Research Design: Wasson

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Section A

Research Design: Wasson Part I
Continuity of Outpatient Medical Care in Elderly Men: A Randomized Trial

Goals of the Study

- To determine the impact of provider continuity on the course of the patient’s illness
- To determine if earlier, positive findings regarding the benefits of provider continuity were generalizable to the adult population
Health Services Research and Evaluation Conceptual Framework

- Basic health services research
- Moderately policy relevant
- Not program evaluation
Hypotheses of Study

- The study is an hypothesis testing study
- Hypothesis—continuity of medical care will have a positive effect on the following:
  - The medical care process and use of services, and
  - The clinical outcomes of illness
Policy Relevance of Study

- Important to know if continuity of care makes a difference, particularly in a large system which operates outpatient clinics
- Relevant to veterans administration system (less applicable to civilian clinics)
Model of Effect of Continuous Care

**INDEPENDENT VARIABLE**
Continuous Care

**INTERVENING VARIABLES**

**DEPENDENT VARIABLES**
- Appropriate Use of Services
- Clinical Outcomes
Patient Selection and Exclusion

- >= age 55
- One way mileage from clinic < 90 miles
- Used VA more than other providers
- Used general medical clinics, not specialty only
- No patients with psychiatric DX or alcohol abuse
- Used VA within six months
- Patient mentally competent or alert
Study Design

- Experimental
- Prospective
- Randomized controlled design
  - Double blind
- Multiple observation points
  - R  X  O  O
  - O  O
- O = Observations at 15 and 30 months
- X = Continuous care during this period
Equilibrium Period

- A fair test of the hypothesis required that the experimental intervention have sufficient time for the differences in provider continuity of care to be established.
- Twelve months were allowed for this purpose (the initial twelve months of the study were called “the equilibration” period).
Characteristics of Patients During the Equilibration Period

- Age
- Diagnosis
- Hospital days
- Total outpatient visits
- Emotional impairment
- Limitations in function and mobility
- Chronic pain
Study Variables

- Major independent (causal) variable
  - Continuity of care
- Dependent variables
  - Medical care related
  - Patient-provider interaction
  - Preventive care
Study Variables

- Intervening variables
  - Age
  - Diagnosis—cardiac disease, respiratory disease
  - Hospital days during equilibrium period
  - Outpatient visits during equilibrium period
  - Limits in function
  - Chronic pain
Approaches to Measurement

- Raw percentage of visits to main provider
- Sequential index of continuity
- Continuity index (new)
  - Adjusts for number of different providers and total number of visits
Sources of Data

- Medical record
- Patient questionnaire (self-administered)
- Interview (in-person, during clinic)
- Pharmacy records
Section B

Research Design: Wasson Part 2
Threats to internal and external validity
Results
# Wasson: Continuity of Care

## Measurement of Provider Continuity During the Analysis Period

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Discontinuity Group</th>
<th>Continuity Group</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of visits with same provider</td>
<td>0.34</td>
<td>0.58</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Sequential visits with same provider</td>
<td>0.35</td>
<td>0.48</td>
<td>0.004</td>
</tr>
<tr>
<td>Continuity of care index</td>
<td>0.21</td>
<td>0.42</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>% of patients claiming continuity</td>
<td>51</td>
<td>71</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Internal Validity of Wasson Study

- History—no problem, randomization
- Maturation—no problem, randomization
- Testing—no problem, randomization
- Instrumentation—valid, reliable measures, some newly created
Measurement Reliability and Validity

- Accepted, published measures
- Use of medical records
- Use of reliability agreement approach for hospital classification into urgent, emergent, and elective
- Use of more than one continuity measure increases validity
### Internal Validity of Wasson Study

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>No problem</td>
</tr>
<tr>
<td>Selection</td>
<td>Some concern that the treatment group is not delineated from comparison group</td>
</tr>
<tr>
<td>Attrition</td>
<td>Two times greater withdrawal rate among comparison group</td>
</tr>
</tbody>
</table>
External Validity of Wasson Study

- Testing-treatment interaction
  - Possibly a problem with satisfaction score
- Selection-treatment interaction (very pertinent)
  - Rural
  - VA
  - In-patient oriented
  - Very high LOS
External Validity of Wasson Study

- Reactive/situational effects
  - Unlikely, if double-blinded
- Multiple treatment effects
  - Possible, given other sites of care used by patients
## Wasson: Continuity of Care

### Effects of Provider Discontinuity on Process and Outcome of Medical Care

<table>
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<tr>
<th>Measurement</th>
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<th>Continuity Group</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital days per patient</td>
<td>9.1</td>
<td>5.6</td>
<td>0.02</td>
</tr>
<tr>
<td>Intensive care days</td>
<td>1.4</td>
<td>0.4</td>
<td>0.01</td>
</tr>
<tr>
<td>LOS</td>
<td>25.5</td>
<td>15.5</td>
<td>0.008</td>
</tr>
<tr>
<td>% emergent hospitalizations</td>
<td>39</td>
<td>20</td>
<td>0.002</td>
</tr>
<tr>
<td>Patient satisfaction with continuity</td>
<td>4.5</td>
<td>5.9</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Patient satisfaction with provider knowledge and thoroughness</td>
<td>14.4</td>
<td>15</td>
<td>0.04</td>
</tr>
<tr>
<td>Patients believe provider gives excellent patient education</td>
<td>10</td>
<td>19</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>No. of outpatient chest X-rays and ECGs</td>
<td>1.3</td>
<td>1.7</td>
<td>0.03</td>
</tr>
</tbody>
</table>
General Strengths and Weaknesses

- Randomized controlled trial
- Used several alternative dependent and independent variable measures
- Basically very sound methodology
- Sensitive to many reliability and validity issues
- Independent variable (continuity) somewhat “watered down”
- Reliance on medical records without reliability check
- Implications of non-VA visits and non-medical clinic visits