Strengthening Organizations to Implement Evidence-Based Clinical Practices

Carol VanDeusen Lukas, Ed.D
Victoria Parker, D.B.A.

Center for Organization, Leadership & Management Research
Department of Veterans Affairs

Boston University School of Public Health
Department of Health Policy and Management

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Study team

- Ryann L. Engle, MPH
- Sally K. Holmes, MBA
- Marjorie Nealon Seibert, MBA
- Michael Shwartz, PhD
- Jennifer L. Sullivan, PhD

+ VISN leaders
Study aim

- To test an organizational model hypothesized to strengthen the ability of healthcare organizations to implement evidence-based clinical practices.
Organizational model based on two premises

- Implementing evidence-based clinical practices is often a complex intervention that requires substantial organizational change.
- Substantial organizational change requires balancing organizational strategy & direction from senior leaders with front-line activity & involvement of staff.
Organizational model developed from Organizational Transformation Model (OTM)

- OTM was developed in evaluation of Robert Wood Johnson Foundation’s Pursuing Perfection initiative
- OTM identifies five interactive elements that appeared critical to successful transformation of patient care

Lukas et al., HCMR, 2007
Organizational Transformation Model

- Impetus to transform
- Leadership
- Integration across boundaries
- Improvement initiatives
- Mission, vision, strategy, priorities
- Culture, values
- Infrastructure
- Organizational functions & processes
- Patient care that meets IOM 6 aims
- Change over time → Sustainability, Spread → Transformation

Alignment from top to bottom
Organizational model reflects OTM consolidated

• Expect that organizational elements that drive organizational transformation will facilitate change required to implement evidence-based practices
Organizational model tested in this study

- Active top leadership commitment
- Links to senior management structures and processes
- Multi-disciplinary evidence-based clinical process redesign
- Improved evidence-based clinical practices
Study design

- Study designed in collaboration with directors and chief medical officers of 3 participating VISNs, or Networks
- Mixed-methods pre-post comparison group intervention in 16 medical centers in 3 networks in the department of Veterans Affairs (VA)
  - 1 Network and its medical centers randomly selected to implement the organizational model
  - Other 2 Networks served as comparison group
- This analysis focused on comparative case studies of 7 medical centers in organizational-model arm
Study questions

• Is the organizational model implemented with high fidelity to the model design?

• Are medical centers that implement the model with high fidelity more successful in improving performance of a targeted evidence-based clinical practice than medical centers that implement fewer elements?

• Why is the organizational model implementation successful or not successful?
Discussion

• Is our framework consistent with your experiences in healthcare organizations?
• In your experience, what makes healthcare improvement efforts successful?
• What facilitates the use of evidence-based clinical practices?
Methods: the intervention

- Study sites
- Clinical focus
- Operational definition of model
- Activities to introduce and support the model
Study sites

- 7 participating medical centers varied in size, location, services provided & academic affiliation
- Senior leadership in each medical center was a quadrad – medical center director, chief of staff, nurse executive & associate director
- All medical centers part of the same network, under one network director
Clinical focus on hand-hygiene compliance

- Clinical redesign process component required
  specific clinical focus to engage staff
- Compliance with evidence-based hand-hygiene
  guidelines evidenced-based and high priority:
  - fundamental aspect of infection control
  - requirement of The Joint Commission
  - new high priority for improvement in the VA at the
    time of study design
Operational definition of organizational model

- Organizational model is defined conceptually in broad terms of model components
- But components need to be operationalized in order to be implemented:
  - research team identified key elements in each component
  - medical centers identified details of structures and processes they would use to put each element into place
Examples of operational elements of model

• Senior leadership commitment
  – Set high expectations for improvement
  – Invest own time on improvement-related activities

• Linkages to senior leadership
  – Appoint a leadership champion
  – Identify clear path for team reporting to senior leadership for accountability & support

• Multi-disciplinary evidence-based redesign team
  – Appoint members from affected disciplines & units
  – Use systematic methods to analyze processes & performance
Introducing and supporting the model

• Introduced at multiple levels within the network
  – leadership consortium
  – facility-level teams
  – shared learning group across facilities
• Consistent assignment of research team members to sites
• Initial visit template
Intervention at 7 medical centers

• Initial site visit for introduction of the project and assessment of baseline state of the model components
• Follow up work with site to complete implementation plan
• Repeat visits every 4-6 months over 2 ½ years
• VISN-wide support
  ▪ Shared learning groups monthly
  ▪ Leadership consortium quarterly
Discussion

• How to develop/evoke commitment at lower levels when the decision to participate was top-down?
• How is feedback process affected by knowledge that we’ll be visiting again?
Four data sources

• Organizational-model implementation fidelity ratings
  – fidelity of implementation

• Observations of hand-hygiene compliance
  – compliance rates

• Semi-structured interviews during site visits

• Site visit impressions journals
  – factors affecting implementation fidelity
Fidelity implementation

Data source: Ratings and narrative evidence of fidelity for each model element completed by site-visit research team at end of each visit

Measures:

• Ratings on a 0-4 scale (0= element not present; 4= element in place and consistently used as intended)
  • Component scores created by aggregating elements and calculating an unweighted mean
  • Overall site fidelity ratings calculated mean of 3 component scores
• Narrative evidence analyzed qualitatively by cross-site comparisons structured by fidelity instrument
Hand-hygiene compliance

Data source: Observations of hand-hygiene compliance measured through structured observations by medical center staff

Measures:
- Percent compliance for each observation period at site level.
- Effect size of improvement in compliance calculated by comparing the baseline 3-month periods to the last 3-month periods of the study.
- Statistical significance tested through a weighted least squares regression model with:
  - time (i.e., month) as independent variable
  - compliance percent as dependent variable
  - sample size in each data collection period as weight.
Factors affecting fidelity

Data source: Notes from semi-structured interviews and impressions journals completed by research team during site visits

Measurement: Notes coded by members of team who did not visit the particular site being coded

- Thematic analyses beginning with individual site cases
- Data organized into matrices for cross-site comparisons
Discussion

• How might variation in site visit teams have influence fidelity ratings?
• How did leadership changes within the facilities affect change between visits?
Study Q 1:

Is the organizational model implemented with high fidelity to the model design?
Fidelity to the model varied considerably

- Final overall fidelity ratings ranged from 1.42 to 3.95
- Sites clustered in two groups by extent of fidelity

<table>
<thead>
<tr>
<th>Facility</th>
<th>Fidelity: overall</th>
<th>Fidelity: overall change from baseline</th>
<th>Fidelity rank order</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>3.95</td>
<td>2.82</td>
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<tr>
<td>C</td>
<td>3.23</td>
<td>1.99</td>
<td>3</td>
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<tr>
<td>D</td>
<td>3.17</td>
<td>1.84</td>
<td>4</td>
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<td>E</td>
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<td>1.21</td>
<td>5</td>
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<td>F</td>
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<td>G</td>
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</table>
Narrative evidence expands on the quantitative findings

- High and low fidelity groups show different patterns of behavior, activities and structures
- Model components interact and are mutually reinforcing
Active leadership commitment to improving the targeted practices

In the *high fidelity* group, senior medical center leaders:
- Set clear expectations about target levels of compliance and sent the message that current practices were deficient
- Were consistently involved and supportive of hand hygiene improvement across settings and over time and stayed focused on those efforts
- Served as role models and champions for hand hygiene and created opportunities for communication and awareness

In the *low fidelity* group, senior leaders:
- Were not consistent in their involvement
- Generated little sense of urgency for improvement across the organization
- Did not communicate clearly about expected levels of hand-hygiene compliance
- Talked about hand hygiene when issue arose but did not create opportunities
Robust clinical process redesign to engage staff and incorporate evidence-based practices in routine operations

In the *high fidelity* group, clinical redesign teams:
- Were energetic and visible
- Tended to involve all staff affected by redesign efforts on their teams.
- Had strong leaders with excellent project management skills who often drew in clinical leaders
- Often involved experienced quality improvement experts as team members or advisors
- Went beyond basic improvement to higher reliability methods

In the *low fidelity* group, clinical process redesign was often more ad hoc.
- Teams never got off the ground or fell away to just the skeleton of a team.
- Sites did not use formal process improvement methods and typically never went much beyond communication initiatives.
- Teams collected data but did not use it to help understand possible sources of non-compliance or the impacts of their intervention activities.
- Often low fidelity sites felt their teams lacked the leadership, the authority or the infrastructure to accomplish their goals.
Linkages to management structures and processes to support, align & integrate redesign

In the *high fidelity* group,
- There were explicit strategies to link improvement efforts to senior management.
- Cabinet champions were explicitly identified and actively involved as liaison with the redesign teams.
- Sites used formal management structures to influence the improvement process -- data monitoring and accountability, problem solving across departments, allocation of resources, staff recognition and communication.
- Hand-hygiene compliance data was reviewed regularly by senior leaders.

In the *low fidelity* group,
- Cabinet champions were less consistently identified and involved, sometimes champions in name only.
- Reporting of hand-hygiene data sometimes was buried several layers below leadership.
- Little systematic follow-up action when low performance reported; sometimes perception that negative information not welcome.
Study Q 2:
Are medical centers that implement the model with high fidelity more successful in improving performance of a targeted evidence-based clinical practice than medical centers that implement fewer elements of the model?
Greater fidelity to the model was associated with greater improvement in compliance with hand-hygiene guidelines.

<table>
<thead>
<tr>
<th>Facility</th>
<th>Model fidelity: overall</th>
<th>Hand-hygiene adherence: pre-period</th>
<th>Hand-hygiene adherence: post-period</th>
<th>Effect Size*</th>
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</thead>
<tbody>
<tr>
<td>A</td>
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<td>C</td>
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<td>80.9</td>
<td>.92 (.22)</td>
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<td>.14 (.07)</td>
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<td>68.3</td>
<td>.14 (-.27)</td>
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<tr>
<td>G</td>
<td>1.42</td>
<td>80.1</td>
<td>70.8</td>
<td>-0.22 (-0.29)</td>
</tr>
</tbody>
</table>
Study Q 3

Why is the organizational model implementation successful or not successful?
Extent of implementation fidelity was affected by competing forces of positive and negative factors.

**Factors affecting implementation**

- **Urgency to improve hand-hygiene compliance (HH)**
  - Infection control problem (+)
  - External HH pressures, e.g., TJC (+)
  - Source of intervention (+,-)
  - Competing priorities (-)

- **Organizational environment**
  - Change in leadership (+,-)
  - Financial pressures (-)
  - Organizational history, e.g., facility integration (+,-)

- **Improvement climate**
  - Staff QI skill (+)
    - QI experience
    - Work team effectiveness
  - Organizational values for improvement (+)
  - Psychological safety (+)
  - Fit with usual improvement model (+)

**Extent of model implementation**

- **Active leadership commitment**
- **Links to senior management structures & processes**
- **Clinical process redesign**
- **Improved performance**
While each site had its own array of forces, patterns emerged across sites

Sites with *high fidelity*,

- Shared the urgency to improve compliance with hand hygiene
- Had no major aspects of the organizational environment that interfered with implementation
- Had a positive improvement climate including:
  - Staff experience and skills with quality improvement,
  - Organizational values for improvement where staff felt safe trying and speaking about necessary changes
- In some cases, fit between this intervention and site’s usual quality improvement approaches
Conclusions:
Implementation strengthened by presence of 3 model components

- The 3 components interact and are mutually reinforcing:
  - Active leadership commitment to improving the targeted practices,
  - Robust clinical process redesign to engage staff and incorporate evidence-based practices in routine operations
  - Links to management structures and processes to support, align and integrate redesign

- Organizational factors affecting implementation while specific to each site also reveal some patterns across sites. Sites with greatest extent of model implementation:
  - Shared urgency to improve compliance with hand hygiene
  - Had no major aspects of the organizational environment that interfered with implementation; and
  - Had a positive improvement climate
Limitations

- Implementation in one Network in VA
- Hand-hygiene observations done locally
- Different team members interacted with each site; thus the intervention team actions might have differed in unmeasured ways
Implications

• Study confirms expectations that implementation of evidence-based clinical practices, particularly those like hand hygiene that cut across multiple processes of care is:
  • Often a complex process in which there are many possibilities for failure
  • Influenced by organizational elements and context
• Study provides refined understanding of relationships among components of the organizational model and with factors in organizational contexts affecting them which provide basis to:
  • Draw practical lessons for future implementation efforts
  • Contribute to the theoretical understanding of the dynamics of the implementation of evidence-based practices