ADVANCED PRACTICE NURSES’ MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS
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The Health Information Technology for Economic and Clinical Health Act (HITECH) was enacted on February 2009
OUTCOME OF THE LAW

- Financial incentives for demonstrating meaningful use of electronic health records
- Eligible professionals and critical access hospitals must be participants in the Medicare and Medicaid programs and must adopt and successfully demonstrate meaningful use of certified EHR technology.
Between January 2011-May 2012 (Stage 1), Medicare and Medicaid provided incentives payments of $458,983,387 to Arkansas, Louisiana, Mississippi, Tennessee to encourage EHRs utilization (Centers for Medicare & Medicaid Services, 2012a)
MEANINGFUL USE RESTS ON FIVE PILLARS OF HEALTH OUTCOMES POLICY PRIORITIES

1. Improving quality, safety, efficiency, and reducing health disparities
2. Engage patients and families in their health

(Centers for Disease Control and Prevention, 2011)
MEANINGFUL USE RESTS ON FIVE PILLARS OF HEALTH OUTCOMES POLICY PRIORITIES

3. Improve care coordination
4. Improve population and public health
5. Ensure adequate privacy and security protection for personal health information
THEORY
DIFFUSION OF INNOVATIONS ROGERS (2003)
Innovation is an idea or practice that is perceived as new by an individual or other unit of adoption.

Diffusion of an innovation is the process by which alteration occurs in the structure and function of a social system.

Thus, diffusion is a kind of social change. Rogers (2003)
E-Prescribing: EHRs can improve patient and provider convenience by making medication more readily accessible.
Safety: EHRs improve safety by reducing adverse drug events in the inpatient setting and in the ambulatory setting by focusing on several components of CPOE such as alerts, reminders, warning and potential drug interactions.

Hillestad et al., 2005
Decision support: EHRs can identify built-in alerts, and reminders, thereby providing “decision support” capability to assist providers.

Ohno-Machado, 2011
**LITERATURE REVIEW: EHR BENEFITS**

- **Workload and productivity:** EHRs can reduce “paperwork” time for providers, and be used to deliver information to public health agencies or quality measurement, saving providers time.

  Centers for Medicare & Medicaid Services, 2010b
LITERATURE REVIEW: EHR BENEFITS

Costs: Studies have suggested that the exchange of health information contained in EHRs and other related EHR activity (e.g. reduced paperwork) “will have a substantial impact on the health care system’s costs”.

Blumenthal et al., 2006
Patient-centeredness: Patients can have a better access to their medical records. EHRs can make a patient’s health information available when and where it is needed. EHRs can bring a patient’s health services received from different providers in one place, so care is better coordinated.

Centers for Medicare & Medicaid Services, 2010b
LITERATURE REVIEW: DISADVANTAGES OF USING EHRs

Logistical problems: there is a discrepancy between the way EHRs are designed and the way work is actually performed by nurses. Some concerns related to the software not well adapted to the needs of frontline users, and not intuitive or user-friendly enough to improve overall nursing efficiency, to support the work flow as well as the patient care process.

Sassen, 2009
LITERATURE REVIEW: DISADVANTAGES OF USING EHRS

Interoperability: Despite their computerized functions, the EHR system remained highly fragmented. Exchange of patient care information between hospitals or from hospitals to physicians’ offices is still not optimized.

Jha et al., 2009
LITERATURE REVIEW: DISADVANTAGES OF USING EHRs

Lack of training: Training has in fact been shown to foster positive nurse attitudes toward the EHRs. Nevertheless, mostly because of the associated costs, nurses have reported inadequate EHRs training

Sassen, 2009
Feelings of imposition: If in the process of adopting and implementing EHRs nurses are not included, they may view the technology as something that has been imposed on them and refuse to use it.

Sassen, 2009
LITERATURE REVIEW: DISADVANTAGES OF USING EHRs

Lack of competence: Gaumer et al. (2007), in their study of recent nurse practitioner graduates found that 9 out of 10 of them use computers at work. Yet, a large proportion of them still have low self-perception of information technology competence, believe that academic preparation for HIT as well as on site-training at job are inadequate.
LITERATURE REVIEW: DISADVANTAGES OF USING EHRS

EHRs hinders nursing work through impaired critical thinking, decreased interdisciplinary communication, and a high demand on work time. The nurses also argued that although use of EHRs enables them to provide safer care, it decreases the quality of care.

*Kossman and Scheidenhelm* (2008)
STUDY’S PURPOSE

To gain a better understanding of EHRs utilization by Advanced Practice Nurses.
OBJECTIVES

1. to investigate overall differences in APNs EHRs-users vs. non users;
2. to examine how APN EHRs-users compare to non-users in four US states: Arkansas, Louisiana, Mississippi, and Tennessee;
3. To describe the characteristics of APN EHRs-users as compared to non-users;
4. To study differences in APNs EHRs-users vs. non users in meaningfully use of the technology.
RESEARCH METHOD

- A non-experimental research design
- Surveys
SAMPLING DESIGN

- Convenience
- Mailing addresses from SBNs: Tennessee, Arkansas, Louisiana, and Mississippi
- Post cards sent to APNs
APNs socio-demographics and practice characteristics were obtained through an online survey.

The survey consisted of a mixture of closed-ended, open-ended and multiple choice questions.
University of Arkansas Institutional Review Board approved the research project.
QUESTION
To investigate the differences between APNs EHRs-users vs. non-users

TEST
Chi-square test for categorical variables and the Nonparametric test of Mann-Whitney U Test for continuous variables.

ANALYSIS
An alpha level of 0.05 was used for all statistical tests.

To determine APNs socio-demographics and practice characteristics associated with the use of EHRs

Multivariable logistic regression.
DESCRIPTIVE RESULTS

Respondents (N=526)

Type of APN

- nurses practitioners (87.7%)
- clinical nurse specialists (9%)
- certified nurse midwives (3.3%)
RACE AND GENDER OF THE SAMPLE

White (91.2%)
African American (6.6%),
Asian 1.4%
Hispanic 0.8%.

Female (88.8%).
# Differences Between EHRs-Users and Non-Users by State

<table>
<thead>
<tr>
<th>States</th>
<th>EHRs-Users (%)</th>
<th>EHRs-non users (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four states combined</td>
<td>64.5</td>
<td>35.5</td>
</tr>
<tr>
<td>Arkansas</td>
<td>68.4</td>
<td>31.6</td>
</tr>
<tr>
<td>Louisiana</td>
<td>60.8</td>
<td>39.2</td>
</tr>
<tr>
<td>Mississippi</td>
<td>61.5</td>
<td>38.5</td>
</tr>
<tr>
<td>Tennessee</td>
<td>69.9</td>
<td>30.1</td>
</tr>
</tbody>
</table>
APNs over 55 years of age are the least likely adopters of EHR technology; only 16.3% use it.
APNs who reported practicing *exclusively* at the hospital setting are more likely to use EHRs (35.2% vs. 17%).
MULTIPLE LOGISTIC REGRESSION

- The more patients APNs see the least likely they are to use EHRs
- The more patients APNs see at the hospital setting as compared to the clinic setting, the more likely they are to use EHRs
- APNs with more years of professional experience are more likely to use EHRs
Multiple logistic regressions further showed no statistically significant differences between EHRs-users and non-users’ in most characteristics.
LIMITATIONS

- A non-probabilistic sampling was used (convenience sample) which limits generalizability.
- Small sample (N=526)
- Study might be too early- Stage 1 had not been completed yet, therefore our findings cannot be extrapolated to the whole duration of Stage 1