

Title Slide: Secure Messaging: Lessons Learned

Disclaimer: I am a contractor to the VA. The views presented are my personal opinions, and do not represent official VA policy.

Poll: Think about a typical day. What is your most common method of communication? Face-to-face? Telephone? E-mail? Text Messaging? Web 2.0 Social Networking? (Blogging, U-Tube, Facebook, Twitter, Second Life)

This presentation focuses on applying informatics principles to the many “lessons learned” from experience with healthcare information technology. My observations are based on working with the Department of Veterans Affairs (VA) electronic medical record, known as Veterans Health Information Systems and Technology Architecture (VistA) Computerized Patient Record System (CPRS), and the personal health record known as *My Healthvet*. VA has had automated data processing systems supporting its medical facilities since before 1985, and the enhanced graphical user interface VistA CPRS since 1997. VA launched a personal health record *My Healthvet* pilot in 1998. The national implementation of *My Healthvet* began in 2003. Thus, VA has more than 20 years of experience with an electronic medical record and more than 10 years of experience with a personal health record. This background provides the context for a new e-health clinical service known as Secure Messaging. On the five-year anniversary of *My Healthvet* in 2008, a pilot for Secure Messaging was launched. Secure Messaging will be rolled out nationally in 2010. The first providers will be Primary Care, followed by Home Telehealth Care Coordinators, and Spinal Cord Injury Primary Care Providers. Pharmacists want Primary Care to triage medication questions and send appropriate questions to “Ask a Pharmacist.” The Pharmacists hope to improve their efficiency by handling questions using Secure Messaging rather than telephone calls interrupting their workflow. A Pharmacy Benefits workgroup is working on templates for responses to the most common questions.

Slide 2: E-Health Clinical Service

Business Requirement: Patients can securely electronically communicate with their healthcare team

Policy: Response time is three business days

Technical Requirements: Provide electronic encrypted bi-directional asynchronous communication

Assumption: Secure Messaging is not e-mail

Slide 3: Why?

One way of leveraging Information Technologies to “Extend the Reach” is to respond to patient requests for online communication with their healthcare team by providing Secure Messaging. There are many points of view to consider. Patients tell us they want to extend the common way they communicate to include their healthcare team. Many providers are afraid they will be buried in an avalanche of messages from patients. These fears must be addressed before there will be widespread clinical adoption. The workload burden of enrolling patients in Secure Messaging and measuring success must be factored

in. As users gain experience with Secure Messaging, they refine their expectations and request changes that will make this e-health clinical service more efficient and effective. Since the first increment of pilot sites, over 95 requests for enhancements have been logged. About one third of the requested enhancements have been deployed for user acceptance testing. Along with the test scripts, administrators, healthcare team members, and patients are also asked to complete feedback statements based on the Questionnaire for User Interaction Satisfaction (QUIS) developed by the Human-Computer Interaction Lab (HCIL) at University of Maryland, College Park (see <http://lap.umd.edu/quis/>)

Slide 4: ACSI Survey

How does My Healthevet know what development efforts to focus on?

My Healthevet has measured customer satisfaction using the American Customer Satisfaction Index (ACSI) since October 2007

For the Reporting Period July 1, 2008 – December 31, 2008

Surveys Completed: 48,912

Sampling Percentage (the proportion of site visitors that receive a survey invitation): 4%

Loyalty Factor (how many pages a site visitor must visit before they are eligible to receive a survey): 4

The loyalty factor ensures respondents have experienced enough of a site to be able to complete meaningfully the Customer Satisfaction Survey

Completion Percentage: 17.7%

Slide 5: Feedback

This chart is a summary of the *My Healthevet* Satisfaction Insight Review for the period July 1, 2008 – December 31, 2008

The results of this analysis enable *My Healthevet* to **diagnose and prioritize areas for improvement** by identifying the impact of change on satisfaction and customers' future behavior

This visual representation of survey data clearly shows that Search and Navigation are top-priority elements because they both have high impact scores and the most room for improvement

Improvement in functionality would have the third greatest effect on satisfaction

Custom questions provide information about key site audiences, and allow profiling with respect to the site and what users want

Looking at comments and asking custom questions further refines our understanding what users want

Slide 6: What Patients Want

Researchers interested in finding ways to encourage health promotion and disease prevention behaviors wanted to know patients preferences for communication

The largest percentages of visitors prefer an email communication to learn more about health screening tests, either from their doctor or health care team (54%) or from the VA or My Healthvet (51%)

About 46% would like information through a personal contact from their doctor or health care team

Recommendation based on the data: Consider offering emails to inform patients about health screening testing

Suggested improvements from visitors with the furthest commute to a VA facility:

"Contact with my doctor online with questions, ordering med. refills that have expired, and anything that can be taken care of online. Have you checked the price of fuel lately?"

"I live 100 miles from the VA Hospital. Written communication between my Doctor and me. I have had 3 strokes and have bad memory."

"The capability to communicate directly with my provider. I live outside the country and it is not always convenient to get information, etc."

"Complete interactive access with appointments and staff after in person verification. VA facility is too far from my home for frequent visits and telephone contact is quite often too lengthy in wait time or call back time."

Slide 7: [Liverpool Cathedral – Lawrence I. Charters]

Cathedrals are grand. However, do we need grandeur or practicality?

Given that patients want the ability to communicate online in writing directly with their provider and healthcare staff, what should that look like?

If the analogy is e-mail, the expectation on the part of users is the full functionality of an e-mail system

One lesson learned is that the requirements specifically stated secure messaging did not have to have all the functionality of e-mail. However, when the first iteration of secure messaging was deployed, over half of the enhancements requested were to make secure messaging function like an e-mail system. If this requirement had been explicit from the beginning, a better solution might have been to look at the build vs. buy options. Instead of reinventing that wheel, a possible technical solution could be to provide encryption of an existing e-mail system

For example, Public Key Infrastructure (PKI) supports message encryption and digital signatures that ensure transactional security

Why not require the healthcare team and patients to use PKI to protect health information?

After all, PKI enables a community of users to communicate and transact dynamically, securely, reliably and cost-effectively

Limiting factor: This solution requires a technical level of sophistication beyond the capability of the average patient

Slide 8: [Millennium Dome – Lawrence I. Charters]

Making the world's largest something or other that covers everything may not be the best choice

The decision was made to limit secure messaging functionality to a core set of essential features

The lesson learned is that this choice requires stakeholder expectation management when doing training and when promoting this e-Health clinical service

The challenge is to define what is essential for adoption by the healthcare team and by patients

If Secure Messaging is too cumbersome or too limited to support clinical workflow, the healthcare team will not adopt it

If where to find Secure Messaging is not obvious to patients, they will go through the process of creating an account, being in-person authenticated, being staged, and then never opt-in because they cannot find the service

The benefit has to be worth the amount of effort it takes to use this feature

Slide 9: [Dover Castle – Lawrence I. Charters]

People say they want cathedrals, but we should build them something sturdy that lasts
William the Conqueror started Dover Castle almost a thousand years ago

This structure endures because it serves its purpose well, it is located in the right place to support its function, and it is low maintenance

In order for secure messaging to endure, it also needs to serve its purpose well, be located in the right place to support workflow, and be robust

Notice how secure the contents of the castle are – access is limited, controlled, and monitored

Patient communication should have the same level of protection

Slide 10: [Coventry – Lawrence I. Charters]

When we go for style over substance, reality can beat us down

One lesson learned is that although the application performs as specified, users do not follow the assumptions underlying the requirements

Another lesson learned is that when we did the tabletop exercises walking members of the healthcare team through their workflow, we should have included at least one patient

There are 95 requests for enhancements users (patients and the healthcare team) would like to see before Secure Messaging is released nationally

Of those 95 change requests, 27 are in a 6 week testing cycle now and should be implemented this calendar year

Another set are in development, and the evaluation data may lead to additional enhancements or changes to existing enhancement requests

Slide 11: Fact Sheet

One lesson learned is that outreach and training material should not use e-mail as an analogy because there are 17 ways in which secure messaging is not like e-mail
Using the analogy of e-mail sets up the wrong expectations, and makes clinical adoption unlikely due to a crisis of rising expectations

Training is a critical factor for clinical adoption, for both patients and staff

Artifacts produced in support of Secure Messaging include:

- How To – Secure Messaging for Patient Users
- Secure Messaging Patient User Manual
- Quick Reference Guide for Secure Messaging Staff
- How To – Secure Messaging Admin Functions
- LiveMeeting Recording of Secure Messaging Admin Training
- Script for LiveMeeting Secure Messaging Admin Training
- Quick Reference Guide for Secure Messaging Admin Functions
- Secure Messaging Admin Functions Presentation

Web-Based Training (WBT) modules

- Patients
- Facility My Healthvet Points of Contact
- Healthcare Team Members
- SM Administrators

Clinical Adoption Secure Messaging Application Toolkit

- Checklists
- Timelines
- Guidelines for implementation
- Materials

When enhancements are made, all of the artifacts need to be reviewed and updated as appropriate

Some of the pilot healthcare team participants are concerned that “too much stuff” is provided

Perhaps the true issue is how the supporting material is presented – that users are task focused, so material that does not support the task is a distraction

Some of the QUIS evaluation statements are focused on getting feedback to help guide development and presentation of artifacts

Slide 12: Fact Sheet

One lesson learned is that many patients never found the secure messaging tab so an enhancement made the tab more prominent and the order of presentation in the training material was adjusted to give more emphasis on the initial access process

Secure Messaging must be part of the patient’s health behavior workflow

To access Secure Messaging, the registered, in-person authenticated, staged patient logs on to their personal health record and selects the Get Care tab

Then they select the Secure Messaging sub-tab

A recommended change to this process is to bring the patient in one time to get everything done and helps them log-on for the first time to make sure they opt-in

Limiting factor: There is only one person staging patients, and she is only available through e-mail according to the contract

There is no coverage if she is not available

Slide 13: Seamless

One lesson learned is that the requirement to have access to secure messaging seamless was “spot on”

The transition to a different server dedicated to Secure Messaging is seamless

Simply click on the button to go to the Inbox

Slide 14: Terms & Conditions

One lesson learned is that the Opt In for use of this feature is a critical success factor

The first time a patient uses Secure Messaging, they must agree to the Terms and Conditions in order to enter

If they “Opt Out,” they will not be allowed to access Secure Messaging

They may opt out at a later point in time by going into their Preferences

If the Terms and Conditions change, the patient will see the new version when they try to access their Inbox

One lesson learned is that the training has been effective in making sure patients know Secure Messaging is not for communicating urgent or life threatening issues

This is a Risk Mitigation strategy for patient safety as the healthcare team has three business days to respond to a secure message

Another lesson learned is that although clinicians wanted to make sure there was a provision for blocking someone from using Secure Messaging, there has not yet been an instance where this policy was exercised

This agreement sets boundaries and gives the consequences for certain behavior:

“Violations may result in being blocked from using Secure Messaging.”

Slide 15: Preferences

One lesson learned is that patient training should emphasize how the user can elect to receive email notification of the arrival of new messages

The recommendation is to set this up as part of the initial log on process done at the facility so there is support

This is very important because the frequency of Secure Messages is low, so users are not rewarded for checking frequently

Another lesson learned is that there needs to be a feedback loop for clinical staff when a patient Opt Out and there needs to be a person who can access a providers incomplete messages should the provider Opt Out (as occurs when they leave)

Slide 16: Notification

The message that arrives in the designated email account is from “MHV-Secure-Message-No-Response” and the title is My Healthvet Secure Messaging – New Messages”

There is no content other than the notification that you have new messages

The user must log on to My Health^eVet and select Secure Messaging in order to read the message

Slide 17: Patient Inbox

One lesson learned is that ideally, a member of the healthcare team will initiate the first message, otherwise the first time a patient goes into the Inbox, it will be empty
If there is a message waiting for them, patients will respond to it, reinforcing use of secure messaging
If there is nothing in the Inbox, the first action most patients take is to click on the New Message button

Slide 18: Send a Message

This patient has created custom folders
Unlike e-mail, Secure Messaging limits the patient to a dropdown list of who can be e-mailed
The default is the triage team
One message learned is that very few patients use the templates, which has implications for training
Unlike e-mail, Secure Messaging offers predefined templates for messages
Use of templates is important for three reasons
 Streamline communication and minimize work on the part of the patient – many patients are not good at typing
 Streamline communication and minimize work on the part of the healthcare team – providers want to copy certain messages into progress notes
 Track messages by title to see what patients are using it for (Evaluation)
Note the patient safety feature of reminding patients not to use secure messaging for urgent or critical communication

Slide 19: Templates

One lesson learned is that the direction to “Select a Message Format” – is not a user-friendly instruction
Another lesson learned is that there are major training implications in getting patients to use the templates – if they are thinking in terms of e-mail they are not thinking in terms of using templates
The clinical staff thought these seven templates would cover the majority of topics
 Administrative Question
 Appointment Request
 Change of Address Request
 Health Information Question
 Lab or Test Results Question
 Medication Prescription Question

The titles are in alphabetical order – One lesson learned is that the titles should be in order-based frequency of use, which means there must be a way to report template usage data

Pharmacists want to modify the title Medication Prescription Question to read Medication Question, and add some options to this template

Slide 20: [Ambleside – Lawrence I. Charters]

An example of an ingenious solution: when taxes are based on land use, build over water
One lesson learned is that if there is no incentive to use the templates and the user is used to entering free text that is what the user will do

Feedback to reward use of templates will reinforce that behavior, which has training implications for the healthcare team

People do what makes sense to them

People are creature of habit

Slide 21: Appointment Request

One lesson learned is that a radio button or check box would make more sense than the current template, which requires the user to enter an “X” between the brackets

Radio buttons and check boxes are not supported in this application

Here is an example of a request to schedule a routine appointment

Slide 22: Reply to Question

This is what the Inbox looks like when there are messages

Clicking on the message opens it

Slide 23: Read Message

One lesson learned is that if the goal is to minimize long message strings and avoid messages with multiple topics this has training implications

One of the enhancements requested is to copy only part of a message

The original requirement was to copy the entire message into the electronic medical record

Another enhancement is to copy formatted data from the electronic medical record into the secure message, which functions like a text editor and does not have formatting

The original requirements were completed before the initiative to provide lab results to patients within a set period

Laboratory extracts are complete but may not be deployed until there is a policy change

Slide 24: Workflow

One lesson learned is that the healthcare team needs to understand what it means when they see the My HealthVet flag on the electronic medical record coversheet

This is how the healthcare team knows which patients are using the personal health record

According to the electronic medical record, this patient is a candidate for using secure messaging, so the clinician can encourage that behavior

Slide 25: Healthcare Team

To integrate Secure Messaging into clinical workflow, the option to go to Secure Messaging is on the dropdown menu of the electronic medical record, VistA CPRS

Slide 26: Healthcare Team Access

Selecting Secure Messaging from the Toolbar brings the healthcare team member to the login page with directions for what to enter and where to go for assistance

Clinicians prefer a single sign-on and Clinical Content of Work could make this workflow safer and more streamlined

Slide 27: Triage

One lesson learned is that training for the healthcare team needs to emphasize the aspects of secure messaging that are not like e-mail

Unlike e-mail, Secure Messaging assigns a Message ID# for tracking purposes

A Secure Message can be moved to a deleted folder, but it is never truly deleted

The healthcare team has almost all the options the patient sees, plus additional options for triage, to save the message as a progress note, and to track messages that have been completed or that not been resolved after three business days

Slide 28: Progress Note

One of the enhancements requested is the ability to save only part of the Secure Message as a VistA CPRS Progress Note and not the entire string, which may get lengthy and have multiple topics included

The Progress Note can be set up to generate workload credit automatically when it is saved to a clinic with a stop code

Slide 29: Surrogate

Because the business rule is that messages must be addressed within three business days, it is important for a provider to assign a surrogate to cover Secure Messages if the provider will be gone for more than three days

The healthcare team has the ability to create groups to receive Secure Messages

These are the triage teams

The healthcare team can customize the view of types of messages displayed in the Inbox, which is a critical factor for clinical adoption

Slide 30: [Paternoster – Lawrence I. Charters]

Sometimes, simple solutions lead to marvelous creations, such as the continuously operating, energy efficient paternoster elevator

Slide 31: [Methodist Hall – Lawrence I. Charters]

This building is both functional and grand

Evaluation of secure messaging should include all types of users, administrators using the Admin Portal, healthcare team members (clerks, nurses, clinicians), and patients

Evaluation of secure messaging should include both hard data, such as transactions, and soft data, such as anecdotes from interviews and focus groups

Slide 32: Dashboard Header

For the healthcare team to stay engaged, feedback is essential

What does the healthcare team need to know in order to make use of the data?

Period of time covered and personnel

Slide 33: Dashboard Snapshot

What data reflects routine operation and effect on workload?

How many messages, who touches them, how many are completed, by whom

Slide 34: Risk Monitoring

What are the markers for a potential problem?

Compliance with and violations of, business rules as a trend over time

Slide 35: [Amoeba – Public Domain]

When life presents challenges, find a way around the barriers

Slide 36: Check It Out!

Take a My HealthVet test drive using the Demo account