A Qualitative Comparative Analysis of Strategies to Increase Evidence-Based Hepatitis C Treatment in the Veterans Administration

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Evaluation Aims

1. To identify the implementation strategies or combinations of strategies linked to Hepatitis C treatment initiation at VA hospitals across the US.

2. To inform future strategy selection and dissemination.
Hepatitis C Background

- **Hepatitis C (HCV) need**
  - VA is the largest single provider of HCV care in the United States.
  - Untreated HCV can have high social and economic costs, including onward transmission and liver transplant.

- **Evidence-Based Practice**
  - >90% highly effective HCV treatment across populations

- **Implementation Strategies**
  - National Learning Collaborative & Regional HCV Improvement Teams (HIT) aim to improve the HCV system of care, including screening, linkage to care, and treatment by redesigning care delivery processes.
Expert Recommendations for Implementing Change (ERIC)

Stage 1: Consensus on a common nomenclature through 3 Round Delphi with Expert Panel Participants (Powell, 2015)

Stage 2: Concept mapping to develop conceptually distinct categories (Waltz, 2015)
Methods

- **Sample**: HCV providers at VA hospitals, FY15 & FY16.

- **Data Sources & Collection**: Annual online survey examining use of 73 implementation across 9 clusters.

- **Primary outcome**: number of HCV treatment starts per year per site.

- **Analysis**:
  - “Traditional” statistics
  - “Novel” Qualitative Comparative Analysis (QCA)
8. In FY15 did your center use any of these **infrastructure changes** to promote HCV care in your center?

- Did you implement this strategy in FY15?
- If implemented in FY15, was it attributable to the HIT?

| Change physical structure and equipment (e.g., purchase a FibroScan, expand clinic space, open new clinics) |
| Change the record systems (e.g., locally create new or update to national clinical reminder in CPRS, develop standardized note templates) |
| Change the location of clinical service sites (e.g., extend HCV care to the CBOCs) |
| Develop a separate organization or group responsible for disseminating HCV care (outside of the HIT Collaborative) |
QCA Methods

1. Collect and calibrate data, construct truth table
   - Condition/Factor: absence = 0, presence = 1
   - Outcome: HCV treatment number $200 > 1$ and $< 199 = 0$

2. Run QCApro in R (Thiem, 2016) consistency > 0.80

3. Boolean minimization
   - AND, OR, NOT

4. Iterate steps 1-3

5. Address model ambiguity
Respondent Characteristics & “Traditional” Results (Rogal, 2017)

- HCV treatment starts positively correlated with the total number of strategies endorsed ($r=0.43$, $p<0.001$).

- 28 strategies significantly associated with treatment starts.

- Most frequently used strategies:
  - data warehousing techniques (85%),
  - intervening with patients (71%).

<table>
<thead>
<tr>
<th>Table 1: Respondent Characteristics</th>
<th>FY15 N</th>
<th>%</th>
<th>FY16 N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>130 VA Hospitals</strong></td>
<td>80</td>
<td>62%</td>
<td>105</td>
<td>81%</td>
</tr>
<tr>
<td><strong>Years in VA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 3</td>
<td>13</td>
<td>16%</td>
<td>23</td>
<td>22%</td>
</tr>
<tr>
<td>4 to 9</td>
<td>25</td>
<td>31%</td>
<td>31</td>
<td>30%</td>
</tr>
<tr>
<td>10 to 19</td>
<td>25</td>
<td>31%</td>
<td>38</td>
<td>36%</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>17</td>
<td>21%</td>
<td>13</td>
<td>12%</td>
</tr>
</tbody>
</table>

**Specialty**

- Gastroenterology/Hepatology: 33 (41%) vs 42 (40%)
- Infectious disease: 17 (21%) vs 21 (20%)
- Pharmacy: 13 (16%) vs 31 (30%)
- Primary Care: 8 (10%) vs 3 (3%)
- Other: 9 (11%) vs 5 (5%)

**Degree**

- PharmD: 35 (44%) vs 35 (33%)
- NP: 13 (16%) vs 21 (20%)
- MD: 11 (14%) vs 14 (13%)
- PA: 5 (6%) vs 3 (3%)
- RN: 2 (3%) vs 8 (8%)
- Other: 14 (18%) vs 2 (2%)

**Site Complexity**

- 1a: 27 (33%) vs 34 (32%)
- 1b: 14 (18%) vs 15 (14%)
- 1c: 12 (15%) vs 16 (15%)
- 2: 14 (18%) vs 19 (18%)
- 3: 12 (15%) vs 21 (20%)
QCA Heatmap
Treatment Starts by Strategies Used

Strategy 1 to 73
QCA Heatmap
Treatment Starts by Strategies Used
Solution
High Treatment

\[ n \text{ OUT} = 1/0/\text{C: 22/58/0} \]
Total : 80

\[ M1: S24 + S54*S70 + S55*S70 \Rightarrow \text{TX} \]

<table>
<thead>
<tr>
<th>incl</th>
<th>cov.r</th>
<th>cov.u</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.000</td>
<td>0.300</td>
</tr>
<tr>
<td>2</td>
<td>1.000</td>
<td>0.250</td>
</tr>
<tr>
<td>3</td>
<td>1.000</td>
<td>0.300</td>
</tr>
</tbody>
</table>

M1 : 1.000 0.550

- 4-strategy solution
- 100% consistency
- 55% coverage
Unpacking the Solution (1) – High Treatment

- $S24 + S70*(S55 + S54)$

- “local technical assistance”
- OR
- the combination of “activate patients”
- AND
- (“learn from early adopters”
- OR
- “partner with a university to share ideas”)
### Unpacking the Solution (2) – High Treatment

<table>
<thead>
<tr>
<th>1st Tier Strategies</th>
<th>2nd Tier Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local technical assistance</strong></td>
<td><strong>Centralize technical assistance</strong></td>
</tr>
<tr>
<td>S24, Interactive Assistance</td>
<td>S26, Interactive Assistance</td>
</tr>
<tr>
<td>GoZone 4 (L feasibility, H importance)</td>
<td>GoZone 3 (L feasibility, L importance)</td>
</tr>
<tr>
<td><strong>Engage in efforts to prepare patients to be active participants in HCV care</strong></td>
<td><strong>Create new clinical teams</strong></td>
</tr>
<tr>
<td>S70, Patient Engagement</td>
<td>S18, Support Clinicians</td>
</tr>
<tr>
<td>GoZone 4 (L feasibility, H importance)</td>
<td>GoZone 3 (L feasibility, L importance)</td>
</tr>
<tr>
<td><strong>Identify and learn from early adopters</strong></td>
<td><strong>Identify and prepare champions</strong></td>
</tr>
<tr>
<td>S55, Interrelationships</td>
<td>S48, Interrelationships</td>
</tr>
<tr>
<td>GoZone 1 (H feasibility, H importance)</td>
<td>GoZone 1 (H feasibility, H importance)</td>
</tr>
<tr>
<td><strong>Develop academic partnerships</strong></td>
<td><strong>Recruit, designate, and/or train leaders</strong></td>
</tr>
<tr>
<td>S54, Interrelationships</td>
<td>S45, Interrelationships</td>
</tr>
<tr>
<td>GoZone 2 (H feasibility, L importance)</td>
<td>GoZone 4 (L feasibility, H importance)</td>
</tr>
</tbody>
</table>
Mapping our Solution – High Treatment

- Change Infrastructure
- Utilize financial strategies
- Engage consumers
- Support clinicians
- Adapt and tailor to the context
- Provide Interactive Assistance
- Use evaluative and iterative strategies
- Develop stakeholder interrelationships
- Train and educate stakeholders
Further directions in conducting QCA

- Year 2
- Year 1 to Year 2 change scores
- Add temporality
- Examine lower treatment sites

Continue iteration
- **Outcome**: Vary the outcome & threshold
- **Case**: Examine differences within similar cases
- **Granularity**: Conditions by cluster, strategy, or other theme
- **Context**: Add contextual factors
- **Stage**: Adoption, implementation or sustainability
Limitations

- Despite shared understanding of strategies across sites, this evaluation was based on **self-report** from one respondent per site.
- We do not know (cannot discern) the **timing or sequence** of implementation strategies used.
- We did not include all **contextual variables**, e.g. patient factors and organizational features.
- Continuous outcome was **dichotomized**.
Conclusions

- Novel data collection method and analysis approach to uncovered strategies and combinations of strategies linked with high and low HCV treatment initiation.

- Difference-making strategies were oriented towards:
  - Multi-level relationship building and coordination (patients, leaders, academia)
  - Creating structures to learn and problem-solve (local and centralized technical assistance)

- Despite site heterogeneity we found patterns of strategy use, thus inviting closer examination of sites with the identified solution.

- Traditional and novel results align and complement one another.
  - strategy interdependency and conjunctural causation
Translating Research Into Practice – Policymakers, Administrators & Local Champions

- Validate and refine theory
  - Do ERIC strategies map together? Are they redundant? Mutually exclusive?
  - In the absence of implementation measures, binary variables analyzed with QCA might suffice?

- Design studies
  - Stepped wedge implementation

- Study the domains of implementation strategies (actor, action, target, dose)
  - Implement with fidelity, how to adapt

- Inform how context AND strategies influence outcomes
  - How do they work in tandem? Relative contribution of each?

- Guide strategy prioritization, how to group, how to sequence rollout
  - Allocate funds & update policies
Acknowledgements

- Veterans with HCV and their providers
- HIT Leadership Team & Regional Teams
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- VA BridgeQUERI PI Allen Gifford

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References


