Managing Medications in Complex Older Patients

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Learning Objectives

1. Define the two major types of medication nonadherence and methods to measure
2. Discuss the epidemiology of medication adherence problems in the elderly
3. Discuss how to determine if there are medication adherence problems in the elderly and describe evidence-based/practical approaches to improve medication adherence in the elderly

Types and Consequences of Medication Nonadherence

- Nonfulfillment (1st or initial medication nonadherence)
- Nonadherence/Nonpersistence (2nd nonadherence)
- Medication Overadherence

Medication nonadherence may occur in 50% & result in between $100 and $300 billion of avoidable health care costs in the US annually

Formal Methods to Measure Medication Adherence

- Pharmacy Claims (PDC, MPR)
- Electronic Monitoring (MEMS, ingestible sensors)
- Pill Counts
- Drug Levels/Biologic Response
- Self-Report Instruments


CMS Part D Medication Adherence Quality Measures Using Pharmacy Dispensing Data

- “5 Star Rating” uses Proportion of Days Covered
- \( \text{PDC} = \frac{\text{# of days between 1st and last rx fill}}{\text{measurement period}} \)
- Adherence=\( \text{PDC} > 0.80 \) (arbitrary)-goal is 75% achieve

- Recent data by type of med classes and Part D plan

<table>
<thead>
<tr>
<th>Classes</th>
<th>Medicare Adv. (%)</th>
<th>PDP (%)</th>
</tr>
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<tbody>
<tr>
<td>Statins</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>RASA for HTN</td>
<td>79</td>
<td>82</td>
</tr>
<tr>
<td>Oral DM agent</td>
<td>77</td>
<td>80</td>
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**Medication Event Monitor System (MEMS®)**

- Microprocessor chip embedded in the cap
- Records date and time when the cap is opened or inhaler actuated for a dose
- Data from cap downloaded

**Morisky Medication Adherence Scale**

- Original is 4 items—also newer 8 item scale
- Moderate correlation with adherence by pharmacy fills
  1. Do you ever forget to take your medicines?
  2. Are you careless at times about taking your medicine?
  3. When you feel better, do you sometimes stop taking your medicine?
  4. Sometimes if you feel worse when you take your medicine, do you stop taking it?

Morisky DE, et al. Med Care 1986;24: 67–74

**Cost-Related Non-Adherence (CRN) Survey**

- Part of MCBS
- During the past x months have you not filled a prescription because it was too expensive?
- During the past x months have you skipped a dose, or taken a smaller dose to make the prescription last longer because you were worried about the cost of the medicine?

Safran DG, et al. Health Aff 2005;W5-152-W5-166

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**Primary Nonadherence With Prescribed Medication in Primary Care**

- Design: Cohort
- Patients: 15,961 primary care patients (53%>65yo) from a network of 31 MDs from Quebec, Canada
- Results: 31.3% of new RXs electronically written not filled; Greatest in those nxd for headache, IHD, & depression; Less likely in elders (AOR 0.89; 95%CI 0.85-0.92)


**Antihypertensive Medication Adherence in Medicare Part D Beneficiaries**

- Design: Cohort
- Patients: 168,522 with Part D and uncomplicated HTN
- Results: 20.5% had antihypertensive medication adherence problems as per MPR<0.80; More likely in Hispanics (AOR 1.72; 95%CI 1.09-1.18) and non-whites (AOR = 1.25; 95% CI 1.18-1.33)

Medication Nonadherence in Older Adults

- Data Source: Health ABC study
- Design: Longitudinal
- Sample: 897 participants with CHD, DM and/or HTN
- Outcomes: MMAS-4
- Results: 40.7% reported medication nonadherence; Blacks were more likely than whites to report nonadherence (AOR 1.85, 95% CI 1.25–2.74)


Selected Risk Factors for Medication Non-Adherence in the Elderly

- Side effects (? Intelligent non-adherence)
- Expense/Cost
- Medication knowledge/beliefs
- Impaired hearing and vision
- Cognitive function decline
- Manual dexterity (ability to open safety caps)
- Difficulty taking medication (e.g. swallowing)
- Multiple prescribers and pharmacies
- Multiple medications and complex regimens

Steinman MA, Hanlon JT. JAMA. 2010;304:1592-160

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Screening for Potential Nonadherence during “Brown Bag” Review

- What is the name of medication and how do you take it?
- What is your understanding about how this medicine may help you?
- How helpful do you think the medication is?
- Does someone help with meds?
- Do you use some sort of system (e.g., pill box)?
- More than one physician/pharmacy?
- More than one type of medication in the vial?
- Amount remaining in the vial inconsistent with rx fill date?
- Have you had any side effects, unwanted reactions or other problems from any of your medications?
- Presence of any risk factors?


Successful Approaches to Improve Medication Adherence

- Informational/Educational (e.g., oral counseling, written materials, icon-based labeling of medication containers, motivational interviewing)
- Behavioral (e.g., list/calendar, pill boxes, packaging, alarm devices, mobile texts)
- Family and Social (e.g., support and monitoring)
- Self-medication (e.g., in hospital or LTCF before d/c)
- Combined approaches


RCTs Designed to Improve Medication Adherence & Outcome in Elderly

Low Bias With Design & 1st Primary Clinical Outcome

Nazareth I. Age and Ageing 2001;30(1):33-40. (↑adherence; ↔ outcome)

Wu JY. BMJ 2006;333(7567):522. (↑adherence & outcome)

Low Bias With Design, Adherence & 1st Clinical Outcome

Gray TA. Eye 2012;26(3):407-17. (↑adherence; ↔ outcome)

Solomon DH. Osteopor Intern 2010;21(1):137-44. (↑ adherence & outcome)

US Studies Excluded from Cochrane Review


Lee JK. JAMA 2006;296:2563-71. (↑adherence & ± outcome)


Schneider PJ. J Am Pharm Assoc 2008; 48:58-63. (↑adherence & outcome)


Impact of of Pharmacist Telephone Counseling on Mortality in Older Polypharmacy Patients

Combined Interventions to Improve Medication Adherence in Heart Failure

- Design: RCT
- Setting: Urban ambulatory care practice
- Patients: 314 low-income/literacy patients ≥50
- Intervention: 9 months of RPh counseling, written med info and med bottles dispensed with icons (e.g., ACEI-picture of ace of hearts)
- Results: ↑med adherence (MEMS-79% vs. 68%); ↓ED visits, hospital admissions, & annual health care direct costs

Example of a Blister Pack

Effect of an Intervention on Medication Adherence, BP & LDL
- Design: RCT
- Setting: Walter Reed Army Med Center
- Patients: 200 community-based patients, >65 taking 4+ chronic medications
- Intervention: 6 month run-in; then 6 months of standardized med education, regular RPh f/u, and meds blister packs.
- Results: Sig ↑ adherence; ↓Systolic BP, ↔ LDL

Lee JK, et al. JAMA 2006; 296:2563-2571

Places to Find Medication Adherence Aides
- Written info- (http://druginfo.nim.nih.gov/)
- Blister packaging (e.g., RxMap, Multimed)
- List/calendar- (AHRQ-search for how to make a pill card)
- Pill box (e.g., e-pill.com)
- Automated medication dispenser (e.g., MedReady)

Patient Name & Date Created
Created by & Contact #

Comparison of Different Adherence Aides
Subjects over 60 (n=123)
Physician Visit
Post-visit interview (n=123)
Cal (n=22) Oral (n=23) Writ (n=25) Pill box (n=23) Ctl (n=30)
Post Intervention Interview

Comparison of Different Adherence Aides

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<thead>
<tr>
<th>Outcome Variables</th>
<th>Post-intervention</th>
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<tr>
<td>Patient preference</td>
<td>Pack&gt;Writ&gt;Oral&gt;Cal</td>
</tr>
<tr>
<td>Self-reported adherence</td>
<td>Pack&gt;Oral</td>
</tr>
<tr>
<td></td>
<td>Pack&gt;Writ</td>
</tr>
<tr>
<td></td>
<td>Pack/Cal&gt;Writ/Oral</td>
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Example of Automated Medication Dispenser

- Compartments for 28 doses
- Low frequency alarm/blinking light when time to take meds

Other Practical Approaches to Improve Medication Adherence

- Resolve intelligent non-adherence problems due to ADEs
- Prescribe generics to reduce costs
- Give liquids if swallowing problems
- Reduce medication regimen complexity
- Specify easy off caps/large print labels
- Engage caregiver to help manage meds

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