

Clinical Research and Methods

Opportunities for the Use of Decision Aids in Primary Care

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Background and Objectives: Shared decision making (SDM) is part of a larger movement for patient-centered approaches to care. SDM can be facilitated through the use of decision aids (DA), which are evidence-based tools designed to transmit information on topics suitable for SDM. They are intended to facilitate the process of patients arriving at an informed, values-based choice in partnership with physicians. Research indicates that SDM and the use of DA are underutilized. This study evaluated SDM and DA in primary care. **Methods:** Adult patients presenting for chronic disease follow-up to one of four participating primary care health centers were recruited over 16 months. Visit discussions were audiorecorded, transcribed, and coded using Davis coding. Discussion comments were coded for type of SDM (with and without DA) and topics matched against two DA registries. **Results:** Forty-four unique patient visits were recorded. Shared decision activities on 15 topics were found in 34 discussions, across 27 (61%) of the visits. DA use did not occur in any visit. Fifteen (34%) visits included topics with peer-validated, freely available DA. **Conclusions:** Even when shared decision making occurs, DAs are rarely used. Research is needed to identify and reduce barriers to using DAs in primary care.

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The move away from a paternalistic model of medicine toward shared decision making between patients and providers has resulted in a shift in care delivery. Shared decision making (SDM) includes a number of elements that go beyond patient education; in particular, patient values are evoked and included in physician feedback and recommendations.¹

The SDM model presented by Charles and colleagues has three distinct, yet overlapping, steps: (1) exchanging information, (2) deliberating on information and treatment implications, and (3) agreeing on a therapeutic option. Ideally, the decision is aligned with the patient's values throughout these steps.² SDM is best suited when

more than one medical outcome may be beneficial, and evidence does not strongly favor one approach.^{3,4} SDM can also prevent the liabilities of paternalism, in which the values of the patient may be underweighted. Further, SDM may temper misunderstandings between physicians and patients when there are differences in cultural values and personal values and health beliefs.

Shared decision-making discussions between providers and patients can be enhanced with decision aids (DAs)⁵. DAs are standardized, evidence-based tools intended to transmit complex clinical information and facilitate the process of arriving at an informed, values-based choice among two or more health care alternatives.^{6,7} They are designed to supplement rather than replace the patient-physician interaction when trying to reach a shared decision. One function of DAs is to help patients consider multiple options in light of their personal values, so that their decisions match what is most important in their lives (even if this compromises the potential for maximum medical outcomes). DAs can help clarify the goals and objectives for both patients and providers, and this clearer understanding of goals

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and objectives may increase the efficiency of care and avoid frustration or confusion.⁸ Patients and physicians have expressed support for the use of DAs in the clinical encounter.⁹⁻¹² Krist et al found increased participation in SDM in patients exposed to DAs prior to meeting with the physician.¹³

In practice, DAs can be presented to patients repeatedly with and without provider counseling. DAs are available as video or written materials to be given to the patient before, during, or after a patient encounter. Physicians and other staff can give patients and/or family members DAs to take home and follow up with a discussion at their next visit. This may be especially appropriate when decisions are complex, such as with cancer treatment or the use of feeding tubes near the end of life. Materials may be tailored to patient characteristics specific to the topic, such as age (eg, acne treatment) and gender (eg, prostate cancer screening and breast cancer treatment options).

International standards have been developed for DAs.⁷ The Ottawa Health Research Institute (OHRI) uses standardized criteria to critically review DAs that are available in English and French, many of which are available for downloading from the Internet at no charge. These DAs are evaluated on their development process, content, and effectiveness (<http://decisionaid.ohri.ca/>). Such efforts to standardize SDM and DA are very timely given the variety of SDM conceptual approaches and methods.¹

Conceptual and empirical evidence exist for the use of SDM and DAs in primary care.^{5,13,14} Generally, the improvements seen with DAs pertain to improved patient satisfaction, knowledge, and alignment with values, not necessarily the actual decision.¹⁴ Elwyn demonstrated improved patient and physician satisfaction, as well as agreement, after physician training to use risk communication aids.¹⁵ In one study of 267 patients and 50 physicians, congruence with decision-making preferences predicted patient satisfaction, adherence, and their perception of their health status, while age, ethnicity, and gender congruence had no predictive value.² Corser found higher patient knowledge and adherence to diabetic management goals in diabetics involved in SDM.¹⁶ Brody found improved satisfaction in patients who participated in decision making.¹⁷

Yet, efforts to use the SDM model, with or without evidence-based DAs, are still not standard practice. In a study of outpatient physicians, Epstein found that less than 1 minute in a 20-minute encounter was spent discussing treatment options and planning, that informed decision making occurred in only 9% of the visits, and that physicians asked patients if they had questions in less than 50% of visits.¹⁸ Legare found that only 10% of physicians enrolling in a workshop on SDM had heard of the concept prior to participating.¹⁹

A better understanding of SDM approaches (with and without DAs) in real patient-physician encounters can help to identify points and approaches for intervention. The purposes of this study were to evaluate the use of SDM and DAs in primary care practice and to determine the number and range of clinical topics for which DAs could have been introduced and used to facilitate SDM.

Methods

A secondary analysis was of with data from a larger Centers for Disease Control and Prevention (CDC)-funded study on immunization of adults with chronic diseases that put them at risk for influenza or pneumonia. The parent study and this secondary analysis were approved by the Institutional Review Board of the University of California, San Diego. The patients and clinicians who volunteered for the study provided written informed consent.

Setting and Subjects

The data collection phase of the study occurred over 16 months, between late 2003 and early 2005. Four non-specialty, primary health care clinical settings—three nonprofit community health centers (CHC) and one for-profit physician managed practice—served as study sites. The CHC patient population was predominantly of low socioeconomic status, while the for-profit facility provided care for upper-middle class clientele with commercial insurance.

A convenience sampling approach was used in this study. The providers (physicians, nurse practitioners, and physician assistants) employed at study setting sites were eligible for participation. Data on ethnicity and age of providers were not collected, and all providers were primary care clinicians. For patients, the inclusion criteria were adult age and matched CDC-specified categories of high-risk persons for pneumococcal pneumonia and or influenza (eg, diabetes, HIV infection, chronic obstructive lung disease, etc). The patients were followed by the participating clinics for these chronic diseases and were established patients. We did not have access to their medical records and did not collect information on length of time with the providers, nor on patients' ethnicity; all patients spoke English. Clinic staff, trained by research personnel, screened the medical records of patients scheduled for clinic visits to determine the study eligibility.

Data Collection

Various types of data were collected for the study, including audiorecordings of 53 patient-physician encounters. Audiorecordings were transcribed by one individual. Two individuals (a physician and a psychologist) listened to the tapes, and each separately coded

comments from each transcription using the Davis' coding method.²⁰ Davis coding distinguishes the type of clinical activity, such as history, planning treatment, physical exam, etc. Disagreements on coded results were reviewed by both investigators, and consensus was reached for the final decision. The coding included timing of the overall visit, as well as time spent in each type of clinical activity.

Recorded visits from the parent study were eligible for this study based on the quality of the audiotaping from the original 53 patient visits; 44 had easily audible tapes and quality transcriptions during the entire visit. Additional coding was done on these 44 patients to identify episodes of shared decision making.

Using the Davis coding of transcripts to provide alerts for potential areas of SDM, transcripts were reviewed with two objectives in mind: to identify (1) instances in which evidence of SDM approaches occurred and (2) instances in which DAs were used or could have been used to facilitate decision making. Coding for the first objective was based on the Charles model, identifying interactions or conversations where there was evidence of exchange of information, deliberation, and joint agreement with reaching a decision. All three components needed to be present to meet coding criteria. With regards to the second objective, one investigator was trained to identify which of the topics would have been appropriate for DAs.

Only those DAs that have been evaluated by the OHRI or the Center for Shared Decision Making at the

Dartmouth-Hitchcock Medical Center (DHMC) were included. DAs listed by these organizations satisfy the Cochrane definition of a DA: "Patient decision aids are interventions designed to help people make specific, deliberative choices by providing information about the options and outcomes that are relevant to a patient's health status and by clarifying personal values. They are intended as adjuncts to counseling."²¹ These DAs also have a development process that includes expert review, an update policy, evidence-based criteria to support the recommendations, and conflict of interest statements.

Each discreet "discussion" of SDM was counted within a visit (Table 1). Similar topics discussed multiple times during a visit were collapsed, resulting in the list of "Topics" in Table 1.

Opportunities for the use of DAs included those topics that were available at OHRI or DHMC in written or video form. A missed opportunity was considered to have occurred if there was no evidence in the transcript that a DA was used during the visit, in addition to lack of any reference to a DA used in the past or for use in the future.

Results

Forty-four unique visits (each with a different patient) were included in this study out of the 53 recruited to the parent grant. The average visit time was 13 minutes. The average patient age was 46 (range 25–73 years), and 60% were female.

SDM (with the use of DAs) was not found in any of the visits. Some level of SDM, without the use of DAs, occurred in 27 (61%) visits (Table 1). These occurred during discussion of recommended compliance with medications, options for patient care, and recommendations for preventive services. The topics included screening tests (prostate specific antigen), diagnostic tests (spirometry), prevention services (immunizations and smoking cessation aids), and treatments (hypertensive medication, complementary medicine, osteoarthritis). No DA use, or reference to past or future DA use, was identified while reviewing all transcripts.

Missed opportunities for the use of DAs were found for nine of the 15 topics, across 15 (34%) visits (Table 2). We found that DAs on these nine topics were available in written form and video. In addition to these disease-specific aids, there were several generic DAs to help patients make decisions. DAs in all these topics were available at the time of the study's provider/patient visit recordings, though not specifically in their current format.

Discussion

SDM and DAs have the potential to improve patient satisfaction, outcomes, and compliance. The use of SDM was found in 61% of visits evaluated in this study,

Table 1

Topics Discussed During Shared Decision Making

Topic	Discussions* (n=44)
Adult immunizations	15 (34%)
Surgery or injection in osteoarthritis knee	1 (2%)
Hypertension medications	1 (2%)
Benzodiazepines usage	1 (2%)
Obtaining a spirometry test	1 (2%)
Depression medications	4 (8%)
Smoking cessation	3 (6%)
Calcium supplements	1 (2%)
Insulin for diabetes	1 (2%)
Antibiotics for respiratory infections	1 (2%)
Medications for chronic hepatitis	1 (2%)
Complementary medicine	1 (2%)
Surgery for cholelithiasis	1 (2%)
Physical therapy for osteoarthritis	1 (2%)
Prostate cancer screening with PSA	1 (2%)

* includes one or more discussions per visit

Table 2

Missed Opportunities to Use Existing Decision Aids (DAs) n=15

<i>Topics Discussed for Which DAs Are Available</i>	<i>Visits Including This Topic (% Visits)</i>	<i>Examples of Available DAs</i>
Smoking cessation aids	3 (7%)	QuitEX (Informed Health Choice) Should I take medicines to quit smoking? (Healthwise) Should I use nicotine replacement therapy to quit smoking? (Healthwise)
Depression treatment	4 (9%)	Should I take medications to treat depression? (Healthwise) Coping with symptoms of depression (Health Dialog)
Antibiotics for respiratory infections	1 (2%)	Should I take antibiotics for acute bronchitis? (Healthwise)
Surgery for cholelithiasis	1 (2%)	Should I have surgery to treat gallstone attacks? (Healthwise)
Complementary medicine	1 (2%)	Should I use complementary medicine? (Healthwise)
Prostate cancer screening	1 (2%)	Is a PSA test right for you? (Health Dialog) Prostate Cancer Screening: a decision guide (CDC) Should you get a PSA test? (Mayo Clinic) The PSA Decision (University of North Carolina at Chapel Hill)
Hypertension treatment	1 (2%)	Should I take medication for high blood pressure? (Healthwise)
Osteoarthritis treatment	2 (4.5%)	Treatment choices for hip osteoarthritis (Health Dialog) Choosing pain medication for osteoarthritis (Agency for Healthcare Research and Quality) Should I have hip replacement surgery? (WebMD)
Medications for chronic hepatitis	1 (2%)	Should I be tested for hepatitis B and C? (Healthwise) Should I take antiviral therapy for chronic hepatitis B? (Healthwise)

but we found no use of DAs, even though 34% of the studied visits included discussion of topics with freely available DAs. These results are consistent with the literature in finding rare uptake of the opportunities for DAs in primary care. Our results were derived from direct observation rather than self-report, which enhanced the reliability and validity of the data and analyses.

Evidence of shared decision making in the examined visits included discussions on preventive measures, pharmaceuticals, interventions, diagnostic testing, and immunizations (the latter being prominent because of the nature of the parent study.²² Other preventive measures were also discussed, including smoking cessation, prostate specific antigen testing, and calcium supplements, with providers making recommendations and then discussing them with patients when the providers encountered resistance from patients. Pharmaceutical and other interventions came into the discussion as providers and patients discussed the risks and benefits of various options. Complementary medicine was one of the few topics initiated by a patient who wanted feedback from the provider and guidance on their use. The missed opportunities for the use of DAs reflected this range of topics.

The average visit time in our study (13 minutes) is consistent with other studies.²³ This short time raises concerns regarding the availability of time for SDM.

Loh's study of psychiatric visits, however, found that SDM did not lengthen the visit, though psychiatric visits may not be generalizable to primary care.¹¹ Although future research may clarify the amount of time for SDM among various topics, it is clear that even the 2–4 minutes incurred due to SDM may appear prohibitive in many clinical settings.²⁴ The use of DAs, combined with system changes, may help to reduce challenges related to longer visits with SDM. Some examples may include: pre-counseling of patients, with DA exposure at home or in the office prior to the visit;²⁵ modification of patient flow to incorporate time for exposure to DA and information during or after the visit; and availability of DA at the correct literacy level, correct language, and matched to patients' culture.²⁶ Additional research will be valuable to convince providers and care administrators that a DA is more likely to improve than impede their practice, as well as improve patient satisfaction and outcome.¹¹

The underutilization of DAs needs to be addressed, at least partially, by increasing provider awareness of their availability through exposure in medical school, residency, and continuing education, and by addressing their delivery in the larger context of improved communication.²⁷ In addition to exposure and access to these tools, providers need to be educated on the identification of decisions appropriate for SDM, as well as patient selection. Other health professionals, includ-

ing nurses, health educators, advance-practice nurses, and physician assistants, are well suited for providing patients with support for the use of DAs. Motivating and training providers on the adoption of these tools will require ongoing research to document their usefulness in improving outcomes, systems approaches to incorporation of DA into practice, and reassurance that the visit time spent on improving the quality of decisions will save time in subsequent care. Alternatively, increasing public awareness of these tools may prompt patients to either use the DAs prior to the visit, or bring them with them to the health care visit for discussion.

Limitations

Interpretations of this study's results should consider several limitations. First, we recruited adult patients with chronic diseases who were due for influenza or pneumococcal immunization—a population that is not necessarily generalizable to all patients. There was also a high number of SDM discussions involving the topic of immunizations, though this topic was only one of 15 topics in which shared-decision discussions were conducted. Because pneumococcal immunization is not up to date in 80% of patients with certain chronic diseases and influenza vaccine is due in 100% of these patients yearly, our subjects are likely typical to some extent of other individuals who have chronic diseases.

Second, our study included only English-speaking patients. Thus, the results may not be similar with patient visits conducted in other languages, using a language interpreter, or with limited English proficient (LEP) patients. SDM has not been well examined for LEP patients, and the availability of DAs is more limited for languages other than English.

Conclusions

DAs are underutilized in primary care, despite potential opportunities for their use. While SDM is included in practice, the support of patient decisions would be enhanced by taking advantage of the existing DAs, such as those available through the OHRI and the DHMC registries. Means of promoting use of these materials need to be identified.

More widespread uptake of DAs will require education of providers and patients. Change in medical care delivery systems may facilitate use of shared decision making tools in a service with severe time restrictions. Research is needed to determine the types of education needed, changes in delivery systems, and DAs efficacy. Such research should take into consideration the education, language, and cultural factors operating for patients as well as the cultural sensitivity and expertise for using shared decision-making procedures among providers, nurses, and assistants.

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REFERENCES

1. Makoul G, Clayman M. An integrative model of shared decision. *Patient Educ Couns* 2006;60:301-12.
2. Jahng K, Martin L, Golin C, Dimatteo, M. Preferences for medical collaboration: patient-physician congruence and patient outcomes. *Patient Educ Couns* 2005;57:308-14.
3. Towle A, Godolphin W. Framework for teaching and learning. *BMJ* 1999;319:766-71.
4. Schneider A, Korner T, Mehring M, Wensing M, Elwyn G, Szecsenyi J. Impact of age, health locus of control, and psychological co-morbidity on patients' preferences for shared decision making in general practice. *Patient Educ Couns* 2006;61(2):292-8.
5. Feldman-Stewart D, Brundage MD, Van Manen L, Svenson O. Patient-focused decision making in early-stage prostate cancer: insights from a cognitively based decision aid. *Health Expect* 2004;7:126-41.
6. McCaffery K, Irwig L, Bossuyt P. Patient decision aids to support clinical decision making: evaluating the decision or the outcomes of the decision. *Med Decis Making* 2007;27:619-25.
7. O'Connor A, Bennett C, Stacey D, et al. Do patient decision aids meet effectiveness criteria of the international patient decision aid standards collaboration? A systematic review and meta-analysis. *Med Decis Making* 2007;27:554-74.
8. Deyo RA, Cherkin DC, Weinstein J, Howe J, Ciol M, Mulle AG Jr. Involving patients in clinical decisions: impact of an interactive video program on use of back surgery. *Med Care* 2000;38:959-69.
9. Naik AD, Schulman-Green D, McCorkle R, Bradley EH, Bogardus ST Jr. Will older persons and their clinicians use a shared decision-making instrument? *J Gen Intern Med* 2005;20:640-3.
10. Merenstein D, Diener-West M, Krist A, Pinneger M, Cooper LA. An assessment of the shared-decision model in parents of children with acute otitis media. *Pediatrics* 2005;116:1267-75.
11. Loh A, Simon D, Wills C, Kriston L, Niebling W, Harter M. The effects of a shared decision-making intervention in primary care of depression: a cluster-randomized controlled trial. *Patient Educ Couns* 2007;67:324-32.
12. Wilkins EG, Lowery JC, Copeland LA. Impact of an educational video on patient decision making in early breast cancer treatment. *Med Decis Making* 2006;26:589-98.
13. Krist A, Woolf S, Johnson R, Kerns J. Patient education on prostate cancer screening and involvement in decision making. *Ann Fam Med* 2007;5:112-9.
14. Barry M, Cherkin D, Chang Y, Fowler F, Skates S. A randomized trial of a multimedia shared decision making program for men facing a treatment decision for benign prostatic hyperplasia. *DMCO* 1997; 1(1): 5-14.
15. Elwyn G, Edwards A, Hood K, et al and the Study Steering Group. Achieving involvement: process outcomes from a cluster randomized trial of shared decision making skill development and use of risk communication aids in general practice. *Fam Pract* 2004;21(4):337-46.
16. Corser W, Holmes-Rovner M, Lein C, Gossain V. A shared decision-making primary care intervention for type 2 diabetes. *Diabetes Educ* 2007;33:700-8.
17. Brody DS, Miller SM, Lerman CE, Smith DG, Caputo GC. Patient perception of involvement in medical care: relationship to illness attitudes and outcomes. *J Gen Intern Med* 1989;4:506-11.
18. Epstein R, Alper B, Quill T. Communicating evidence for participatory decision making. *JAMA* 2004;291:2359-66.

19. Legare F, Graham I, O'Connor A, et al. Prediction of health professionals' intention to screen for decisional conflict in clinical practice. *Health Expect* 2007;10:364-79.
20. Callahan EJ, Bertakis KD. Development and validation of the Davis Observation. *Fam Med* 1991;23(1):19-24.
21. O'Connor AM, Stacey D, Entwistle V, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database of Systematic Reviews* 2003;1:Art. No.: CD001431. DOI: 10.1002/14651858.CD001431.
22. Mueller MR, Hill L, Fontanesi J, Kopald D. Disagreement on immunization recommendations: an analysis of lay-clinician interaction. *Journal of Applied Social Science* 2007;1:69-76.
23. McGuire TG, Zhang W. Time allocation in primary care office visits. *Health Serv Res* 2007;42(5):1871-94.
24. Watson D, Thomson R, Murtagh M. Professional centered shared decision making: patient decision aids in practice in primary care. *BMC Health Serv Res* 2008;8:5. www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=18190683.
25. Greenfield S, Kaplan S, Ware JE. Expanding patient involvement in care. *Ann Intern Med* 1985;102:520-8.
26. Kaplan R. Shared medical decision making: a new tool for preventive medicine. *Am J Prev Med* 2004;26:81-3.
27. Falzer, P. Toward a communication-based perspective on shared medical decision making [Paper]. ICA 2007. Available at http://www.allacademic.com/meta/p171809_index.html. Accessed June 23, 2008.