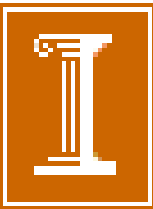




Collaborative Tools for Provider/Patient Self-Care Planning

Dan Morrow, Liza Raquel & Angela Schriver

Beckman Institute and Human Factors Division, University of Illinois at Urbana-Champaign



Overview

- Nonadherence to prescribed medications
 - Patient cognitive limits + Inadequate health system support
- Patient/provider collaboration
 - Potential to support low literacy patients that is often unrealized
 - Tools to support patient/provider collaboration and adherence
- Medtable
 - Developing the medtable
 - Preliminary evaluation study
- Conclusions

Medication Nonadherence



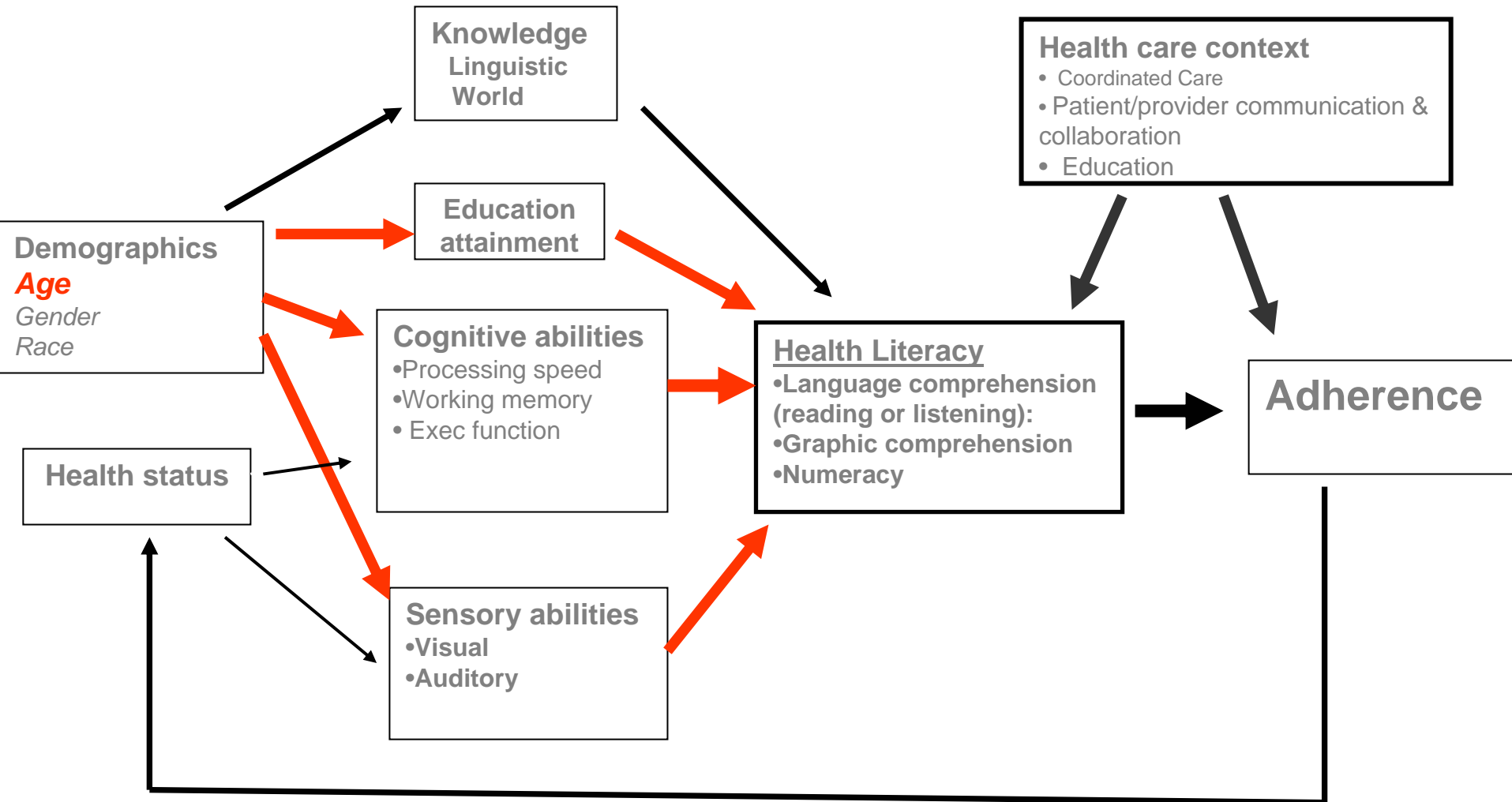
- Reduces treatment efficacy and threatens safety in outpatient settings (Aspden et al., 2007)
- Challenge for chronically ill elders
 - take on average 4-5 prescribed medications (Kaufman et al 2002)
 - may take only 50% doses of medications prescribed for cardiovascular illness (Avorn et al. 1998), diabetes (Brown et al 1999), or other illnesses
 - 30% of elders' hospitalizations due to medication nonadherence (Col et al. 1990)



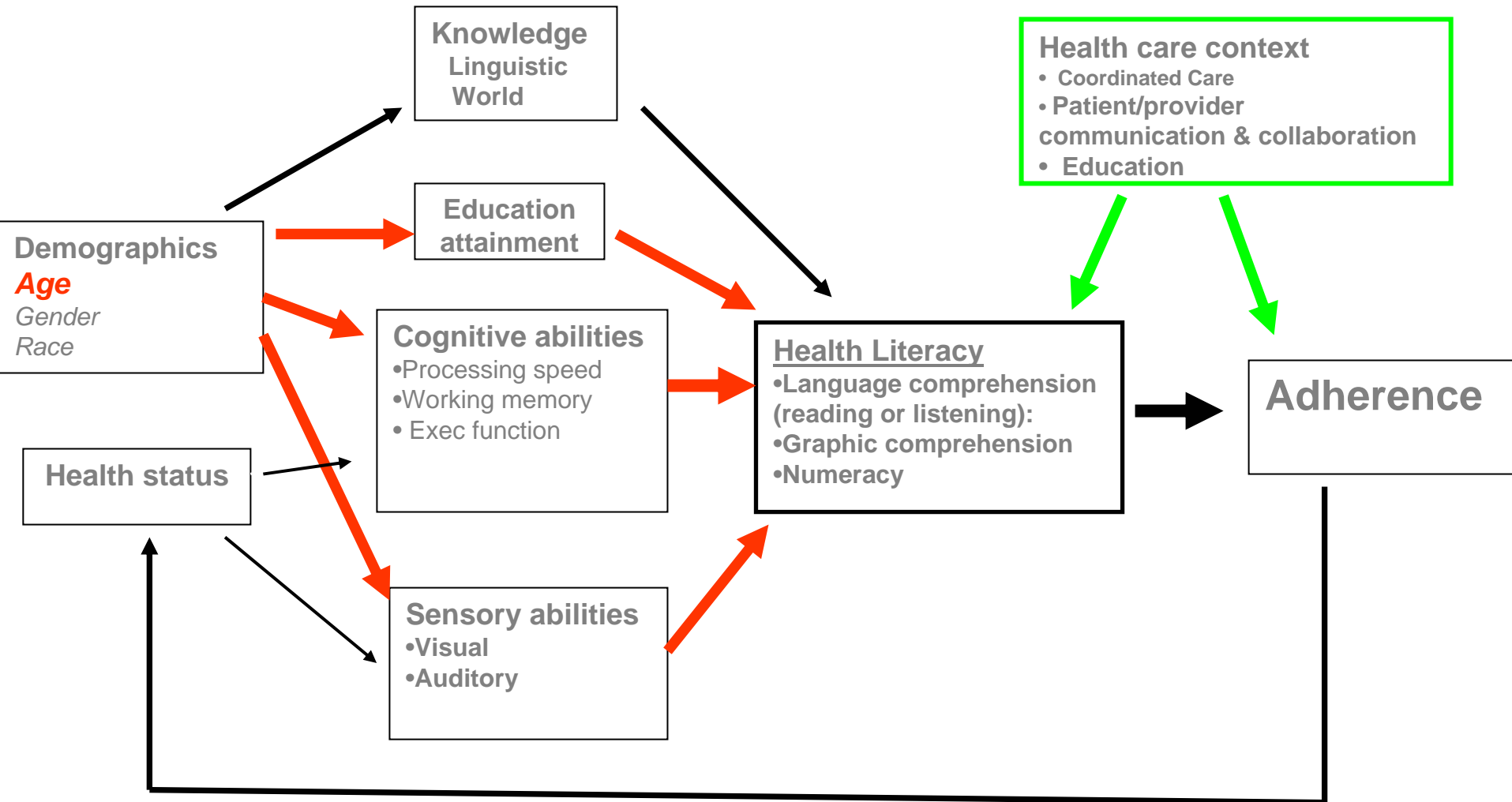
Causes of Nonadherence

- Older patients often do not understand how to take medications (poor comprehension), or forget to do so (poor prospective memory)
- Comprehension problems reflect age-related declines in literacy and cognitive abilities, coupled with...
- Insufficient help from health care system
 - Fragmented care, poor coordination, inadequate medication reconciliation

Cognition, Health Literacy, and Adherence (Morrow et al. 2006)



Cognition, Health Literacy, and Adherence (Morrow et al. 2006)





Patient/Provider Collaboration

- *Potential* to support adherence by offsetting cognitive and literacy limitations...
- BUT provider communication is not always
 - Complete (Sleath et al., 1997; Tarr et al., 2004)
 - Organized (Ley, 1997; Rost & Roter, 1989)
 - Interactive (check patient comprehension; Schillinger et al., 2003)
- As a result...
 - Little shared understanding of adherence goals and plans
 - **Patients & providers “not on same page”**
 - Patient goes home unprepared: ‘Discontinuity of care’ (Forster et al 2003)

Improving Provider/Patient Collaboration



- Providers need to...
 - Present specific, easy-to-understand information (about treatment, illness)
 - Check patient comprehension and explore concerns
- Patients need to...
 - Present information about daily routine, barriers to adherence...
- Providers and patients need to work together to create concrete adherence plan
 - Develop and agree on plan that addresses medication and patient constraints

Improving Provider/Patient Collaboration



- Tools to help patients and providers get on the same page
 - Distributed cognition (Hutchins, 1995; Zhang & Norman, 1994)
 - Older adults may adaptively shift from internal to external resources to offset declines in cognitive resources (environmental support)



Collaborative Tools in Health Care Settings

- Providers rely on tools to get work done
 - (white boards, paper records, computer displays...)
- Not frequently used in patient/provider collaboration



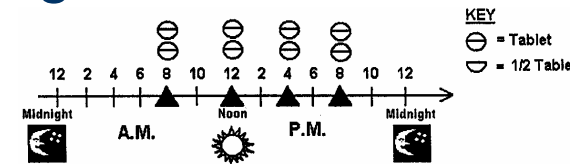
Collaborative Tools in Health Care

- Getting patient and provider on same page

- Present and understand information

- Visual aids can improve older adults' comprehension of med information

(Katz, Kripalani, & Weiss.2006; Morrow et al., 1998)



- Check comprehension

- By using tool, patients can show providers how they understand task (“teachback” strategies)

- Support planning

- ‘External workspace’ for developing adherence plans

Collaborative Tools in Health Care



- Graphic aids used to support medication use by patients with complex regimens (DeWalt et al. 2003; Gifford & Groessel, 2002; Murray et al., 2007)
- But no focused research to refine tools and procedures for their use in health care settings (What works best? Under what conditions?)

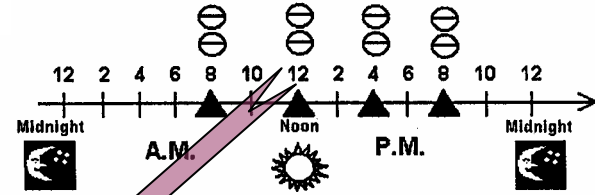
Medtable: Tool for Collaborative Planning about Medication Adherence

- First steps: Developing the tool
 - Should reduce cognitive complexity of planning
 - Externalizes key problem constraints
 - Should reflect how older adults think about taking medication

Medtable

Reflects how patients think about taking meds

KEY
 = Tablet
 = 1/2 Ta



Daily Medication Schedule

Externalize key constraints

	Wake Up	Breakfast			Lunch			Dinner	Bedtime
Times	:	:	:	:	:	:	:	:	:
Medications									
1 Name:									
Instructions:									
2 Name:									
Instructions:									
3 Name:									
Instructions:									
4 Name:									
Instructions:									



Medtable: Collaborative Tool for Planning about Medication Taking

- First steps: Evaluating the tool
 - Simulated patient/provider medication scheduling task
 - Participants
 - 72 healthy well educated older adults (mean age=70) randomly assigned to act as provider or patient (36 pairs)..
 - Procedure
 - Provider (with medication information) works with patient (information about daily schedule) to develop schedule that satisfies constraints.

Medtable Study: Procedure

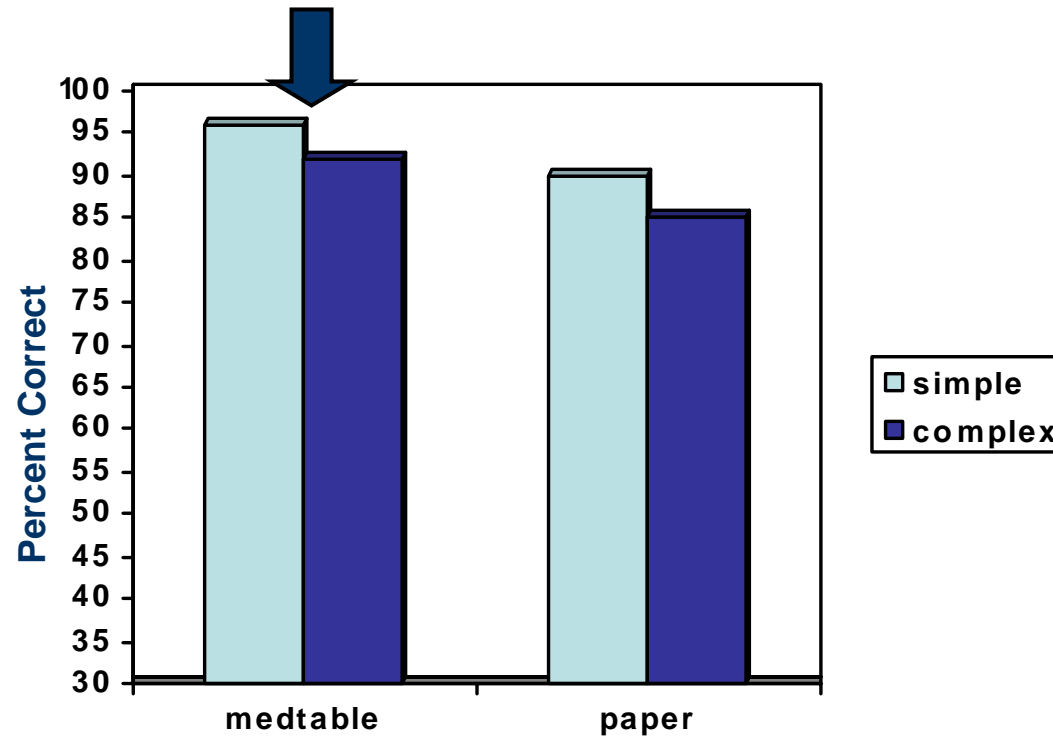
- *Medication information (for “provider”)*
 1. Lanoxin (for congestive heart failure):
 - Special Instructions - Must be taken with food.
 - Dose - Take 1 pill one time each day.
 2. Atenolol (Beta-Blocker):
 - Special Instructions - Must be taken on an empty stomach; cannot be taken within 2 hours of Lanoxin.
 - Dose - Take 1 pill, twice each day. Space doses by at least 8 hours
- *Daily routine (for “patient”)*
 - Complexity of information (regular vs irregular schedule)

Collaborative Aid Study:

- Potential benefits of medtable
 - Improve patients' understanding of medication information *
 - Improve providers' understanding of how patients conceptualize adherence
 - **Improve patient/provider concordance**
 - Create more accurate and feasible plans *
 - Improve patients' ability to implement plan
 - Implementation intention
- Performance measures in the study
 - Accuracy of medication schedules
 - Problem-solving efficiency (time per accuracy point)

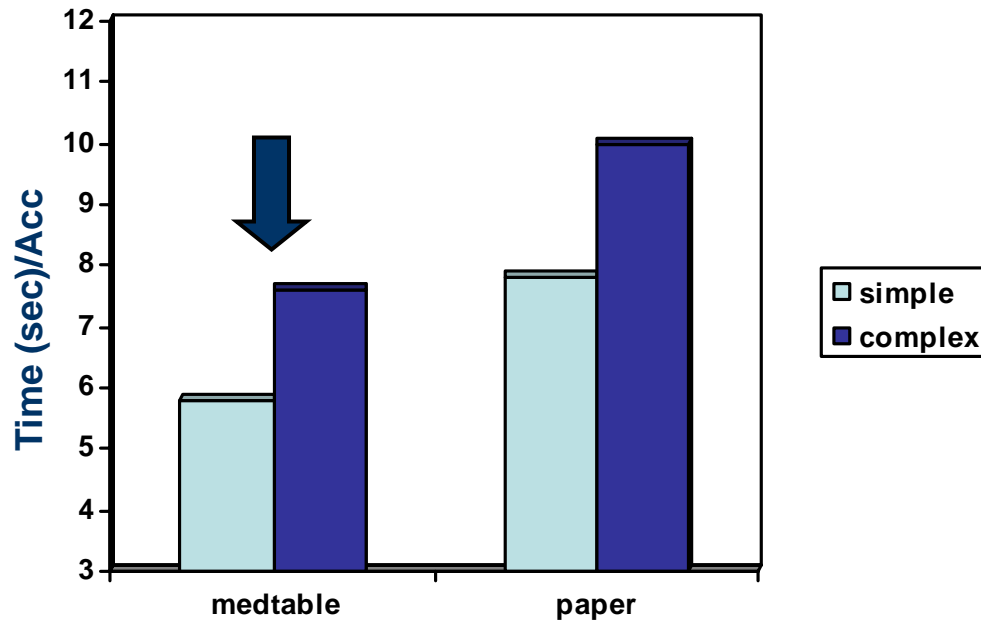
Collaborative Aid Study Findings

- Participants who used medtable created more accurate schedules



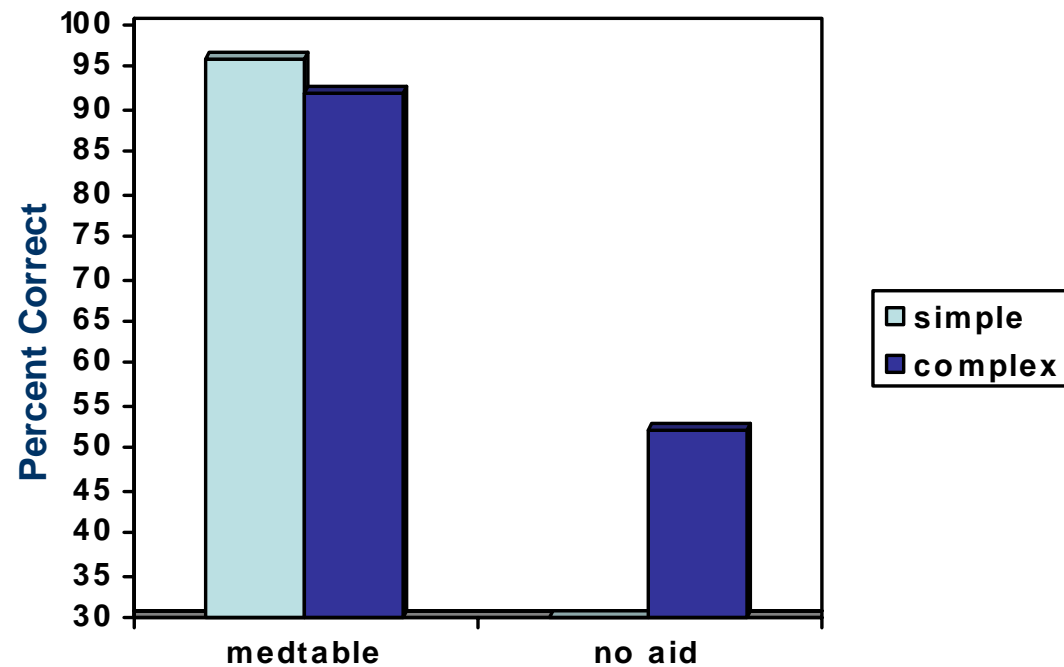
Collaborative Aid Study Findings

- Participants who used medtable created schedules more efficiently



Collaborative Aid Study Findings

- Participants who used medtable created more accurate schedules compared to those with no aid



Daily Medication Schedule



Wake Up

Breakfast

Lunch

Dinner

Bedtime

(midnight)

Times	8:00	8:30	:	:	1:00	:	6:30	7:40	:	12: AM
Medications 1 Name: Zolomac (over the counter) Instructions: X must be taken at bedtime - 8 hrs. apart 1 pill 2x daily										X
2 Name: Glybitor (diabetes) Instructions: 30 min before a meal 1 pill 2x daily 10-12 hrs apart							X			
3 Name: Hydrapaque (reduces water) Instructions: 2 pills 2x daily 8 hrs. apart 4 hrs before bedtime							XX			
4 Name: Levothril (thyroid) Instructions: 1 pill 2x daily 8oz glass water 8 hrs. apart							X			

Full

~~Question~~ Zithromax w/ 8oz H₂O
 8:00
 8:30
 9:00
 Lunch 11:00 - Question
 1:00

6:30 Fosimaf
 Dinner 7:PM Sporolacton w/ dinner
 9:00 Question
 10:00 Zith w/ 8oz H₂O
 Bedtime 12am

Question → empty stomach 1 hr before or 2 hrs after
 1-2x/day no other w/in 1 hr
 at least 8 hrs apart

Fosimaf ✓ 1-2x/day do not eat for 30 min
 8 hrs apart after - do not lie down
 for 1 hr

Sporolactone ✓ 2x/day w/ food not w/
 8 hrs apart 4 hrs bed

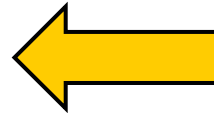
Zithromax 2x/day 8oz glass of H₂O
 at least 8 hrs apart

Summary

- Older adults in our study planned more effectively when using medtable
- Perhaps because medtable was designed to
 - reduce cognitive complexity of planning (externalize constraints)
 - support collaboration: External workspace that guides joint attention to relevant information

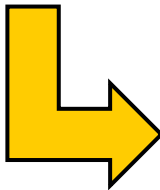
Next Steps: The Medtable in Primary Care

Before office visit
Provider ensures medication list
is current and complete
(Reconciliation)



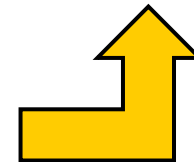
After visit

- Provider: Updates medical record
- Patient: Takes medtable home
 - Guide for medication taking
 - Personal Health Record



During office visit

- Provider adds medication information to medtable
- Patient adds daily routine information
- Provider & patient jointly complete medtable



Implications for Practice

- Can clinicians and patients use the aid during routine care?
 - Time pressure!
 - Most appropriate for patients with challenging regimens?
 - Training needs
- Ideally, medtable would be implemented in a way that combines virtues of
 - “Low tech” paper aid (interaction)
 - Technology (easy to generate, tailor, and update medtable)

Questions??????

Daily Medication Schedule

Time	Wake Up		Breakfast		Lunch		Dinner		Bedtime		
	1	2	1	2	1	2	1	2	1	2	
Medications											
1 Name: Instructions:											
2 Name: Instructions:											
3 Name: Instructions:											
4 Name: Instructions:											

