

Online Patient / Provider Messaging Systems

Enhancing Asynchronous Internet Communication with Information Technology

The Internet provides a convenient way to address the patients' need for communication

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Online patient / provider communication has a number of barriers, but also a wealth of opportunities. After a brief background, the majority of the paper concerns three important information technology tools that enhance Internet asynchronous communication between patient and provider: Content Management- the use of predetermined content. Message Flow Management- the use of message routing systems. Quality Management- the use of quality matrices and reports.

Background

Providers and patients have been exchanging letters since at least the 17th or 18th century¹ and letters are still a recommended means of communication.²

There are a variety of reasons patients would want to communicate with their provider outside of an office visit. There are some things that do not require a office visit. Sometimes a scheduling conflict will preclude an office visit.³ For a variety of reasons, patients may need more information than the provider gave in the office.⁴ It may be as simple as providers forgetting to cover material. However, it may also be that the patient was not able to ask questions they had-providers often control the conversation⁵ and patients will not counter them.⁶ Patients may feel awkward in the office, or in a face to face environment (^{7 8 9}) Patients can be the ones that forget what was told them.¹⁰ Patients may want an easy way to share the information with others.¹¹ Patients may simply want more information than they received.¹²

outside of the office and brings well know advantages,¹³ including cost savings.¹⁴ Email is so desirable to patients that they consider it an important aspect in their choice of provider.¹⁵

While email is often the means of much Internet communication, it is not secure.¹⁶ HIPAA does not allow Protected Health Information to be transmitted unencrypted and there needs to be authentication to be sure the appropriate parties are involved. Thus, insecure email is not appropriate.¹⁷ While HIPAA does not require a certain encryption method,¹⁸ modern web browsers allow for encrypted communication using Single Socket Layer.¹⁹ Using a web browser to login, view, and create messages, sometimes called "Web Messaging", is secure. A patient may get an email telling them to log into their web messaging site, but the email itself would not contain any healthcare related information.

Using web messaging allows the patient to use other abilities of a web browser including forms. As well shall see, this more formally structured means of communication allows for more automation.²⁰ However, to answer a possible criticism, electronic surveys need not seem impersonal, and have been found in some cases to get more sensitive and complete answers than face to face meetings.²¹

Content Management

Patients should expect each web message to include several things:²²

The identity of staff and clinicians who have or may see the message.

The ability to contact the clinician directly.

Information on how to escalate the issue in case of an emergency.

Request that the patient acknowledge that they read the message.

These sorts of items can be placed automatically within the message by the messaging application, saving the author time.

Further, this same technology can also be used to place other information in the message, saving the author more time, and giving the patient more and better information.

Pre-made content, or templates, can be used to convey common information. The templates are carefully created beforehand, but then they can be used over again. Time that is spent designing them is recovered later. The well designed template allows for better patient satisfaction and outcomes. Templates can be made to follow evidence based medicine, giving the patient the best information available.

It is not enough to have information simply dumped automatically into a message for a patient. Many communications are simply too complex for that.

Although the template may provide the correct evidence based medicine, some clinicians feel that strictly following evidence based medicine does not allow for their clinical experience and opinion which helps the individual patient.²³ There are other aspects, such as experiential evidence, pathophysiologic rationale, and patient's goals and values that need to have equal priority.²⁴

To prevent miscommunication and allow the author to include other matters within the message, templates would be presented to the author and not automatically placed in the text. A template palette would provide an opportunity, but not a necessity for use. One could choose content from several that are offered. They could also be edited before being sent to a patient. They may serve as an example, a guideline. Templates, at the very least, may serve as a caution. Similar to an alert during CPOE, a warning in template can be more of a benefit than a nuisance.²⁵

Patients should expect information pertinent to themselves. Information should be tailored to

their individuality. Tailored information is the most useful in that it has been shown to help behavior change.²⁶ The medical profession recognizes the importance of this.²⁷ A proper messaging system should provide tailoring.

In order to tailor information, one needs to understand the preferences of the individual (which may change over time.) One could get some of that information from the patient's clinical data or EMR.^{28 29} One could ask about their current state when they login.³⁰ One could administer assessments prior to, or even along with the messaging. Tailoring can be even more dynamic, with information based on past messaging history.³¹

Templates can be created to apply to a number of different tailoring factors, and based on the patient's preferences, be displayed to the author for potential use.

Templates can be oriented towards different cultural, or health belief systems. There can be several versions written for different grade, or health literacy, levels. They can be written in such a way to help bridge the difference between the medical profession's concept of disease and patient's experience of illness.

Templates could be written in other languages, with the literal translation provided to the physician. General information could be passed along in this manner...more individual information would still need a translator.

Templates can be made to assist those with disabilities. Perhaps they could be written specifically for access via a screen reader or even include audio files.

Templates can be created in light of a patient's learning styles. This may be as simple as using a graphic to help describe risk,³² or even providing multimedia snippets that would allow for a greater amount of learning styles.³³

Templates can be designed with different behavioral change theories in mind.³⁴ For example, by knowing the Transtheoretical stage a patient is in, one could successfully tailor the intervention (message) to that patient's level.³⁵

Templates could be configured to help build patient/provider relationships. Using guidelines and examples from the shared decision making

field,³⁶ these can be more broadly focused on other types of communication.

Templates can also be made to remind providers that some issues, HIV, Workman's Comp., mental illness, may be better discussed in other manners.³⁷

Templates can be designed to help elicit measurable outcomes and measurable satisfaction. Patients can be asked to do certain actions and record the results within the web message.

Templates can be automatically populated from other business systems,³⁸ such as scheduling or the billing department.

Once the content has been chosen for the patient, and any editing and custom information included, the application can do several additional things. Similar to a spell check, the text could be matched against consumer health vocabulary.³⁹ This could flag certain terms and offer more appropriate words. The text can finally be scanned to see if it is written at an appropriate level.⁴⁰ Messages could also be set so that they must be reviewed by others, senior staff, prior to being published.

Message Flow Management

Information Technology allows computers to automate response and routing of messages.

All incoming messages should be responded to quickly with the following information:^{41 42}

- The message was received.
- Information on how to get immediate assistance
- If directed to a particular individual, a response if they are out of the office.
- Estimated response time.

Other automated messages may be originated by the provider. These may include: appointment confirmation, prescription refills, lab result communication (when OK) and appointment scheduling.⁴³ Clinical Reminders can be tied to the messaging system to send request for appointments.⁴⁴

Incoming messages can be forwarded to the appropriate staff/clinician member or often more appropriately the proper role,⁴⁵ in case an individual is not available. This allows for more flexible staffing as well as getting the message to the area that can best answer it. Just who sees/answers messages needs to be well understood and agreed to by both provider and patient, as they often have a different perspective on just what is appropriate.⁴⁶

Indeed, these and other sorts of issues need to be dealt with prior to the patient and provider communicating.⁴⁷ Messaging applications can be made to not allow communication until this sort of discussion has happened and agreement documented. Further, there may be other guidelines that may need to be followed in order to have proper communication. A messaging system with work flow rules can help assure things happen as they should. In the past, providers have not been as careful as they should about following communication guidelines.⁴⁸

All messages can be automatically archived and associated with the patient. Patients may need to be given the ability to append notes to their messages, or even remove them.⁴⁹ A messaging application must be flexible enough to accommodate this.

Patients and providers should be placed into categories, or risk groups. This will allow the messaging application to help prioritize who gets attended to first.⁵⁰ A quick survey as to the patient's emotional status upon logging in may be similarly beneficial.⁵¹ Categories will also allow for communication (blind carbon copied) about issues that effect entire groups.⁵²

Other ways a messaging application can help workflow (found in current Customer Relationship Management software used in customer service centers) include: Tracking patient issues until they are resolved. Alert providers about certain issues in the patient's record.⁵³ Send alerts if a message remains unresolved in a given time frame. Automatically detecting powerful emotions and giving those messages higher priority. Archiving messages in a database to help find and preserve the communication history.⁵⁴

However, as messaging applications become more automated, one must be careful that they

do not pass judgment. Too much automation, without human intervention could raise ethical concerns. If a messaging system goes beyond “general accounting or communication functions” they will be subject to FDA regulation.⁵⁵

Quality Management

As noted, templates can be written in such a way as to allow one to measure outcomes as well as patient satisfaction/dissatisfaction. Further, actual surveys for these topics can be included, by choice or automatically into the message.

Surveys, or quizzes can also be used to assess the patient (or provider’s) understanding of the situation. Patients can be asked to reiterate drug dosages; physicians can be asked if they have covered certain information.

There is a need for such satisfaction surveys, as patients and physicians may have very different opinions.⁵⁶ While self administered satisfaction tests can be good,⁵⁷ the messaging system could be set up to notify a third party to conduct the survey, online or over the phone.⁵⁸

Surveys can be administered to both patient and provider in order to capture a more complete understanding of the situation.

Surveys sent to patients can be done with every message or can be based on rules.⁵⁹ Follow up messages and surveys can be issued automatically several days or weeks later.

Other quality measures can be gleaned from workflow data: Average response time is an important issue to patients, who generally would like a response in two business days or sooner.⁶⁰ ⁶¹ ⁶² Current pending messages can help with staff scheduling. The number of messages per issue, may be an indicator of poor communication on the part of the patient or provider, suggesting a different mode of communication or further training. Viewing the types of messages over a cross section of the population may indicate trends (for both patients and providers.)

The quality indicating data can then be displayed by the web application in a number of ways: Text or graphs, live dashboard displays, or

alerts.⁶³ This provides information the way individuals may require.

One will use these measures to further refine the system, its templates, workflow rules, and measures of quality.

Discussion

How would all this play out for patients?

I think the biggest issue is that patients need to understand the system prior to using it. We want patients to understand that “canned” messages, and despite our best efforts they will seem “canned” to experienced consumers, may have information that is particularly relevant to the individual. We do not want to put a patient in the position from the start of not using the message system because they are put off by the way content is created.

Patients need to know how the use of templates, workflow, and quality measures help the provider assist the patient. In part this is to “set patient expectations,” but in a broader sense, it allows the patient not to feel stuck within the system. Armed with this knowledge, a patient may have more self efficacy with regards to using the system. Further, they may more constructively critique the system to make it better.

For patients without the proper Internet connection, or none at all, much of the valuable tailored information could be printed out, faxed, displayed on a kiosk in the clinic, or even stored on a DVD (to preserve multi media content) and played on a less expensive DVD player. This may preclude the timeliness of the communication. However, the system is much more powerful than just a way to exchange email. Its information can be provided in other ways to help get past issues of access.

How will this play out for providers?

There are two major issues for providers that I have not addressed: How is such a system paid for, and how is it maintained.

A web messaging system that I have described would be a major endeavor, touching all areas of

a provider's healthcare system. However, much of it already resides, or soon will, in healthcare practices that use electronic documents and messaging. The cost of such a system would not be independent of the functionality required for other aspects of a modern healthcare system. A messaging system, as described, may be leveraged on top of already existing infrastructure. It would also make for greater efficiency to those other processes.

While cost may be significant, it needs to be thought of as part of a larger system being made better.

It always seems that maintenance of I.T. systems incurs a large bulk of the costs. Keeping a significant number of templates up to date may seem to be cost prohibitive. However, there are several ways to minimize the cost and effort:

Much of the content, whether it be text, graphs, multimedia, etc.... can be shared among those in the system and in other similar systems. If the content obeys a standard, other entities can help create and maintain them. Cost can be shared amongst organizations.

Common issues, or that which provides the biggest benefit, can be addressed first. Savings with them may be used to help pay for less common issues. Starting with fewer issues also keeps the scope of the project smaller and more manageable to begin with..

Original, non-template, messages can be de-identified, refined, and made into templates. Past efforts are thus leveraged into the new system.

Some authors can be allowed to edit templates as they use them, thus creating continuous improvement even in use. Quality measures may identify templates that need work, or those that are gold standards and do not need more effort.

With enough people sharing content, and quality measures identifying proper goals, maintenance becomes a much smaller issue.

Not only can information technology can be used to enhance patient provider communication. It can also be used to maintain itself.

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