MINC Model

Kathleen Calzone, PhD, RN, APNG, FAAN
Center for Cancer Research, Genetics Branch, National Cancer Institute
Rogers Diffusion of Innovations

Reasons for Limited Progress

- Top down approach does not engage the end user
  - Limited outcome evidence

- Relevance of genomics to practice is not fully appreciated
  - Knowledge deficits persist
  - No trialability/observability

- Previously existing competencies were long, not realistically achievable given packed curricula and busy professionals with limited time for CE

- Insufficient numbers of faculty/CE educators prepared to teach this content

- Accrediting bodies did not consider genomics in their evaluations

- State Boards and certifying groups are inconsistent in requiring evidence of genomic competency as part of licensure, re-licensure, or certification
Accelerating Innovation Diffusion Using Opinion Leaders (Champions)

- Inclusion and support of respected members or organization opinion leaders
  - Peer influence
  - Peer education
  - Peer networks

- Use of Opinion leaders has been shown to accelerate adoption of evidence-based practices has been shown to accelerate change

Method for Integrating a New Competency into Practice (MINC): Aims

- Develop, implement and evaluate a year-long genomic education program to train, support, and supervise institution administrator and educator dyads to increase nursing capacity to integrate genomics
  - Expand the Global Genetics and Genomics Community to support education initiatives

- Evaluate institutional nursing workforce attitudes, practices, receptivity, confidence and competency in genomics of common disease and utilization of family history
  - Establish GGNPS reliability using test/retest methods to further refine the instrument

- Describe the impact of study participation on policies that support genomic integration including privacy/confidentiality, research, and electronic health records
Methods

Instrument

- Genetic/Genomic Nursing Practice Survey
  - Attitudes, receptivity, confidence, competency, knowledge, decision, adoption, demographics
  - Format - multiple choice, dichotomous yes/no, Likert scale
  - Focus on genomics of common disease and family history

- Online using SurveyMonkey™

- Baseline survey July-August 2012
- Post intervention survey July-August 2013
- 4 weeks to complete
- Eligibility - all registered nurses

Intervention Methods

- Baseline education content
  - Champion Kick-off meeting
    - Study orientation
    - Relevancy of genomic information to clinical, policy, regulatory, and delivery infrastructure
    - Core genomic knowledge

- Ongoing education and support
  - Dyad personal needs assessment
  - Ongoing education and support targeted to the identified group learning needs
    - Monthly conference calls
    - Dyad presentations
    - Group discussion
Intervention Methods

- Institutional Action Plans
  - Institutional Action Plan
    - Personal development needs, policy and education assessments
    - Objectives, strategies or methods to achieve aims
    - Timeline allocated to accomplish tasks
  - Virtual site visits and quarterly action plan reports
    - Monitor institutional progress
    - Obstacles encountered in achieving their objectives
    - Strategies to overcome those obstacles
Population

Intervention Group

- 21 Magnet Recognition Program® Designated Hospitals from 18 States
  - 1 rural Hospital
  - 3 Children's Hospitals
  - 1 VA Hospital
  - 1 Cancer Center
  - 1 Psychiatric Hospital

- Number of nurses employed ranged from 80-3382

Control Group

- 2 Magnet Recognition Program® Hospitals
  - 2 additional states
Geographic Distribution
Number of Nurses Intervention Hospitals

- DUH
- UKH
- NMH
- CNH
- BHS
- BHM
- PSV
- AC
- THF
- SS
- CD
- CNM
- THP
- MED
- OSA
- BH
- JC
- FC
- H
- AK
Baseline Intervention Survey Population

Overall Response Pre

- 29 did not answer institutional affiliation so were excluded from analysis
- 17-63% Range of hospital specific response rates
- 12 excluded from analysis because they were not a registered nurse
  - 7 LPNs
  - 5 non-RNs

Final Response for Analysis N=7,306/25,630

29% Overall average response rate
Post Intervention Survey Population

Overall Response Post

- 111 did not answer institutional affiliation so were excluded from analysis
- 19-70% Range of hospital specific response rates
- 31 excluded from analysis because they were not a registered nurse
  - 9 LPNs
  - 22 non-RNs

Final Response for Analysis N=7,813/25,814

- 30% Overall average response rate
Clues to Educational Needs

Most:
- Indicate a potential disadvantage to integrating genomics into practice was that it would increase insurance discrimination.
- Felt that genetics could increase patient anxiety about risk, despite behavioral studies in many conditions indicating that most patients do well with genetic information.
- Felt genetics is not reimbursable or too costly.
- Feel genetics is important BUT do not think that senior staff feel it is important to their role.
- Are willing to learn more, and are willing to do so on their own time.
RN Number of Years in Nursing and Time Spent Seeing Patients
Primary Area of Practice

- Staff Nurse
- NP/CNS
- Leadership*
- Educator
- Researcher

*M=Nurse, Head Nurse, Supervisor, Director, Assistant Director, Consultant, Case Manager

Legend:
- MINC-Pre
- MINC-Post
- NC SBN

Chart shows distribution of primary area of practice among different roles.
MINC Enrollment Outcomes

- One institution withdrew from the study citing competing demands and inability to adhere to an institution wide initiative
  - Data not included in pre/post analysis
- 2nd institution had a participation gap of four months due to staffing challenges resulting in the inability to meet the study demands during this period
  - Data was included in the analysis
MINC Outcomes

- Mean of 4 months (range 1-9) before start of awareness campaigns
  - Personal competency development
  - Institutional Persuasion
  - Planning

- Mean of 7 months (range 4-11) before dyads started education interventions
Implementation Strategies

- **Steering Committees**
  - Interprofessional

- **Awareness campaigns**

- **Continuing Education**
  - Mandatory

- **Single Concept Learning**
  - Gene Splash

- **Poster Days**

- **DNA Day**

- **Research**

Leadership Considerations

- Limited healthcare workforce genomic knowledgebase
  - Novel strategies for education given the current fiscal climate

- Infrastructure needed to integrate genomics into healthcare delivery systems
  - Policies
  - Electronic health record (EHR)
  - Point of care decision support

- Business/financial plan
Policy Implications

MINC Existing Policies
- Genomic Advanced Directives

MINC Participant Policy Initiatives
- Genetic education, counseling and informed consent for genetic tests
- Pathways for referrals to genetic services
- Documentation of family history
- Genomic Nursing Competency
<table>
<thead>
<tr>
<th>Reported it was SOMEWHAT OR VERY IMPORTANT for nurses to become more educated about genetics of common disease</th>
<th>Intervention</th>
<th>Control</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINC Pre</td>
<td>MINC Post</td>
<td>MINC Pre</td>
<td>MINC Post</td>
</tr>
<tr>
<td>Reported it was SOMEWHAT OR VERY IMPORTANT for nurses to become more educated about genetics of common disease</td>
<td>89% (6309/6707)</td>
<td>89% (6487/7280)</td>
<td>86% (349/404)</td>
</tr>
<tr>
<td>AGREE or STRONGLY AGREE that there is a role for nurses in counseling patients about genetic risks</td>
<td>58% (3315/5687)</td>
<td>62% (3892/6280)</td>
<td>64% (175/274)</td>
</tr>
<tr>
<td>Believe senior staff see genetics as an IMPORTANT part of the survey respondent’s role</td>
<td>25% (1342/5314)</td>
<td>36% (2023/5688)</td>
<td>21% (49/234)</td>
</tr>
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</table>
## MINC Outcomes: Confidence

<table>
<thead>
<tr>
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<tr>
<td></td>
<td>MINC Pre</td>
<td>MINC Post</td>
<td>MINC Pre</td>
</tr>
<tr>
<td>More or very confident in accessing reliable and current information about genetics and common diseases</td>
<td>18% (999/5711)</td>
<td>20% (1252/6287)</td>
<td>17% (46/273)</td>
</tr>
<tr>
<td>More or very confident deciding which patients would benefit from a referral for genetic counseling and possible testing for susceptibility to common diseases</td>
<td>13% (745/5708)</td>
<td>16% (987/6293)</td>
<td>12% (34/276)</td>
</tr>
<tr>
<td>More or very confident in facilitating referrals for genetic services for common diseases</td>
<td>9% (671/5642)</td>
<td>15% (390/6230)</td>
<td>12% (33/277)</td>
</tr>
</tbody>
</table>
MINC Outcomes: Genomic Knowledge

Rate their understanding of the genetics of common diseases

- Poor: MINC-Pre 48.7%  MINC-Post 41.3%
- Good/Fair: MINC-Pre 44.6%  MINC-Post 49.3%
- Excellent/Very Good: MINC-Pre 6.6%  MINC-Post 9.5%

MINC-Pre vs MINC-Post
# MINC Outcomes: Genomic Knowledge

Objective Measure of Knowledge and Competency

- **Total Knowledge Score**
  - 12 knowledge/competency questions Correct or incorrect

<table>
<thead>
<tr>
<th></th>
<th>MINC Pre</th>
<th>MINC Post</th>
<th>P-Value</th>
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<tbody>
<tr>
<td><strong>WEAK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BHS</td>
<td>8.004</td>
<td>8.068</td>
<td>0.666</td>
</tr>
<tr>
<td>CMH</td>
<td>8.241</td>
<td>8.151</td>
<td>0.506</td>
</tr>
<tr>
<td><strong>STONG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUH</td>
<td>7.897</td>
<td>8.377</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>THP</td>
<td>7.876</td>
<td>8.543</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td>7.986</td>
<td>8.065</td>
<td>0.628</td>
</tr>
<tr>
<td>Intervention</td>
<td>8.085</td>
<td>8.265</td>
<td>&lt;0.001</td>
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# MINC Outcomes: Genetic Education Impact

<table>
<thead>
<tr>
<th></th>
<th>Prior Genetics Education</th>
<th>No Prior Genetics Education</th>
<th>P-value</th>
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</thead>
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<tr>
<td></td>
<td>MINC Pre</td>
<td>MINC Post</td>
<td>MINC Pre</td>
</tr>
<tr>
<td>Reported hearing or reading about the Competencies</td>
<td>24.9%</td>
<td>68.2%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Self described genetic/genomic knowledge and Good/Fair</td>
<td>44.6%</td>
<td>64.6%</td>
<td>29.5%</td>
</tr>
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</table>
# MINC Outcomes: Adoption

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>MINC Pre</td>
<td>MINC Post</td>
<td>MINC Pre</td>
</tr>
<tr>
<td>In the prior three months nurses seeing patients who RARELY OR NEVER assessed a family history</td>
<td>68% (2873/4201)</td>
<td>67% (3439/5159)</td>
<td>75% (171/229)</td>
</tr>
<tr>
<td>Took family history: Assessed age at dx</td>
<td>29% (1564/5348)</td>
<td>33% (1989/5959)</td>
<td>27% (68/250)</td>
</tr>
<tr>
<td>Took family history: Assessed maternal and paternal lineages</td>
<td>53% (2850/5336)</td>
<td>55% (3243/5940)</td>
<td>48% (119/247)</td>
</tr>
</tbody>
</table>
MINC Outcomes

- Awareness of genomics has increased
- Scope of interventions influenced degree of knowledge gain
- No change in adoption domains
- Increased educational intent
- Nursing workforce is clearer that nursing leadership values genomics
- Genomic education in school or post licensure appears to increase capacity to achieve genomic competency
- Complex competency and one year is insufficient
Limitations

- Varying institutional interventions
- No individual direct pre/post assessment
- Self selected Champions
- Largely baccalaureate prepared nurses not reflective of non-Magnet hospitals
- Varying institutional response rates
Leadership Support

Economic Return on Investment

Infrastructure

MINC Model

Sustainability

Adoption

Knowledge

Persuasion/Relevance/Awareness

Champion Genomic Competency

Leadership Support

EHR capacity

Policy
MINC Leadership Team

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Laurie Badzek LLM, JD, RN, FAAN
Principle Investigator
West Virginia University School of Nursing

Kathleen Calzone PhD, RN, APNG, FAAN
National Institutes of Health, National Cancer Institute

Jean Jenkins PhD, RN, FAAN
National Institutes of Health, National Human Genome Research Institute

Sarah Smith, MS Project Coordinator
Stacey Culp PhD Statistician
West Virginia University Research Corporation, West Virginia University School of Nursing
Participating Institutions

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Beaumont Health System
Central DuPage Hospital
Children's National Medical Center
Duke University Hospital
Fox Chase Cancer Center
Hunterdon Healthcare System
Jersey City Medical Center
Martha Jefferson
Michael E. DeBakey VA Medical Center
Northwestern Memorial Hospital
OSF Saint Anthony Medical Center
Providence St. Vincent Medical Center
Saint Joseph's Hospital
South Shore Hospital
Texas Health Harris Methodist Hospital Fort Worth
Texas Health Presbyterian Hospital Dallas
The Children's Mercy Hospitals & Clinics
University of Kansas Hospital
West Virginia University
Questions/Discussion

calzonek@mail.nih.gov
301-435-0538