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HEALTHCARE

How to get technological innovation used in behavioral healthcare:
Build it and they still might not come.

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Abstract

This article presents models of the diffusion of innovation and how they can assist behavioral health systems and providers in not just acquiring, but implementing technological advances within their organizations. Through the case study of a multimedia substance abuse screening program (the ASI-MV), the authors employ various perspectives on the diffusion of this innovation to illustrate how the early adoption of this technology has taken place in many behavioral healthcare settings. The reasons for the relatively successful diffusion of the ASI-MV, as well as the problems that have impeded even wider use, are addressed.

How to get technological innovation used in behavioral healthcare:

Build it and they still might not come.

The use of an innovation is dependent upon far more than simply “building a better mousetrap.” Although various computer mediated technological advances (e.g., e-mail, online chat, handheld computing devices such as PDAs, multimedia programs, the Internet, and telephone Interactive Voice Recognition or IVR) have been available to those offering healthcare services for quite some time, acceptance has been relatively slow.

In this article, through the case example of a computerized multimedia substance abuse screening program that simulates a human interviewer, we will: describe the early stages of innovation adoption in behavioral healthcare, particularly substance abuse treatment; how and why this innovation has begun to gain acceptance and problems that have yet to be overcome; and discuss theories of innovation diffusion that clarify effective ways to persuade behavioral health systems and practitioners to adopt technological advances that enhance treatment quality and are cost-effective.

Introduction

It is important to note that innovative technologies, even those that far surpass older, less effective methods, are often slow to come into general use. This is not a new phenomenon. In 1834 a London Times editorial about the recently invented stethoscope stated,

“that it will ever come into general use notwithstanding its value is extremely doubtful...because its hue and character are foreign and opposed to all of our habits and associations...There is something even ludicrous in the picture of a gray physician proudly listening through a long tube applied to the patient's thorax.” (McKusick as cited in Thier, 1988)

Aside from issues of propriety, a major concern at the time was that the stethoscope would negatively affect the doctor patient relationship.

In a survey of physician acceptance of multimedia and Internet technologies, aptly titled, “Why doctors hate the Net” (Barrett, 2000), it was reported that relatively few physicians use the Internet for patient care, fearing it would make more work than it saved, and was non-reimbursable time. Another survey (Gillespie, 2001) asked hospital administrators to categorize their organization into one of three groups: 1) those aggressive in implementing new technologies, 2) those that use technologies only after they are proven to work, and 3) those that are risk averse. The results showed that less than 1% of hospitals were in the aggressive adopters category, 15% would wait to implement proven technology, and the remainder, 84%, consider themselves risk averse.

This caution is partly due to fears of being in violation of the Health Insurance Portability and Accountability Act's (HIPAA) confidentiality and security requirements. Until HIPAA compliance priorities are fully dealt with, healthcare organizations are unlikely to embrace multimedia and Internet technologies, especially those involving protected health information. However, this does not explain the reluctance to use

technologies that are not covered by HIPAA and do not involve identifiable patient data, such as multimedia patient education and accessing clinical resources on the Internet.

We have little reason to believe that the situation is greatly different in behavioral health. Due to financial restraints and lack of computer expertise, clinicians rarely have consistent use of computers to access clinical and educational resources, as well as computer assisted client tools. In a controversial area of healthcare delivery, the International Society for Mental Health Online addressed numerous myths about online counseling and reasons for its reluctant adoption in their 2002 report. Their conclusion was:

“...a face-to-face clinician cannot simply step into cyberspace and immediately open a practice - not, at least, if that clinician expects to be as effective as possible. Newcomers will need to educate themselves about the complex techniques of online clinical work, as well as about the culture and resources of the online mental health profession.” (Fenichel, et al., 2002).

However, short of attempting to practice clinical work via the Internet, there are many multimedia and Internet technologies that are not controversial and readily available. Using listserves and email to get expert help with complex situations and learning about “best practices” from web sites of known authorities in the field, are just a few examples.

Although the overall process of integrating computer mediated technologies into the clinical practice of health and behavioral health has been relatively slow, there have

also been areas where such technologies have had extraordinary and rapid impact. The public has embraced the Internet as a place to get much of their healthcare information. In fact, two out of three teens and young people have retrieved health information from the Internet, and four out of ten of these young online health seekers say that they have changed their behaviors because of information that they learned on the Web (Kaiser Family Foundation, 2001). Among the general population of Internet users as many as 86 percent of adults have used it to research information on healthcare or a specific disease (Eng, 2001). Healthcare consumers are seeking to become more empowered by accessing health information when and where they want it - yet many providers are lagging behind.

Diffusion of Innovation

Many authors have long identified great difficulties in transferring scientifically based and cost-effective interventions into the practice of behavioral healthcare and substance abuse treatment (Simpson, 2002; Lamb et al., 1998). In this paper we will apply a “diffusion of innovations” (Rogers, 1995) perspective to the broadening use of a National Institute on Drug Abuse (NIDA) supported and empirically tested computer-mediated interview, the Addiction Severity Index Multimedia Version (ASI-MV: Butler et al., 1998; Butler et al., 2001). A better understanding of the reasons for the relatively successful diffusion of the ASI-MV, and at the same time, problems that have arisen that have impeded even wider use will be addressed.

The Addiction Severity Index (ASI)

Thomas McLellan, Ph.D. and his colleagues began working on the Addiction Severity Index (ASI) as a semi-structured, substance abuse interview in the 1970s. It was first published in 1980 (McLellan et al., 1980) for use in a large outcome study in Philadelphia and it identified problems that did not necessarily relate directly to the substance abuse problem, but must nevertheless be addressed for treatment to be successful. Because its original intent was to measure outcomes of a variety of different treatment modalities and populations, the questions were designed to be generic and cover areas that were likely to change over time as a result of treatment.

The final product is an interview that takes about one hour to administer and 10 to 15 minutes to score. Clients are asked to respond to specific questions about problems they have experienced in the last 30 days and over their lifetime. Clinicians then determine the Severity Ratings in each of seven domains from the answers: medical, employment, drug, alcohol, legal, family/social, and psychiatric. The Severity Ratings range from 0, no real problem-treatment not indicated, to 9, extreme problem-treatment absolutely necessary. In addition, the client is asked to verbally rate their own problem areas and their desire for treatment (McLellan et al., 1992). Composite Scores are also calculated and they are not based upon clinicians' subjective judgment, but instead are derived from an arithmetic formula. They are perceived as more reliable, and can be used to measure change over time in response to treatment. Although McLellan has encouraged the use of Composite Scores, clinicians tend to view Severity Ratings as "more intuitive" and these remain the standard for both clinical and research purposes.

Since the ASI was developed, it has become the most widely used measure of problem severity among clients entering substance abuse treatment. The ASI is required,

or highly recommended, by a large number of states, cities, and large governmental organizations, such as the Veteran's Administration (VA). It has also been translated into 13 languages, and expanded to cover such specialized populations as Native Americans, prisoners, psychiatrically ill substance abusers, and individuals with antisocial personality disorder. We would estimate that each year, in the United States, somewhere between two and three million ASIs are administered.

The Addiction Severity Index Multimedia Version (ASI-MV)

One of the drawbacks to the ASI is that it is time-consuming and expensive to administer. Counselors often resent it, because time that is normally spent counseling patients is instead used for assessment. Another complaint is that the ASI is repetitive to administer, requiring the clinician to ask the same questions several times. The rapid turnover in substance abuse facilities also affects the administration of the ASI, as training for proper administration takes two full days by a qualified instructor. Despite this extensive training, rater inconsistency or drift still occurs over time. With the constant turnover of counselors it becomes cumbersome at best, and impossible at worst, to properly train every new staff member and maintain accuracy of scoring for previously trained counselors. In a series of focus groups done with dozens of substance abuse counselors and managers from around the country, Budman and Butler (as cited in Butler et al., 2001) found that even though many were using the ASI, most resented it, found it costly, tedious, and time consuming, and "cut corners" by using the measure in various improvised ways. For example, one large facility that was forced to use the ASI had it administered by secretaries who had no training at all in its use. At another large system

they were told that the least qualified clinicians were given the task of administering ASIs as a demotion rather than terminating their employment.

In 1995 with a grant from NIDA, Inflexxion (formerly Innovative Training Systems) began development of a multimedia self-report version of the ASI, later to be called the ASI-MV. It was our goal to offer facilities using the ASI a scientifically tested, cost-effective alternative to the human interview version. Basic goals for the development of this tool were to combat the common problems experienced by those using the clinician-administered ASI. We sought to reduce administration time of the assessment by making it a client self-report. This would give back valuable treatment time to the counselor and eliminate both the need for ASI administration training and the problem of rater drift by instituting a standardized scoring system. The ASI-MV took the basic ASI and created a multimedia computer program that simulates the interview process.

The client is taken through each of the seven ASI domains by on-screen guides. Each domain has an individual “virtual interviewer” who asks the questions through the use of video and audio clips. Since the program is computerized, it can also tailor the interview to fit the individual client, by only asking relevant follow-up questions (for example only asking about substances the client previously reported using) and checking for inconsistent answers between related questions. Clients select their answers from options that are presented visually and audibly. The ASI-MV takes approximately 43 minutes to complete (Butler et al., 2001). The clinician can immediately generate and print a narrative report that presents the client’s responses in each domain, in addition to the Composite Scores and Severity Ratings. This 11-page report, in Microsoft Word, is editable so that clinicians can easily add their clinical impressions into the document,

which can then be put directly into the client's file. We see the narrative report as both a summary of the assessment as well as a starting point for treatment planning.

The ASI-MV was tested with 202 clients and found to have excellent reliability and validity (Butler et al., 2001). None of the clients refused to use the computerized program, or were unable to complete the assessment, regardless of literacy or level of computer experience. In fact, we have had a number of illiterate clients who were able to complete the program, all of whom reported feeling a sense of accomplishment in doing so. In an independent study done by McLellan's colleagues (Gurel and Carise, 2001), 89% of the clients preferred using the ASI-MV over the clinician-administered version, and reported that they felt less threatened completing the assessment alone. These initial findings have been reinforced as the ASI-MV use becomes widespread.

The ASI-MV is currently being used in 37 states, as well as over 50 VA facilities. The state of Louisiana's Office for Addictive Disorders is also using the ASI-MV to screen and refer its Temporary Assistance to Needy Families (TANF) recipient population for substance abuse treatment. In more than ten thousand uses in Louisiana alone, no client refused to use the ASI-MV, and only one client was physically unable to complete the assessment due to an organic dysfunction. An enhanced version allowing for treatment planning guidelines, an adolescent version, a Spanish version, and a Chinese version of the program are planned.

These findings indicate that use of ASI-MV can save behavioral healthcare organizations time and money and increase the reliability and validity of data gathered, enabling counselors to spend more time counseling their clients.

Diffusion of Innovation Theory

In 1962 Dr. Everett Rogers published the first edition of his classic work, Diffusion of Innovations. Now in its fourth edition (Rogers, 1995), the book provides a clear conceptual perspective for understanding how and why certain useful innovations may be adopted rapidly, while others languish or are minimally applied even over long periods of time.

There are a variety of characteristics of an innovation that are important in the differences in rates of adoption. Among the most important of these are: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 1995). These factors by themselves account for up to 87% of the variance in how likely a given innovation is to be adopted.

Relative Advantage is essentially a cost-benefit analysis of how useful a given innovation is in comparison to what is already available. Relative advantage may not just be measured in dollars, but can also be measured in prestige, such as “This would make us the most technologically advanced substance abuse treatment system in our area.” or other benefits arising from an innovation. It is useful to note that preventive innovations (e.g., eating disorder prevention in college women) may be a much harder sell. This is because prevention generally takes place over time and, therefore, the benefits and advantages may take extended periods to accrue. It may also be more difficult to gauge whether a positive outcome (or absence of a bad outcome) occurring days, months, or years after a preventive intervention is related to that intervention or other factors. These types of innovations are also harder to distinguish from competing innovations as the lag

between implementation and evaluation of the results often takes a significant period of time that makes comparison difficult.

The ASI-MV has a significant relative advantage to the standard interview ASI. Costs for the multimedia version are about 70 percent less. Therefore, the potential customer can easily see the value of adopting this innovation.

The ASI-MV also has as good or better reliability and validity than the clinician administered version (Budman, 2000; Butler et al., 2001). This is an important variable when scores or information will be used to help determine reimbursement or level of care placement. Finally, the program requires no recalibration or additional rater training - such training may be very costly and time consuming.

Compatibility refers to the degree to which the innovation fits with the existing values, structures, past experiences and needs of potential adopters. We learned early on that if the ASI-MV was going to be used by different treatment systems it had to fit quickly and easily into the infrastructure and values of that system.

We originally viewed the ASI-MV as a standalone program to help facilities meet their ASI requirements in a more accurate and cost-effective way; however, it soon became clear that facilities wanted more. In addition to relative advantage, these facilities also needed the ASI-MV to readily integrate into their existing clinical, administrative and data flow. This meant that the program, which originally had a very minimal report, had to be upgraded with a much more comprehensive and editable clinical report that could be used to help facilities meet third party requirements, such as state substance abuse regulations. It would also help them meet standardized assessment requirements put forth by the Joint Commission on Accreditation of Health Organizations

(JCAHO), the Commission on Accreditation of Rehabilitation Facilities (CARF) and the National Committee for Quality Assurance (NCQA). That is, the ASI-MV report generated by the program needed to be in a narrative format similar to information that could be provided by a human interviewer.

Further, the ASI-MV had to be capable of communicating with existing information management systems and eventually to county or state information systems where the data might need to be used. It had to coexist with current technologies and clinical processes—not disrupt them.

Clinicians needed to feel comfortable that the program was acceptable to their clients and that clients would not feel treated in a cold impersonal manner. Indeed, clients have actually liked self-administering the ASI-MV, and many have reported feeling a sense of mastery with completing a computer program, especially those with no previous computer experience. In a pilot study conducted by McLellan’s colleagues (Gurel and Carise, 2001), 89% of clients preferred the ASI-MV over the clinician-administered approach, 89% stated they liked taking the ASI-MV, and 96% said it was easy to use.

A major objective in designing the ASI-MV was to develop a program that facilitated engaging the client in treatment and building the therapeutic alliance. We emphasized assuring clinicians that the program would not replace them but give them another tool to use as a significant part of their full evaluation process. This would free up more of their time for doing direct clinical work, rather than some of the tedious, repetitive tasks involved in reliably administering and scoring the ASI. Having a number of experienced substance abuse clinicians at Inflexxion helped us to understand what

types of issue with which clinicians are dealing. It also allowed us to work closely with clinicians in integrating this innovation into their broader practice.

No matter how good an innovation in behavioral care is, if it is not readily compatible with the workflow and needs of all relevant stakeholders (e.g., clinicians, administrators, patients) the likelihood of adoption is, in most circumstances, very low. Although many innovations may not be completely compatible on every front, less compatibility leads to greater resistance and lower adoption rates.

An excellent example of an innovation with numerous compatibility problems is the Segway Human Transporter. Developed by Dean Kamen, a wealthy, self-taught inventor with many successful patents, the Segway was billed as a device that would revolutionize transportation and “change civilization.” Looking like a large scooter (or a small chariot) the Segway was viewed by its inventor as an alternative to gas guzzling automobiles, that would lead to no pollution, and be a handy single person form of transportation. One group that Kamen believed would flock to the Segway was postal workers. However, a year after its much-heralded introduction, adoption remains very low. One reason appears to be poor compatibility. This was summarized by a postal worker in Concord, N.H., “You can’t keep warm if you’re not walking. You end up like a frozen popsicle on a stick.” (Keenan, 2003). Additionally, San Francisco has outlawed the Segway for use on public sidewalks for fear that it may injure pedestrians or the handicapped and other municipalities are considering following suite. This means that the device in these areas would need to be used in the street, which then presents safety problems for the rider. (Watercutter, 2003).

Complexity is the degree to which end users perceive the innovation as hard to use. According to Rogers, there is an inverse relationship between perceived complexity and rate of adoption. The ASI-MV was designed to be as easy as possible to use for both the clinician and the client. In developing the original ASI, McLellan felt that because the interview dealt with such sensitive information, the face-to-face contact and support of the clinician was an important element in assisting the interviewee, responding to questions and gathering more in-depth information.

In developing the ASI-MV, we did extensive interviews with expert ASI trainers. These interviews helped us formulate items in such a way that many likely questions are already answered as the question is asked. For example, in an ASI question pertaining to how many days in the last 30 the person spent in a “controlled environment,” the program explains what a controlled environment is and is not. This approach also corrects what clients often perceived as “ambiguous and unclear” counselor explanations (Gurel and Carise, 2001). In addition, the program is colorful and rich with video and audio components. In a virtual city, the interviewee is led by “guides” (on screen people who take the user to different offices) to “meet” with various onscreen interviewers. For example, the medical domain of the ASI is administered by a virtual physician in her office and the employment section by a virtual employment counselor. All questions are read clearly with well-defined explanations and the possible answers are highlighted as they are also read aloud. Since a large percentage of the population of substance abusers in this country have low literacy levels, the ASI-MV was developed so that clients, regardless of education level, reading ability and prior computer experience, can successfully self-administer the interview. To select an answer, the user needs only to

click the mouse on his or her response. At the end of the program, the user receives a printed certificate, indicating they successfully completed the ASI-MV. Clients value this certificate and at some facilities, when a printer was not working or ran out of ink, the clients went out of their way to return for their certificate at a later time.

One hurdle that we had to overcome was that many clinicians viewed computers as inherently complex, especially those with minimal or no experience. For these individuals demonstrated how using the computer was actually less complicated than conducting the interview ASI and coach them on basic computer competencies before introducing the ASI-MV to clients. This is also true for clients who have limited computer experience. We learned that after a brief demonstration (less than two minutes) on how to use the mouse, clients were able to complete the ASI-MV with no assistance.

Trialability is the degree to which the innovation can be tested on a limited basis before making a more comprehensive (and possibly costly) commitment. The ASI-MV has very easy trialability, much greater than the interview ASI. A facility needing to review the program can use the five trial uses provided to get sense of how well the program would fit within their system and how clinicians and clients respond to it. Most ASI-MV customers only used one or two of the free trials before ordering the program. In contrast, doing the interview ASI requires an immediate expensive outlay of funds for staff training. If a facility is committed to collect high quality information via the interview, all staff members who will be administering the ASI need to spend about two days learning it thoroughly from a well-trained expert. This represents a major expenditure of time and money and no possible means of trialability.

The rapid spread of America Online was directly related to its easy trialability. Most people buying a computer during the late 1990s and into the present received a no-cost disk that allowed for up to 1,000 free hours of on-line use. During this extended trial period people set up an email account and begin using AOL for a variety of purposes, all of which make leaving the service at the end of the free period more difficult. They are already intertwined in the benefits of the service and leaving would cause more work than staying. This personal experience with the technology, positive or negative, can even overcome other evidence for or against its adoption.

Observability is the degree to which the results of an innovation are visible to others. Some innovations are highly observable, while other innovations may be perceived and/or understood by very few. For example, Rogers describes safe sex for the prevention of AIDS and sexually transmitted disease as an ambiguous idea with no clear observability. In contrast, he describes the cell phone as highly observable. In the 1980s the earliest cell phones were purchased and used by executives in large corporations because costs were prohibitive (about \$3,000) and having a cell phone came to be associated with high prestige and status. In the first ten years of cell phone use in the United States (1983-1993) over 13 million were sold!

The ASI-MV is a highly observable innovation. Even though the client self-administration of the program is done in private, clinicians, administrators, state officials, and other interested parties can view the program in action and see the output or reports. The clinician time freed up for other activities may be more difficult to observe, but the value of that benefit could be measured in a number of ways, such as tracking the number of assessments completed or surveying clinicians and clients. When the Louisiana Office

for Addictive Disorders used the ASI-MV to screen welfare recipients oriented the staff to the program, a greater percentage of the recipients kept their screening appointment. We attribute this to observability; when the welfare staff was able to “play” with the ASI-MV program, observe some recipients self-administer it and ask questions, they were more apt to present the screening process to the recipient in a positive manner. Center directors who visited facilities and observed the ASI-MV in use, contacted us about bringing it to their centers. Rogers would view ASI-MV as classic observable innovation. You can walk up to it, watch someone using it, see the print out, etc.

Problems in diffusion of the ASI-MV

Although the ASI-MV meets many of Rogers’ criteria for a highly “diffusible” innovation, there have been numerous issues that have impeded broader adoption. From our perspective, Rogers concepts, although quite useful are insufficiently focused upon systems and organizational issues that can greatly affect the likelihood that an innovation will come into widest use. In addition to relative advantage, compatibility, complexity, trialability, and observability we add the following systemically based concepts.

Relevance: Does the function accomplished by the innovation “really” need to be achieved by the healthcare system? A corollary to this point is that doing nothing may be an alternative to improvement/innovation.

Leadership buy-in: Is top leadership committed to change, improvement and/or innovation?

Administrative Complications: Are there covert or overt system agendas that mitigate against innovation?

We learned a great deal about how systems operate over the course of the development and diffusion of the ASI-MV. Although a technology based tool may meet all of Rogers' criteria, there may still be major problems in getting health systems and providers to adopt that innovation. One focus that Rogers did not specifically deal with is the need to examine change both by the individual as well as the organization as separate but related entities.

Relevance: Does the function accomplished by the innovation “really” need to be achieved by the healthcare system? We would estimate that in a large percentage of the states and counties where the ASI is mandated but rarely enforced. A requirement needs to be adhered to only if there are consequences of non-adherence or if the system and the majority of individuals within that system have made a commitment to adherence and/or innovation. Under circumstances in which the tasks addressed by the innovation do not really need to be accomplished, doing nothing is an adequate and often desirable response.

We have had extensive experience in discussing the ASI-MV in states or organizations where there is a requirement “on the books” for its use, however, for a variety of reasons this requirement is never fully enforced. Often, state officials grow tired of struggling with facilities and clinicians about completing the ASI. At the same time, some state substance abuse agencies have not adequately described to providers the purpose of using the ASI, have not provided them with useful feedback, and generally have not made relevant use of the information that they do receive from compliant providers. Although the ASI can be a very valuable tool and the results can be used to substantially impact outcomes (McLellan et al, 1997; Gurel et al, 2001), frequently it is

perceived by providers and state officials as another “hoop” to jump through to meet requirements. Providers have become quite skilled in doing the absolute minimum or using passively resisting demands they disagree with or see as irrelevant to their work. In many provider organizations administrators have little real commitment to getting the ASI done. In the midst of financial cutbacks and other immediate pressures, implementing the ASI often falls to a low priority or is ignored completely. In these systems, there is virtually no likelihood of an innovation like the ASI-MV being adopted, regardless of how useful, cost-effective, and easy it is to use.

Leadership buy-in: Is top leadership committed to change, improvement and/or innovation? In our work developing and diffusing various types of innovative healthcare technologies, we have seen the crucial importance of buy-in from high-level leaders to the success of innovation diffusion. It is rare to see a system that is moving in the direction of making use of innovative technologies without strong leader support. Some leaders are risk averse and rarely make use of any types of tools or strategies until many others have implemented them. Others are what Rogers calls “Early Adopters” and are interested in adopting new approaches that appear to lead to better and more cost-effective outcomes. Although private industry may be more likely to attract Early Adopters, there are individuals in state or local governments with these same characteristics. Unfortunately, in both public and private venues, leadership often tends to be slow to make or allow change, making it very difficult to get buy-in for new innovations, regardless of what lower level leaders desire.

Sometimes the leadership from whom you need to get “buy-in” is not only the leadership “on paper,” but also the opinion leaders (sometimes called thought leaders).

These are people who, because of their status as a trusted source of information and not a title or rank, can influence the adoption of an innovation. Since these leaders are respected for their opinion, their views carry more weight. While complex procedures have been developed to identify opinion leaders (Collins et al., 2000), in terms of the ASI-MV they are more easily identified. The ASI-MV opinion leaders are the people who ask us to provide them with more information to effectively present the product to their supervisors and peers. They are typically the ones who are technically savvy and can easily see the “bigger picture.” Especially in large organizations, top-level administrators can be influenced by the groundswell of provider interest as a reason to commit to making the change work.

These opinion leaders also have hurdles that the adoption and diffusion process must overcome. To get opinion leaders on board with an innovation two specific conditions must be met (Collins et al., 2000). First, they must believe that the recommendations, innovations, or procedures are appropriate and that their clients could benefit from them. Without this first condition being met, opinion leaders have no reason to push for the diffusion of the innovation. Second, there must be evidence available to observe the desired effect, such as measuring improved quality, reduced cost, time savings, increased standardization, etc. When opinion leaders are identified and these two conditions are met, the rate of adoption or adherence to new guidelines is notably higher than when no leader is identified.

Administrative complications: Are there covert or overt system agendas that mitigate against innovation? There are direct and indirect reasons that a system resists innovation. In some parts of the country, reimbursement for substance abuse treatment is

based upon clients' ASI Severity Ratings—the higher the severity the higher the reimbursement. We have been told that it is not uncommon in such situations for clients to be given the “benefit of the doubt” and a higher (better reimbursed) ASI Severity Rating. Since these ratings are subjective, there is considerable room for misjudgment. It is unlikely that such facilities would like these judgments to be made completely automated by a scientifically developed algorithm. Even impartial providers may bias Severity Ratings in order to admit clients to higher levels of care and receive higher reimbursement rate. The hidden agenda of wanting to maximize reimbursement would likely sabotage the adoption and diffusion of the ASI-MV innovation.

Other agendas that may mitigate against innovation often arise when different views are held by an individual and the organizational surface (Hu et al, 2000). Anyone who has worked at a facility when directives for change were handed down, will know that what seems like a good idea from the point of view of an administrator can be very different from the point of view of front-line staff who have to implement the change. For example, in 1970 President Nixon thought it was a good idea to boost morale of the White House Police and foster an air of importance by changing their uniforms. However, the officers thought the uniforms were unsightly costumes and quickly returned to wearing their prior uniforms that they felt signified the importance of their work. Nixon's change directive had the opposite effect of boosting morale and importance and, therefore, was not adopted or diffused. (Fusell, 2002). In the end an innovation won't be adopted unless stakeholders of all levels believe in it and want it to work.

Conclusion

We have learned that the successful adoption and diffusion of innovation involves far more than “building a better mousetrap.” Innovation, especially computer and Internet technologies have had a major impact on our lives and undoubtedly will have a significantly greater role in the future. Financial institutions have succeeded with easing us into wide acceptance and adoption of bank machines as a mainstream vehicle for doing business. This occurred, not by merely installing computers and blocking access to tellers, but by applying Rogers’ concepts on the diffusion of innovation, wittingly or unwittingly. Banks let us observe the computers in operation, offered us individual demonstrations, let us try them out and gave us much information about the relative advantages, such as 24-hour access and speed of operation. Eventually, diffusion required most of us to change the way we interacted with our banks.

To facilitate initial acceptance of the ASI-MV, we also had to encourage providers and organizations to test the program, get feedback from clinicians and clients, demonstrate how it can be effectively used, and provide information about the program’s value and relative advantages, such as increased accuracy of data gathered and lower assessment costs. Once it was accepted, successful diffusion of the ASI-MV required most customers or providers to change the way they interact with their clients, to seamlessly integrate this new technology into their assessment, evaluation, and treatment planning processes. Just the way we generally use bank tellers less for routine tasks, the ASI-MV enables clinicians to spend less time with routine data gathering and more time engaging with their clients and implementing treatment plans.

Computers, multimedia tools, and Internet technologies are likely to become standard tools in behavioral healthcare in the not too distant future. The skillful use of

these tools by clinicians has the potential to standardize and improve the quality of treatment provided, to enhance treatment outcomes, to expand resources for consistent client education and prevention activities, and to save money by more cost-effectively using expensive clinician time. At the same time, managers and administrators will be able to use these technologies to access data in “real time” for more effective decision-making and deployment of valuable resources.

We believe Rogers’ diffusion of innovation concepts and our experiences developing, marketing, selling, and helping customers adopt and diffuse the ASI-MV, can be useful for individuals and organizations faced with technology decisions and difficulties. Attention to Rogers’ critical dynamics for successful innovation diffusion can assist organizations with troubleshooting existing problems and with developing optimal change management plans for implementing new technology innovations.

The growth and diffusion of technological innovations raises theoretical and ethical questions: How to integrate our professionalism with best practice developments and technology innovations; How to positively impact the future of substance abuse treatment and our professional destiny—while carefully maintaining our humanity and respect for the value of the relationship.

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