Patient Portals: 
*Research Findings on Patient Portal Use and Determinants of Patient Portal Use*

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Presentation Objectives

• Share research findings on:
  – Impact of patient portal use on patient engagement
  – Patient portal usage
  – Compliance aspects
  – Theories that explain use of technology/systems

• My research goals related to:
  – Perceived usefulness
  – Perceived ease of use

... of patient portals
What is a Patient Portal

HealthIT.gov (2014) defines a patient portal as “a secure online website that gives patients convenient 24-hour access to personal health information from anywhere with an Internet connection. Using a secure username and password, patients can view health information such as: recent doctor visits, discharge summaries, medications, immunizations, allergies, and lab results” (para 1).
Just a Little Background

- The idea of patient portals ... since 1990s
- Over 100 studies have focused on patient portals (Irizarry, DeVito, & Curran, 2015)
- HITECH Act of 2009 and MU Stage 2 requirements fueled the growth
- In 2016, most hospitals and physicians offices in the US have a patient portal
Visualization of Patient Portal Research

Potential factors related to patient portal use
• Patient demographics
• Patient characteristics
• Utilization of health services
• Promotion by providers
• Portal features
• Portal Functionality
• Portal Usability
• PU
• PEU

Portal Usage by Patients
• Frequency of use
• Duration of use

Patient Behavior Associated with Portal Usage
• Patient engagement
• Disease management
• Compliance with medications

Potential Health Outcomes Associated with Portal Usage
• Better health outcomes
• Better self-reported health
• Decreased healthcare costs
Why is patient engagement important?

- Influences patient’s knowledge and health education & overall self-reported health outcomes (Kaphingst, 2014)
- Can contribute to improvement in quality of care & health outcomes (Kaphingst, 2014)
- Impacts healthcare costs; engaged & activated patients – 21% less healthcare costs than not engaged patients (James, 2013)
Why is Portal Use Important?

• Has the potential to increase patient engagement in their own health and healthcare related decisions (Ammenwerth, Schnell-Inderst, & Hoerbst, 2012)

• Helps patients feel more in control of their own health and increase adherence to medication regimens (DelBanco et al., 2012)
Meaningful Use Stage 2 Requirements

• Eligible providers were to provide more than 50% of all unique patients with online access to their information and the ability to view online, download, and transmit their health information within four business days of the information being available to the eligible hospital or provider.

• More than 5 percent of all unique patients seen during the EHR reporting period (or their authorized representatives) view, download, or transmit to a third party their health information (CMS, 2014, para 3).
Survey Results

Analysis of data collected from the 2008-2013 AHA Annual Survey showed:

• 59% of hospitals have implemented a basic EHR
• 10.4% of hospitals have met the patient view, download, and transmit criteria
• 11.6% of the hospitals had the transmit function
• 27.5% had the download function
• 39.3% had the view function on their patient portals

(Adler-Milstein et al., 2014, p. 1668)
From HealthIT.gov Dashboard

U.S. Hospital Adoption of Computerized Capabilities to Meet Meaningful Use Stage 2 Objectives
2013

Percent of U.S. Hospitals with Computerized Capability. Hover or touch a bar to get more information.

- Record Vital Signs
- Record Smoking Status
- Imaging Results
- Record Electronic Notes
- Track Medications
- Clinical Lab Test Results
- Patient Lists
- Record Demographics
- Patient Specific Education
- Protect Electronic Health Information
- Advanced Directives
- Record Family Health History
- Medication Reconciliation
- CPOE
- Electronic Lab Results to Ambulatory Providers
- Immunization Registries
- CDS
- Lab Results to Public Health Agencies
- Syndromic Surveillance
- e-Prescribe Discharge Medication Orders
- Summary of Care
- View, Download, Transmit

- 2012 Core Objective
- 2013 Core Objective
- 2012 Menu Objective
- 2013 Menu Objective
From HealthIT.gov Dashboard

<table>
<thead>
<tr>
<th>Patient Engagement Functionality</th>
<th>Percent of Hospitals with Capability</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Change (% point)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you currently have an electronic system that allows you to do the following?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and provide patient-specific education resources</td>
<td></td>
<td>82.8%</td>
<td>90.2%</td>
<td>94.2%</td>
<td>4</td>
</tr>
<tr>
<td>Provide patients an electronic copy of their discharge instructions</td>
<td></td>
<td>82.7%</td>
<td>92.4%</td>
<td>N/A¹</td>
<td>--</td>
</tr>
<tr>
<td>Provide patients an electronic copy of their health record within 3 business days</td>
<td></td>
<td>81.1%</td>
<td>91.7%</td>
<td>N/A¹</td>
<td>--</td>
</tr>
<tr>
<td>Are patients able to do any of the following regarding their health/medical records?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>View information from their health/medical record online</td>
<td></td>
<td>24%</td>
<td>39.8%</td>
<td>90.8%</td>
<td>51</td>
</tr>
<tr>
<td>Download information from their health/medical record</td>
<td></td>
<td>14.3%</td>
<td>27.8%</td>
<td>82.2%</td>
<td>54.4</td>
</tr>
<tr>
<td>Electronically transmit care/referral summaries to a third party</td>
<td></td>
<td>N/A¹</td>
<td>11.6%</td>
<td>66.4%</td>
<td>54.8</td>
</tr>
<tr>
<td>Request an amendment to change/update their health/medical record</td>
<td></td>
<td>30.9%</td>
<td>32.8%</td>
<td>72.4%</td>
<td>39.6</td>
</tr>
<tr>
<td>Pay bills online</td>
<td></td>
<td>49.3%</td>
<td>55.4%</td>
<td>66.9%</td>
<td>11.5</td>
</tr>
<tr>
<td>Secure Messaging¹</td>
<td></td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>51.3%</td>
<td>--</td>
</tr>
<tr>
<td>Schedule appointments online</td>
<td></td>
<td>21.6%</td>
<td>29.8%</td>
<td>41.4%</td>
<td>11.6</td>
</tr>
<tr>
<td>Request refills for prescriptions online</td>
<td></td>
<td>19.3%</td>
<td>27%</td>
<td>39.4%</td>
<td>12.4</td>
</tr>
<tr>
<td>Submit patient-generated data (e.g., blood glucose, weight)</td>
<td></td>
<td>7.3%</td>
<td>12.5%</td>
<td>32.5%</td>
<td>20</td>
</tr>
</tbody>
</table>

¹Measure was not collected in survey year
The Reality of Portal Usage

• According to CMS statistics, 66 percent of US hospitals had **zero patient attempts to access their portal**. (Dan, 2015)
Meaningful Use Stage 3 Requirements

CMS expected higher use of patient portals and proposed:

• 25% of patients should view, download, and transmit their health information
• 35% of the patients should receive a secure message using the electronic health record messaging function or in response to a secure message by the patient
• more than 15% of patients should contribute to patient-generated health data (CMS, 2015)

After the comment period, these expectations were not finalized as a rule; instead eligible hospitals and providers are now, only required to show that at least one patient used the view, download, and transmit functions
Why is Patient Portal Use Still Important?

• Use of patient portals contributes to patient engagement & patient outcomes
• Patient portal technology & infrastructure is already in place
  – Patient portals are already implemented
  – EHR infrastructure and interoperability efforts support patient portal technology even further
  – Emergence of a new conceptualization of a patient portal, such as Zobreus

Need to find ways to make use of the technology for the benefit of patients
Potential factors related to patient portal use

- Patient demographics
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Portal Usage by Patients

- Frequency of use
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Patient Behavior Associated with Portal Usage

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Potential Health Outcomes Associated with Portal Usage

- Better health outcomes
- Better self-reported health
- Decreased healthcare costs
Portal Usage Findings

- Patient demographics
- Patient medical condition
- Health literacy and language
- Promotion of the portal by providers
- Portal functionality & usability
Portal Usage Related to Demographics

• Digital divide exists between
  – younger and older patients
  – black and non-black patients

• Differences in access and usage also exist
  – Medicare/Medicaid patients & patients with
    private insurance who are more likely to enroll and
    use the patient portal

• Other demographic characteristics, such as
  gender and education also impact access

(Ancker at al., 2011; Roblin, 2009; Schickendaz at al., 2013;
Wald, 2010; Weingart, Rind, Tofias, & Sands, 2006).
Portal Usage Related to Medical Conditions

• Patients with more visits or more chronic conditions were more likely to activate and use the patient portal account (Ancker et al., 2011)

• Patients enrolled in disease management programs (in UK & US) such as renal disease or diabetes used the patient portal regularly (Phelp, Taylor, Simpson, Samuel, & Turner, 2014; Urovitz et al., 2012)
Portal Usage Related to Language & Literacy

• Barriers limiting use of the portal:
  – Language proficiency
  – use of professional medical terminology
  – Abbreviations
  – complex concepts without explanations

• Patients would appreciate:
  – comprehensive, consistently structured and better organized documents
  – features such as medical dictionaries

(Keselman et al., 2007; Schickendaz et al., 2013)
Portal Usage Related to Provider Promotion

• Physician endorsement or indifference was found to make a difference in the use of personal health records provided by Veteran’s Administration facilities (*Nazi, 2013*)

• In studying Patient Gateway portal, it was found that 71 percent of the patient population was interested in using e-mail communication but only 19 percent reported using it, mostly due to the perception of dynamics between patients and providers (i.e. inefficient communication in a busy practice) and concerns about maintaining privacy or confidentiality (*Schickendaz et al., 2013*)
Portal Usage Related to Functionality & Usability

• Studies have focused on specific applications, during the implementation or soon after the implementation of PatientSite, Patient Gateway, or Open Notes

• Feature activation, such as secure messaging, requests for prescriptions, appointments, referral authorizations, chart information on allergies, medications, health library, lab reports, or radiology reports was a potential factor in adoption and use of the patient portal

(Schnipper et al., 2008; Wald, 2010; Weingart, Rind, Tofias, & Sands, 2006)
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Theories on Technology Adaptation

• Fit between Individual, Task and Technology (FITT) by Ammenwerth, Iller, & Mahler (2006)

• Adoption of information technologies in healthcare depends on
  – attributes of the individual, such as computer anxiety and motivation
  – attributes of the clinical tasks and processes, such as organization and task complexity
  – attributes of the technology, such as usability, functionality, and performance
FITT

Adapted FITT Model (based on Honekamp & Ostermann, 2011)
Theories on Technology Adaptation

• Technology Acceptance Model (TAM) by Davis, Bagozzi, and Warshaw (1989)
  • Explains behaviors related to computer usage
  • Derives from the Theory of Reasoned Action
  • Explains voluntary use of a system
  • At the core of this model are
    – perceived usefulness (PU), which refers to the “degree to which a person believes that using a particular system will enhance task performance within a certain context”
    – perceived ease of use (PEU), which refers to the “degree to which a person believes that using a particular system would be free of effort”
Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989).
My Research Goals

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Research Questions & Hypothesis

• RQ1: How does change in perceived portal usefulness impact frequency and duration of the portal use by patients?

• $H_0$: There is not a statistically significant relationship between perceived portal usefulness and frequency and duration of portal use by patients.

• $H_1$: There is a statistically significant relationship between perceived portal usefulness and frequency and duration of portal use by patients.
Research Questions & Hypothesis

• RQ2: How does change in perceived portal ease of use impact frequency and duration of portal use by patients?

• $H_02$: There is not a statistically significant relationship between perceived portal ease of use and frequency and duration of portal use by patients.

• $H_a2$: There is a statistically significant relationship between perceived portal ease of use and frequency and duration of portal use by patients.
Research Plans

• Create a Questionnaire based on Davis’ perceived usefulness (PU) and perceived ease of use (PEU) scales (Davis, 1989)

• Sample questions:
  – Using the patient portal enables me to accomplish my objective quickly
  – Using the patient portal enables me to accomplish my objective more easily
  – Overall, it will be useful using the patient portal
  – Learning to operate the patient portal is easy for me
  – It is easy to get the patient portal to do what I want to do
  – It is easy to remember how to use the patient portal
Research Plans

• Proceed with Data Collection in collaboration with Abington Memorial Hospital and Holy Redeemer Hospital and Medical Center
References


Questions?

• Feel free to contact me at: dsherifi@devry.edu