Increasing Breast Cancer Screening Rates through an Alert System in the Electronic Medical Record

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Objectives

At the end of this presentation, the participant will be able to:

1. Identify women who qualify for breast cancer screening based upon current recommendations.
2. Define a real time clinical decision support tool, also known as a Best Practice Advisory (BPA) alert.
3. Describe the process, including key stakeholders, to implement a BPA alert in the electronic medical record (EMR).
4. Utilize features of the EMR to assist in providing individualized patient care related to breast cancer screening.
Background

• Breast cancer is the second leading cause of cancer death in women
  ▫ 40,610 deaths annually \(^{22}\)
  ▫ 252,710 new cases in 2017 \(^{5}\)
  ▫ 1 in 8 women \(^{5}\)

• Mammography
  ▫ 30-40% reduction in mortality \(^{3,2}\)
  ▫ 66.8% of women age 40 and over received mammography in the past 2 years \(^{8}\)
  ▫ Low income women: 23.4% mammography uptake \(^{2}\)
Background

- Mammography rates

<table>
<thead>
<tr>
<th>Year</th>
<th>NE</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>62.4%</td>
<td>68.6%</td>
</tr>
<tr>
<td>2010</td>
<td>71.5%</td>
<td>75.6%</td>
</tr>
</tbody>
</table>

- CHI Health mammography rates (July 2016)
  - Insured = 45%
  - Uninsured = 5%
Significance

- Healthy People 2020
  - Target goal: 81.1% breast cancer screening rate \(^2^9\)
    - Baseline is 73.7% \(^2^9\)

- National Breast and Cervical Cancer Early Detection Program (NBCCEDP)
  - Nebraska
    - Every Woman Matters program
Problem

- Mammography decreases mortality \(^{17,27}\)
- Disparity in mammography compliance \(^{18,24}\)
  - Low-income women
- Technology is underutilized for providers recommending mammography and patient compliance rates
Aims

- Aim 1: Introduce an alert system for breast cancer screening in the EMR
- Aim 2: Assess the influence of EMR/Best Practice Alert technology on provider compliance with screening recommendations
Literature Review

- Breast cancer screening guidelines 9,11,23,26,28,31
- Risk factors for developing breast cancer 5,9,11,12,18,20,22,23,28
- Barriers to mammography compliance 1,2,3,10,16,17,24
- System strategy in EMR 6,13,14,15,28
Mammography Screening Guidelines

<table>
<thead>
<tr>
<th>Group (date)</th>
<th>Frequency of screening (years)</th>
<th>Initiation of screening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>40 to 49 years of age</td>
</tr>
<tr>
<td>Government-sponsored groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Preventive Services Task Force (2016)[1]</td>
<td>2</td>
<td>Individualize^</td>
</tr>
<tr>
<td>Canadian Task Force on Preventive Health Care (2011)[2]</td>
<td>2 to 3</td>
<td>Recommend against^</td>
</tr>
<tr>
<td>National Health Service, United Kingdom (2013)[3]</td>
<td>3</td>
<td>Yes, start age 47</td>
</tr>
<tr>
<td>Royal Australian College of General Practitioners (2012)[4]</td>
<td>2</td>
<td>No (eligible but not targeted)</td>
</tr>
<tr>
<td>Medical societies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American College of Obstetricians and Gynecologists (2011)[5]</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>American College of Physicians (2015)[6]</td>
<td>1 to 2</td>
<td>Individualize^</td>
</tr>
<tr>
<td>American Academy of Family Physicians (2009)[7]</td>
<td>2</td>
<td>Individualize^</td>
</tr>
<tr>
<td>American Cancer Society (2015)[8]</td>
<td>1 year age 45 to 54</td>
<td>Yes, start age 45</td>
</tr>
<tr>
<td></td>
<td>2 years age ≥55</td>
<td></td>
</tr>
<tr>
<td>American College of Radiology (2013)[9]</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>Coalitions</td>
<td></td>
<td></td>
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<tr>
<td>National Comprehensive Cancer Network (2014)[10]</td>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Literature Review

- Breast cancer screening guidelines $9,11,23,26,28,31$
- Risk factors for developing breast cancer $5,9,11,12,18,20,22,23,28$
- Barriers to mammography compliance $1,2,3,10,16,17,24$
- System strategy in EMR $6,13,14,15,28$
Theoretical Framework

- Ajzen’s Theory of Planned Behavior
Sample and Setting

• The setting:
  ▫ Ambulatory CHI Health Clinics
    • Internal Medicine
    • Family Medicine
    • Women’s Health

• The sample:
  ▫ Women
  ▫ Ages 39-75
  ▫ No recorded screening mammogram in the EMR within the last two years to date.
Sample and Setting

- The EMR utilized was EPIC
- Women with a personal history of breast cancer were not eligible
- Providers encouraged to update Health Maintenance (HM) Modifiers
Sample and Setting

• Health Maintenance Topics
  ▫ Breast Cancer Screening
  ▫ USPSTF guidelines
  ▫ Earlier or different interval frequency
  ▫ 3D mammography as a completion action
  ▫ Excluded in screening
    • Right/left or bilateral mastectomy
  ▫ Inclusion for Every 1 Year screening
    • BRCA Positive
    • Single sided right or left mastectomy
# Health Maintenance

<table>
<thead>
<tr>
<th>Due Date</th>
<th>Topic</th>
<th>Frequency</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/12/1976</td>
<td>TETANUS ADULT VACCINE</td>
<td>10 year(s)</td>
<td></td>
</tr>
<tr>
<td>5/12/1978</td>
<td>PAP SMEAR</td>
<td>3 year(s)</td>
<td></td>
</tr>
<tr>
<td>5/12/2007</td>
<td>COLON CANCER SCREENING COLONOSCOPY</td>
<td>10 year(s)</td>
<td></td>
</tr>
<tr>
<td>9/1/2017</td>
<td>INFLUENZA VACCINE</td>
<td>8 month(s)</td>
<td>1/23/2017 (Declined)</td>
</tr>
<tr>
<td>5/20/2018</td>
<td>BREAST CANCER SCREENING</td>
<td>2 year(s)</td>
<td>5/20/2016, 5/19/2016</td>
</tr>
<tr>
<td>Completed</td>
<td>BMP/CMP</td>
<td>1 year(s)</td>
<td>5/7/2016, 4/24/2016, 10/12/2013, 5/14/2012</td>
</tr>
</tbody>
</table>

## Health Maintenance Plans
- BREAST CANCER SCREENING MAMMOGRAM EVERY 2 YEARS-DEFAULT
- CHI AMB BMP/CMP
- COLON CANCER SCREENING EVERY 10 YEARS-DEFAULT
- INFLUENZA VACCINE AGE 6 MOS AND OLDER
- PAP SMEAR EVERY 3 YEARS-DEFAULT
- TETANUS VACCINE
Methods

• Proposed practice change
  • Real time clinical decision support tool
    • Best Practice Advisory (BPA)
      • An alert tool in the electronic medical record (EMR)
Real Time Clinical Decision Support Tool

• Definition
  ▫ An alert system embedded in the EMR to facilitate and encourage a direct patient referral process

• Mammogram BPA
  ▫ To support quality measures and recommendations
  ▫ To prompt a clinical response for specific mammogram qualifiers
BPA Alert

1. Every two years for patients ages 50-75 (USPSTF recommendation).
BPA Alert

2. Every two years for patients ages 40-49 should be considered (USPSTF does not recommend).
BPA Alert

- Use the **CHI AMB MAMMO for BPA** SmartSet to place applicable orders
**PROCESS LEADING TO CHANGE**

- **June-July 2016**: Idea of Mammography BPA
- **July-Aug 2016**: Present to Medical Director of Informatics
- **Aug-Nov 2016**: Approval
- **Aug-Nov 2016**: Build BPA
- **Nov-Jan 2017**: Testing
- **Jan-March 2017**: Test in Live Environment
- **Stakeholders**
  - Informatics team
  - Population health team
  - Physician builders
  - MDs, NPs, PAs
  - Radiology Department
  - Consulting Firm
  - External forces
- **Live**
- **Production**
- **Tip Sheet to End Users**
Results

• An alert system may increase breast cancer screening compliance rates
  ▫ Monitoring reports
    • Provider compliance
    • Insurance status
  ▫ Completed mammography reports
    • Results
    • Unable to schedule notification
    • Incomplete order notification
Conclusions

• Implementation of the BPA
  ▫ Increases prompt discussion between provider and patient
  ▫ Promotes individualized education
  ▫ Promotes individualized breast cancer screening guidelines
  ▫ Cost effective
  ▫ Replicable
DNP Implications

Policy Change
Leadership
Negotiation
Ethical Situations
Conflict Resolution
Collaboration
System Processes
Sustaining Improvement
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- Catherine O’Keefe, DNP, APRN-NP (Advisor)
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- Craig Kulawik, MBA (CHI Health Division Director Clinical Informatics)
Questions?
References


References


References


