From Information Exchange to Sensemaking: A Thematic Analysis of Secure Messages between Patients and Providers

Holly J. Lanham, PhD, MBA, The University of Texas Health Science Center San Antonio; McCombs School of Business, Department of Information, Risk, & Operations Management
Luci K. Leykum, MD, MBA, MSc, South Texas Veterans Health Care System; The University of Texas Health Science Center San Antonio; McCombs School of Business, Department of Information, Risk, & Operations Management
Jacqueline A. Pugh, MD, South Texas Veterans Health Care System, The University of Texas Health Science Center San Antonio

Research Objective
Secure messaging (SM) is a server-based approach to exchanging data between patients and providers in a private and protected manner, and its use is a VA priority. To date, SM adoption by Veterans is low, and when used, considerable heterogeneity in usage patterns and content exists. Health IT acceptance and use knowledge is under rapid construction and better understandings of the role of technologies such as SM in improving health care delivery are needed.

Study Design
We examine SM use as a dynamic interdependency-level phenomenon situated in the context of all other communication Veterans have with their PACT, the VA’s version of a Patient Centered Medical Home. We conducted a thematic analysis grounded in complexity science of 100 SM threads sent in the South Texas Veterans Health Care System between November 1, 2013 and December 15, 2013. We detected patterns in Veteran-PACT communication, particularly in terms of the purpose(s) of the SM (the nature of the problems or issues raised in the message), the responses to Veteran initiated messages by PACT members, and the tone match/mismatch between Veteran-PACT member SM content. To follow up on messages that appeared unresolved, we conducted chart audits. Chart audits were used to determine whether or not the issue raised via SM was ultimately addressed (e.g. via an office visit, scheduled subspecialty outpatient visit, phone call, etc.).

Population Studied
Secure message content between Veterans and their Patient Aligned Care Teams in 11 south Texas VA clinics.

Principal Findings
Analysis resulted in four main categories. Categories pertained to whether issues raised via SM were resolved/unresolved, urgent/non-urgent, and matched/unmatched in tone between Veteran SM content and PACT member SM content. We also found themes pertaining to information and uncertainty management, resulting in four sub-categories: information exchange, problem
solving, sensemaking and relationship building. These strategies emerged from the
data and were informed by the uncertainty and information management literature.

1. **Unresolved Problems**: Problems initiated in a SM thread were sometimes not
resolved in that same SM thread, and may have gone unresolved. It was not possible
to tell from the original SM thread whether the problem was resolved in another SM
thread started by a provider, for example, or by a phone call or face-to-face visit – or
if the problem went unresolved. This occurred in 11/100 threads.

2. **Urgent Medical Issues**. Despite the education, training and warnings by the VA
to Veterans to not use SM for urgent medical matters, some are using SM for urgent
or complex medical issues. We noted this behavior in 3/100 threads. Particularly
troubling was the observation that sometimes the PACT response to these messages
was days later, sometimes even beyond the 72-hour response window.

3. **Mismatches in Tone between Veterans and PACTs**: Messages from Veterans
that included personal, emotional or mental health details, or that were of an
interpersonal writing style that provided abundant detail. PACT responses to these
messages were often brief and curt in tone, which came as a surprise given the tone
and/or content of some of the Veteran initiated messages. This occurred in 10/100
threads.

4. **Information and Uncertainty Management Strategies**: We detected themes on
uncertainty and its management. In doing so, we identified four categories of
information and uncertainty management. SM content was then categorized as one
of four information and uncertainty management strategies: *information exchange,*
*problem solving,* *sensemaking,* and *relationship building*. These strategies emerged from
the data and were informed by the uncertainty and information management
literature.

<table>
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<tr>
<th>Table 1. Summary of Thematic Analysis Findings.</th>
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<tbody>
<tr>
<td><strong>Themes</strong></td>
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<td><strong>UNRESOLVED PROBLEMS</strong> (11/100)</td>
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<td>Example SM Content: “I have been seeing double vision 3 or 4 times every day for 2 to 4 minutes each time. For the past week I have been getting light headed just doing chores. My carpal tunnel supports need replacement please both of them. Thank you. Response: None</td>
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<td><strong>URGENT MEDICAL ISSUES</strong> (3/100)</td>
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<td>Example SM Content: “Dr ____, This morning I was to have an endoscopy but it was cancelled due extremely high blood pressure. I am faithfully taking my meds each morning around 9-9:30. I took the pills as directed this morning at 6am and arrived at the VA around 6:45am. My blood pressure was 208/110 and came down to 186/100 and then back up to the 200+ range. The endoscopy was cancelled. The chief of endoscopy was quite concerned as I was because I took my meds and have been taking them like I said – every morning. Now, I have had a lot of stress in the last 3 weeks. My father died and my brother and I are trying to get things…” Patient then goes on to describe death in the family plus other somber matters…</td>
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<tr>
<td><strong>MISMATCHES IN TONE</strong> (10/100)</td>
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<td>Example SM Content: “Long, detailed, multi-problem message with short response from PACT nurse – “Will forward your concern to the doctor.”</td>
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### INFORMATION EXCHANGE (34/100)

**Example SM Content**: "would like to request a consult to be placed with physical therapy for "dolphin stem" treatment to help with scar tissue buildup post total knee replacement. Thank you."

**Example SM Content**: "I have tried to call and cancel throughout the weekend with no avail. I will not be able to make my appointment this afternoon. Please be sure to cancel it for me. Thank you."

### PROBLEM SOLVING (38/100)

**Example SM Content**: "I have a nasty head cold. My nose is running constantly, sneezing, ache all over. Is there any over the counter meds I can take to help that won’t react with the medications I’m taking?"

**Example SM Content**: "my omeperzole has change there giving only filled my last script with 1 cap 10 mg a day. I need my coverage TID due to my frequent feeding cause of my gastric bypass surgery. I have heart burn without why was it changed. Also can you send prosthetic a script for diabetic shoes they said my last script expired. Thank you."

### SENSEMAKING (10/100)

**Example SM Content**: "Hi Team ____, I had a CT scan of my chest last week and was able to look at the results online. Saw some words that make me uneasy, can you give me a quick email with your impressions and summary?"

**Example SM Content**: "Dr ____, I just wanted you to know that I had my Methacholine challenge test yesterday. I was confused when the tech said it showed I DON’T have asthma. I was wheezing and a 72-year-old lifetime smoker by the last test. Then she gave me a dose of Albuterol, which cleared me right up and enabled me to blow the last spirometry test away. It that tightness and wheezing was not asthma, then what was it? I know we’ll be able to talk about this next week at our appointment.

**Example SM Content**: "The reason I kept going to my mental health doctor, was not because I wanted to, it was because I needed to. I have serious problems with depression. I cry for no reason and have thoughts of suicide, I just want to lay in bed and do nothing, and I don’t even want my son (who I love with all my heart) around me. I am taking Fluoxetine on a regular basis now and I’m still having bouts of depression. I really wasn’t relaying this very well with my doctor, mainly because I wasn’t having a ‘dark day’ when I saw him. I need something to help with all these bouts that I have. It’s an ongoing thing. Please help. I don’t know why I keep having these."

### RELATIONSHIP BUILDING (6/100)

**Example SM Content**: "I would like to set up this line of communication so that my appoints in the future will not be overlooked. Also I would like to apologize to ____ staff for my forgetting and missing my 11/19/13 appointment. Now that I have access to this Web page all my important information is in one place. Sincerely, ____"

**Example SM Content**: "Hey there young man. You all ready for Christmas? If you are, you got me beat. ______, you didn’t do a dam thing wrong my friend. Something was blocking the messages from coming through to me, that’s it. Now as you can tell, everything is back to working just fine. Thank you for your help and patience."

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**Conclusions**
Understanding the extent to which problems initiated via SM go unresolved, or are resolved via another communication tool, is an important piece of the puzzle for understanding 1) the role of SM in the patient-provider team communication toolbox and 2) potential unintended consequences of SM. Likewise, understanding the extent to which Veterans are using SM to communicate urgent medical matters is important, particularly given the 72-hour response time given to PACTs and the potential link to increased care utilization and patient safety concerns.

**Implications for Policy, Delivery or Practice**
The patterns identified in this analysis shed light on potential new patient safety concerns, particularly if communicating via SM is ill suited to address some issues.
raised by patients. Research questions that emerge from this analysis are: What are the communication strengths/weaknesses of SM? How can one limit the introduction of new, unanticipated patient safety concerns involving SM use? If an issue a patient raises via SM goes unresolved, what are the patient safety and patient engagement implications? Similarly, does a tone mismatch between patients and their provider teams result in decreased patient satisfaction or patient activation?