Multifaceted Intervention to Improve Medication Adherence and Secondary Prevention Measures (Medication Study) After Acute Coronary Syndrome Hospital Discharge

Disclosures

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Background

- Adherence to cardiac medications in the year after ACS is poor
  - By 1 month, 1/3 stop at least 1 medication
  - By 1 year, only ~60% are taking statins
  - Adherence <60% even with no co-pay for cardiac medications
- Poor adherence is associated with adverse outcomes
Objective

• To test whether a multi-faceted intervention in the year after ACS hospitalization improves adherence to cardiac medications
  • Medication reconciliation and tailoring
  • Patient education
  • Collaborative care
  • Voice messaging
Methods

• 4 VA sites (Denver, Little Rock, Seattle, Durham)
• Inclusion criteria:
  • Admitted with ACS (biomarkers, symptoms, ECG)
  • Received usual care at VA
• Exclusion criteria:
  • Admitted with primary non-cardiac condition
  • Planned discharge to nursing home
  • Limited life expectancy
  • Lack of phone
  • Used of non VA pharmacy
ACS hospitalization (AMI or UA)

Hospital discharge: Patients received standard discharge instructions

IVR tele-monitoring and pharmacist contact as needed:
- Months 2-6: Monthly medication reminder and medication refill calls
- Months 7-12: Medication refill calls

Medication reconciliation with pharmacist

Pharmacist telephone contact

7-10 days Month 1

Intervention

Usual Care

12-month Follow-up visit
Analysis

• Primary outcome: Proportion of patients adherent (PDC>0.80) based on average PDC of cardiac medications at 12-months
  • PDC: number of days supplied over the number of days of follow-up
  • ß-blockers, statins, clopidogrel, ACE-I/ARB
• Secondary outcome: BP and LDL goals
• Tertiary outcome: MI, death, revascularization
• Sample size: 280 patients to have 80% power to detect 15% difference in proportion adherent
789 patients assessed for eligibility

536 patients excluded
• 428 not meeting inclusion criteria
  • No ACS: 152
  • Study Defined Exclusion Criteria: 276
• 108 refused to participate

253 patients randomized

129 Assigned to Receive Intervention

Intervention Patients Excluded:
5 patients withdrawn
2 No medication data

122 Intervention Patients

124 Assigned to Receive Usual Care

Control Patients Excluded:
3 patients withdrawn
2 No medication data

119 Usual Patients
Baseline characteristics were comparable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Usual Care</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Subjects</td>
<td>119</td>
<td>122</td>
</tr>
<tr>
<td>Age, Mean (SD)</td>
<td>64.0 (8.6)</td>
<td>63.8 (9.2)</td>
</tr>
<tr>
<td>Diabetes mellitus (%)</td>
<td>39.5%</td>
<td>50.8%</td>
</tr>
<tr>
<td>Prior Heart Failure (%)</td>
<td>10.9%</td>
<td>13.9%</td>
</tr>
<tr>
<td>Chronic Kidney Disease (%)</td>
<td>23.5%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Chronic Lung Disease (%)</td>
<td>19.3%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Prior CAD (%)</td>
<td>66.4%</td>
<td>64.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of ACS</th>
<th></th>
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<tbody>
<tr>
<td>STEMI</td>
<td>12.6%</td>
<td>14.8%</td>
</tr>
<tr>
<td>NSTEMI</td>
<td>30.3%</td>
<td>28.7%</td>
</tr>
<tr>
<td>Unstable angina</td>
<td>57.1%</td>
<td>56.6%</td>
</tr>
</tbody>
</table>

| In-hospital revascularization     |            |              |
| PCI (%)                           | 39.8%      | 43.8%        |
| Drug eluting stent (%)            | 84.1%      | 78.9%        |
| CABG (%)                          | 17.1%      | 6.7%*        |

* p<0.05
Primary outcome: Higher adherence in intervention
Proportion with average PDC >0.80
Sensitivity analysis: Adherence higher in intervention. PDC >0.80 for all medications.

- Average PDC: Intervention > Usual Care
- All PDC >0.80: Intervention > Usual Care

* *p<0.05
Sensitivity analysis: Adherence higher in intervention

Mean PDC

- Composite
- Statin
- ACE/ARB
- Clopidogrel
- B-blocker

- Intervention
- Usual Care

* p<0.05
No difference in clinical outcomes at 12-months (BP, LDL, revascularization, MI and death)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Usual Care</th>
<th>Intervention</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieved BP goal (%)**</td>
<td>49%</td>
<td>59%</td>
<td>0.23</td>
</tr>
<tr>
<td>LDL &lt;100 mg/dl</td>
<td>83%</td>
<td>72%</td>
<td>0.14</td>
</tr>
<tr>
<td>Mortality %</td>
<td>7.6%</td>
<td>9.0%</td>
<td>0.86</td>
</tr>
<tr>
<td>MI (%)</td>
<td>4.2%</td>
<td>6.6%</td>
<td>0.60</td>
</tr>
<tr>
<td>Revascularization (%)</td>
<td>17.6%</td>
<td>11.5%</td>
<td>0.24</td>
</tr>
</tbody>
</table>

BP goal: BP<140/90 mm Hg and <130/80 mm Hg for DM and CKD
a: 94% had BP data
b: 63% had LDL data
Modest intervention costs and similar total costs at 12-months

<table>
<thead>
<tr>
<th>Costs</th>
<th>Usual Care</th>
<th>Intervention</th>
<th>P-value</th>
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<tbody>
<tr>
<td>Intervention</td>
<td>$0</td>
<td>$360</td>
<td></td>
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<tr>
<td>Cardiac medications</td>
<td>$663</td>
<td>$722</td>
<td>0.70</td>
</tr>
<tr>
<td>Total medications</td>
<td>$2,724</td>
<td>$2,887</td>
<td>0.43</td>
</tr>
<tr>
<td>Total outpatient</td>
<td>$11,691</td>
<td>$13,086</td>
<td>0.53</td>
</tr>
<tr>
<td>Total inpatient</td>
<td>$14,287</td>
<td>$11,294</td>
<td>0.68</td>
</tr>
<tr>
<td>Total (intervention, medication, outpatient, and inpatient)</td>
<td>$19,989</td>
<td>$19,901</td>
<td>0.56</td>
</tr>
</tbody>
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Limitations

• Predominantly males within an integrated health care system
• Highly adherent patients
• Relatively short duration of follow-up
Conclusions

• Multi-faceted intervention improved adherence to cardiac medication after ACS
• No difference in the clinical outcomes
• Modest cost of the intervention over the 1 year period
• Important to understand impact of improvement in adherence on clinical outcomes
Multifaceted Intervention to Improve Medication Adherence and Secondary Prevention Measures After Acute Coronary Syndrome Hospital Discharge: A Randomized Clinical Trial

P. Michael Ho and coauthors

Title: Multifaceted Intervention to Improve Medication Adherence and Secondary Prevention Measures After Acute Coronary Syndrome Hospital Discharge: A Randomized Clinical Trial

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