues which brought about this conclusion, for instance:

- Existing network bandwidth was used to capacity
- Committed information rates varied at each facility
- Latency was not proven to meet minimum requirements

We proposed an upgrade to meet the following minimum requirements:

- Simulate an "intranet" with virtual private networks (VPN's), switch virtual circuit (SVC), or private virtual network (PVN)
- Committed Information Rate of 384Kbps with bursting up to 512Kbps to support a single quality connection of interactive video
- Latency must be guaranteed under 250 milliseconds roundtrip
- Quality of service must be guaranteed from the provider and network managers

For an analysis over time, costs can be divided into two types. One-time costs include equipment purchase and installation. Recurring costs include maintenance, telecommunication costs (if applicable), and added personnel costs. It is important to consider the costs at all of the sites. If rural sites are paying telecommunications charges, we always suggest that they apply to USF.

With all of the associated benefits, both internal and external, will the system pay for itself? There are, of course, instances where the system doesn't have to pay for itself. If the benefits are spread across a number of constituencies, some outside agency may be willing to take on at least a partial subsidy for the system. Or there could be some way of charging for services which

would generate the needed cash flow. Usually, though, the major source of funding for the system is cost savings.

When you're rounding up the usual suspects for telehealth savings, the first one to come to mind is transportation costs. If services aren't being provided in a given geographic area someone, the patient or a health care organization, is paying for transportation (of the patient or of the provider).

Our work with the state Corrections Department provides an excellent example of this. Not only are they transporting patients for medical exams, but the patients need to be accompanied by corrections officers. It turned out that the Department had been tracking their transportation activity, and that we could get hard data for the previous year's medical travel from each facility to Albuquerque. The Department was also able to supply some data regarding transport costs:

- Transport cost per mile \$ 0.51
- Average Officer Salary w/ benefits \$18.13
- Average Officers per transport 1.5

They also let us know that, on average, 75% of the officers transporting inmates were being paid overtime. We assumed an average consult time with the health care professional of 3 hours. From this we were able to estimate the annual cost of transporting prisoners for medical reasons, which turned out to be considerable.

Because of training considerations and the lack of availability of specialty and sub-specialty practitioners, most projects have to be phased in. Also, in any system there will always be the necessity for some transports, for instance medical emergencies or hands on therapy. We were able to find evidence which suggested that transports could be reduced by 60-70% in mature corrections systems.

A lesser potential source of cost savings comes in the educational area. Rural health facilities often have to pay transportation, hotel, and per diem in order for the professional personnel to get continuing medical education. To the extent that this can be provided via the telehealth system, there are savings to the rural facility.

Having outlined the all of the costs and demonstrated possible savings, how do the two go together? We show a table with the years as column heads and the various cost and savings items as rows. The first column will be "Year 0", showing a large cost outlay. It is also useful to show the payback period (in which year do the accumulated savings equal the costs?). We also often show the net present value calculated at some minimal cost of capital (4%) to make the accountants feel better.

### **Less Tangible Benefits**

Any telehealth system is likely to have benefits which extend well beyond the organization which is implementing it. For instance, if the system is being instituted by a government agency, it is extremely likely that there would be benefits to other government agencies. At the very least,

any telehealth system is going to result in time and cost savings to patients. With an accurate projection of the number of families involved, this can be quantified.

We like to point out how the network could be an important step toward the formation of a statewide Telehealth alliance. This telehealth alliance could bring together providers of health services to alleviate some of the capacity constraints caused by the shortage of physicians in the state. It could also help to even out the disparities medical services between rural and metropolitan areas in the state.

The lack of affordable broadband could be compensated for by connecting existing and proposed telehealth networks to create a network of networks that will provide broader access and increased connectivity. An alliance of medical, technical and management expertise would also enable the service providers to operate in a well-managed technological and administrative environment leading to a sustainable telehealth system in the state.

In a larger sense, Telehealth projects can be of enormous economic value to a rural state like New Mexico. The development of communications infrastructure can provide access and bandwidth to the communities where facilities are located, many of which currently do not have any type of broadband service. Rural economic development can be a difficult problem when medical services are not available. Providing services via Telehealth could help to convince more employers to locate in rural areas.

Successful projects establish proof of concept to demonstrate the validity of remote delivery systems. Health services and education are both critical issues in rural economic development and both can be delivered over the infrastructure developed to deliver either.

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