

Introduction

- **Overall goal**
 - Improve cognitive support for clinicians using EHR systems
 - Guide design of computerized, patient-specific **knowledge summary** (see Figure) to help providers meet their information needs
- **Prior work** on providers' information needs
 - 0.2 to 1.5 questions per patient
 - > half are not answered

Results

Sample: 36 patient visits; 10 providers

Information needs frequency:

- 1.9 information needs per patient visit [range: 0 to 7]
- 53% not met during the appointment

Information need types:

- Treatment: 46 (67%)
 - Drug treatment: 40 (58%)
- Diagnosis: 14 (20%)

Information need type	n(%)	Example
What is the drug of choice for situation y?	13 (19%)	"What is the best drug choice for diabetes with CHF?"
What are the adverse effects of drug x?	10 (14%)	"Can rivastigmine cause hallucinations?"
What is treatment goal for condition y?	6 (9%)	"What is the HbA1c goal in the aging population?"

Aims & Methods

- **Aim 1:** Assess providers' information needs and information-seeking behavior in the care of complex older adults.
 - Observations at University, Salt Lake VA, and Intermountain
 - Cognitive work analysis of visits
 - Questions classified according to Ely's information needs taxonomy
- **Aim 2:** Design patient-specific and knowledge summary prototypes to assist decision-making.
 - Manually craft knowledge summaries to address cases observed in Aim 1
 - Obtain provider feedback

Knowledge Summary Prototype

Conditions

Hypertension [choice of antihypertensive](#)

Blood pressure goal: target blood pressure of 150/80 mm Hg with indapamide sustained release (HYVET trial) reduced 21% (p=0.02) in total deaths, 39% (p=0.05) in stroke-related death, 64% (p<0.001) in fatal and nonfatal heart failure, and 34% (p<0.001) in cardiovascular events [details](#)

Diabetes [diabetic nephropathy](#) [glycemic goals](#) [lipid-lowering](#) [insulin](#)

Consensus algorithm issued by the ADA lists metformin as the initial drug therapy of choice for the management of type 2 diabetes mellitus. [details](#)

Medications

Enalapril [contraindications](#) [patient education](#) [how supplied](#) [interactions](#)

Dose: Adults: Initially, 2.5-5 mg PO once daily. In patients with hyponatremia, hypovolemia, moderate-severe CHF, renal dysfunction (ie., Scr > 1.6 mg/dl), or in those receiving diuretics, an initial dose of 2.5 mg is recommended.

Side effects: agranulocytosis, anaphylactoid reactions, angioedema, aplastic anemia, azotemia, cholestasis, hepatic failure, hyperkalemia, hypotension, jaundice, neutropenia, orthostatic hypotension. [details](#)

Metformin [contraindications](#) [patient education](#) [how supplied](#) [interactions](#)

Dose: Initially, 500 mg PO twice daily or 850 mg PO once daily, given with meals. Dosage increases should be made in increments of 500 mg weekly or 850 mg every 2 weeks, up to 2000 mg/day, given in divided doses. Patients can also be titrated from 500 mg PO twice daily to 850 mg PO twice daily after 2 weeks. Maximum is 2550 mg/day. [details](#)

Side effects: anemia, anorexia, diarrhea, dysgeusia, dyspepsia, flatulence, hypoglycemia, hypotension, lactic acidosis, malaise, metabolic acidosis, metallic taste, myalgia, nausea, vitamin B12 deficiency, vomiting, weight loss.

Discussion

- Higher rate of information needs than in most previous studies
- Most information needs motivated by polypharmacy and aging
- Small set of question types
 - Knowledge summary to focus on these question types
- Next step: automate knowledge summary and integrate with EHR
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