Development of a Framework and Tool to Facilitate Cost-of-Care Conversations With Patients During Prenatal Care

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Background: Studies show that patients want to engage in cost-of-care conversations and factor costs into the formulation of care plans. Low-income patients are particularly likely to defer care because of costs, suggesting that cost-of-care conversations may be an important factor in health equity. Little guidance is available to clinicians and health systems for how to integrate effective cost-of-care conversations into clinical practice or to address specific cost needs of low-income patients.

Objective: To develop a framework and tool to assist cost-of-care conversations with low-income patients during prenatal care.

Design: A qualitative study using human-centered design methods.

Setting: University medical center–based obstetrics-gynecology (ob-gyn) practice.

Participants: 20 pregnant or recently postpartum women, 16 clinicians, and 8 support and executive staff.

Results: Pregnant women accumulate substantial indirect costs that interfere with treatment adherence and stress patients and their relationships. Frequency and duration of appointments are primary drivers of indirect costs; the burden is exacerbated by not knowing these costs in advance and disproportionately affects low-income patients. Working with ob-gyn clinicians, staff, and patients, a paper-based tool was developed to help patients forecast treatment demands and indirect costs, and to help clinicians introduce and standardize cost conversations.

Limitations: Data were collected from a small number of stakeholders in a single clinical setting that may not be generalizable to other settings. The tool has not been tested for effects on adherence or clinical outcomes.

Conclusion: A communication tool that helps pregnant patients understand their care plan and anticipate indirect costs can promote cost-of-care conversations between clinicians and low-income patients.

Primary Funding Source: Robert Wood Johnson Foundation.

Supplement: Cost-of-Care Conversations

See also:
- Editorial comments . . . . . . . . . . . . . . . . . . S33, S36
- Web-Only
- Visual Abstract
- Supplement

This article is part of the Annals supplement “Fostering Productive Health Care Cost Conversations: Sharing Lessons Learned and Best Practices.” The Robert Wood Johnson Foundation provided funding for publication of this supplement.
We used this information to draft a tool to facilitate cost-of-care discussions during prenatal care.

**METHODS**

**Study Design**

To draft a cost-of-care conversation tool, we used a human-centered design (HCD) approach. The field of HCD includes methods for examining the real-world context and behaviors of individuals, deeply engaging stakeholders, and rapidly prototyping solutions optimized for specific end-user needs (12). The methods of HCD have been recognized in the health care literature as relevant to program implementation, patient services, and promotion of chronic disease management (13–15). For this project, we adapted an HCD development process first used to design a patient-facing health education tool for use with a similar population—low-income, minority, and Chicago-based—in a Patient-Centered Outcomes Research Institute (PCORI)-funded clinical trial (16). Our adapted approach engaged a 5-step process (Figure 1).

**Setting and Participants**

We engaged 4 stakeholder groups at a university medical center obstetrics-gynecology (ob-gyn) clinic in Chicago’s predominantly African American south side: 1) pregnant and recently postpartum patients presenting for pregnancy-related care; 2) ob-gyns, nurses, medical assistants, and technicians who provided direct services to patients in that clinic; 3) frontline clinic staff who interact with the patient population; and 4) executive administrators responsible for workflows in the clinic or other services that address patient cost issues (for example, billing and call center). Original eligibility criteria and recruitment focused on women diagnosed with a high-risk pregnancy; designated “near poor” or “nearly poor” (approximately 138% to 400% of the federal poverty level [FPL]); Medicaid-covered or privately insured through the Affordable Care Act; and seeking prenatal care at the participating site. However, early patient and clinician interviews counseled that cost burdens were a significant factor in low-risk pregnancy care among low-income women, as well as in high-risk pregnancy care for women outside the 400% FPL range. As a result, we expanded our income range to include a small sample of women with household incomes above the 400% FPL and low-income women with low-risk pregnancies for comparison.

**Preparation of Interview Guides**

Semi-structured interview guides were prepared with stakeholder input. The patient guide was informed by community health workers who work in underserved black and Hispanic communities in Chicago, to align questions with the social and cultural context of patients. The clinician guide was informed by an expert ob-gyn and a third-year ob-gyn resident to align questions with clinic practices and culture. Executive and administrative staff guides were informed by participatory research in which researchers called to schedule appointments and documented the patient experience from call center to insurance review.

American College of Obstetricians and Gynecologists guidelines, pregnancy books, and pregnancy apps were reviewed to design a “provotype” of a cost-of-care conversation tool for use in initial interviews. Provotypes, or provocative prototypes, are early-stage designs that are not focused on accuracy but instead are crafted to provoke discussion of current or future practice (17). Review of provotypes in interviews can draw out acceptability, appropriateness, feasibility, and adoption of a proposed change (18), and suggest productive design directions.

**One-on-One Interview and Focus Group Methods**

Patients were recruited in clinic by front desk staff using fliers and posters. Patients who called the study...
phone number were screened and scheduled by a research team member. Interviews were conducted at a location of the patient's choice for 60 to 120 minutes and were compensated at $75. Patients were asked about prenatal care experiences in the home and clinic, pregnancy costs and cost-of-care conversations with clinicians and family, and experiences with insurance. In addition, during patient interviews, patients were asked to diagram their care experience over time and connect it to accrued expenses; were shown photographs and asked to select which best depicted their feelings about being pregnant; and were asked to sketch “stick figure” drawings to illustrate all of the people important to their pregnancy or providing cost-related support (Supplement 1, available at Annals.org).

Employees of the medical center were recruited using direct outreach by the research team and snowball sampling. All interviews lasted 30 to 60 minutes, occurred in the clinic or administrative offices, and were compensated $25. Questions targeted the frequency of, nature of, institutional support for, and receptivity to cost-of-care conversations. Clinicians were asked to map typical appointments and treatments for low- and high-risk pregnancies as a context for cost discussions. Administrators were asked about financial and social services, patient population, and barriers to providing care or services to their population (Supplement 1).

All participants were shown at least one prototype of a cost conversation support tool (Supplement 2, available at Annals.org), with at least one half reviewing 2 prototypes as new design concepts emerged. With permission, interviews were audio-recorded and transcribed; drawing activities were photographed. All participants were assigned an anonymous study identification number.

Review of Draft Tool

Two patient focus groups included participants from earlier interviews. In 2-hour sessions held at a local YMCA, patients reviewed the cost-of-care support tool and discussed benefits of its adoption.

A physician focus group was recruited from a safety-net hospital on Chicago’s West Side through an open e-mail to clinical staff; they met for 30 minutes to review the final prototype.

Additional feedback was gathered during departmental grand rounds at the primary research site, where clinicians voluntarily engaged in review of the final prototype, using sticky notes to annotate individual copies.

The project was approved by the institutional review boards (IRBs) at all participating institutions: IRB 2016-134 at the Illinois Institute of Technology, IRB 16-175 at the University of Chicago, and IRB 17-24 at Mount Sinai Hospital.

Role of the Funding Source

All work was funded by Robert Wood Johnson Foundation, which had no role in study design, data collection, analysis, interpretation, or writing the report.

RESULTS

Of 37 patients screened, 20 qualified for and participated in individual interviews. Fifteen patient participants reported income below 400% of the FPL, 10 had high-risk pregnancies, 13 identified as African American and 7 as white, and all were 18 to 45 years of age. We approached 27 clinicians and staff to complete 24 interviews: 7 of 9 ob-gyns, 1 of 1 physician assistant; 5 of 5 nurses, 2 of 2 medical technicians, 1 of 1 medical assistant; 3 of 3 patient service representatives, 1 of 1 social worker, and 4 of 5 executive administrators.

Patient focus groups consisted of 1 group of 3 privately insured patients and 1 group of 3 publicly insured patients. Fourteen physicians participated in the safety-net hospital focus group and 24 grand rounds clinicians from the primary research site engaged in review of the final tool.

Relevant Patient Costs

When prompted, clinicians and patients typically talked about different costs. Clinicians identified tests, procedures, and drugs as drivers of patient cost burden, and voiced frustration that such costs are unknowable when formulating care plans and sometimes never known unless patients return with a bill. Lack of precise cost information, owing to variations in insurance types and coverage, was a primary reason for skepticism about cost-of-care conversations. Patients, on the other hand, were more likely to highlight indirect costs of appointments (such as lost income, transportation, and childcare). Patients characterized these costs as burdensome and stressful, particularly when unexpected.

In addition, frequency and duration of appointments multiply indirect costs. Guideline-based prenatal care is visit-intensive, requiring 13 to 27 visits for low- and high-risk pregnancies, respectively. Patients and staff reported that a visit can last 4 hours. Cumulatively, even when care is “free” because of Medicaid coverage, indirect costs can exceed $2500 during high-risk prenatal care. To estimate these costs, we used multiple scenarios for transportation (bus, car, taxi), 1 small meal, and potential lost earnings for each visit (calculated at the 2016 Illinois minimum wage). We excluded child care and calculated parking at the lowest discounted rate, although patients expressed difficulty getting these rates. Estimates for all scenarios ranged from $2500 to $2800. Although a patient may not necessarily pay $2500, this is the financial hurdle she must negotiate to attend appointments. Clinicians and clinic staff, when presented with this cost table, expressed shock but concluded the estimates were both accurate and conservative. They also requested that patients not be shown the cost table for fear it might affect patient commitment to pregnancy care.

Effect of Patient Costs on Prenatal Care

Multiple staff stated that ob-gyns should understand that patients say they miss appointments because they cannot afford to attend, not because they don’t want to attend. Staff also reported that patient strategies to mitigate indirect costs—circling for free parking,
leaving to feed the parking meter, or bringing children to appointments—caused clinic operations issues. Both patients and staff reported that the frequency and duration of appointments caused stress with participating family members and partners. Patients expressed frustration that they didn’t understand the burden of visits in advance. Low-income patients expressed a greater need than higher-income patients to forecast indirect costs so they could budget and make tradeoffs in other spending to attend visits. One ob-gyn observed that his patients with resources (such as family and job flexibility) but poor insurance demonstrated more ability to mitigate the burden of high-risk care than patients who had quality insurance but inflexible jobs or no family.

Willingness of Various Stakeholders to Address Costs of Care

All clinicians and staff reported that cost-of-care conversations are already occurring. Nurses, social workers, and front desk staff were more likely to report addressing indirect costs with patients. Obstetrician-gynecologists voiced reluctance to initiate cost conversations, citing lack of time in the appointment; lack of training, resources, and information to offer patients; and discomfort bringing up problems without having solutions. They feared that adverse events from accommodating cost-related requests (such as skipping a test) could cost them their license. Some ob-gyns raised concerns that talking about costs would cause patients to avoid care or end their pregnancy.

Patients and nurses stated that the absence of cost discussions made nonadherence more likely, not less. Low-income African American women, while reporting disproportionate financial stress from visit-intensive care plans, voiced the most concerns about cost conversations. These concerns included embarrassment at revealing need to doctors, avoiding stigma, and not wanting to prompt lesser care. Some worried that if they brought up costs, they might be seen as not belonging there. These same patients expressed pride in receiving care at a respected institution and “getting the best care for their baby.” Low-income African American patients expressed interest in services and programs that were clearly available to everyone (such as free breast pumps), but less receptivity to supports that might mark them as different.

Stakeholder Requirements to Engage in Cost-of-Care Conversations

Stakeholder requirements are presented in the Table, using the Multilevel Requirements Framework from design (18). Thirteen iterations of a cost-of-care conversation tool were generated before concluding in a design that stakeholders deemed acceptable, appropriate, and feasible. Each iteration was reviewed by at least 4 participants; one half of the participants were one half of the participants were appropriate, and feasible. Each iteration was reviewed by at least 4 participants; one half of the participants were shown 2 concepts when a second design emerged. One ob-gyn observed that his patients with resources (such as family and job flexibility) but poor insurance demonstrated more ability to mitigate the burden of high-risk care than patients who had quality insurance but inflexible jobs or no family.

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The final prototype uses a checkbox format that fits both low- and high-risk pregnancy care (Figure 2, section 1). Writing and design choices are women-centric, not baby-centric, to show sensitivity for women with at-risk pregnancies. Text is written at a 6.4 reading grade level (Flesch-Kincaid). Descriptions of tests and procedures include estimated times and preparation tips to help patients prepare for appointments (Figure 2, section 2). A timeline organizes and sequences all appointments (Figure 2, section 3). A planning worksheet orients patients to indirect costs but is placed on the back page, away from the treatment section, so patients can introduce cost conversations when they are ready (Figure 2, section 4). Insurance and treatment questions help patients initiate cost conversations with clinicians and payers (Figure 2, section 5). Support phone numbers for services are placed on the front cover, not the back, to normalize that all patients may need assistance (Figure 2, section 6).

Our findings informed the following framework for designing cost-of-care conversations:

1. Create a shared understanding of the care plan that includes the frequency and duration of appointments.
2. Build awareness of the indirect costs of the care plan among both patients and clinicians. A shared model of burden permits discussion and, where possible, negotiation.
3. Build the belief that talking about money is allowed and a part of quality care.
4. Provide a means to initiate and standardize cost conversations to ensure they are applied routinely and equally, and so avoid the appearance of judgment to patients. A good solution will fit within the limited time of a typical visit and be initiated by a trusted provider.

Feedback on the Final Draft Tool

Twenty-seven of 69 comments collected at grand rounds offered praise for content and approach; for example, “These explanations are simple and clear,” “I love this, and if a patient had a $$ constraint, I would pick which appts to cancel/skip,” and “At least we are acknowledging costs and can maybe help.” The remaining 42 comments contained suggestions for additional content, corrections, requests for more visuals, and use of colloquial language. Safety-net hospital physicians noted a strong fit with their patient populations, for whom costs are a chronic issue. They observed that the tool would be easy to integrate into standard care, where cost discussions are already taking place. One physician proposed adding 15 minutes to the first prenatal appointment to go over the tool and map out what to expect throughout the pregnancy.

Patient focus group participants praised the tool for “prompting things I wouldn’t know to ask” and “making me a partner in my care plan”; providing a treatment road map; helping coordinate care with other providers; as proof of visit frequency to their partners; and as a means of initiating a budget conversations with a partner.

Discussion

Our research identified the indirect costs of prenatal care, driven by frequency and duration of appointments, as a substantial burden for patients. Findings suggest broad patient need for conversations about these costs. Low-income pregnant women demon-
### Table. Stakeholder Requirements of Cost-of-Care Conversations

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<thead>
<tr>
<th>Stakeholder</th>
<th>Content Requirements</th>
<th>User Requirements</th>
<th>Contextual Requirements</th>
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<tbody>
<tr>
<td><strong>Patients (n = 20)</strong></td>
<td>Reduce word count and reading grade level: Make content easy to understand and clear about treatments and timing Easy to scan: High-level headlines for patients who have been pregnant before Details of tests and procedures: For first-time patients Just the right amount: List only the most likely number of appointments and frequently scheduled procedures and tests Make the need for multiple visits clear: Provide explanations for repeat tests and visits within each trimester to reduce perceived redundancy Provide solutions, not just numbers: Include tips and resources patients can use to address cost issues, not just the facts of what this will cost, including key questions to ask insurance companies</td>
<td>Women-centric rather than baby-centric: Focus on care of the mother for patients who have lost a pregnancy before or who have mixed feelings about being pregnant Reduce uncertainty where possible: Prenatal women deal with many unexpected issues (insurance, fetal anomalies, miscarriage, maternal issues, wait times), so help them know what’s knowable Help plan time and money: Low-income patients need headlines into specific demands of the care plan so they can make budgetary tradeoffs and schedule child care and time away from work Reduce stigma of needing resources and aid: Prominently place phone numbers so patient services are easy to find</td>
<td>Easy to carry and use: Distinguishable from other clinic paperwork; fits into a purse or a folder Fits patient modes: Some patients need an overview only during the initial clinic visit, others may post it on their fridge; still others may take it to every appointment. Provide content that is useful for each use case Let patients choose when to talk costs: Separate treatment plan (for use with clinicians) from planning worksheet (for use with family and partner) Works as proof to others that appointments are necessary: Low-income women need help underscoring to employers and partners that frequent absences are not a choice</td>
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<td><strong>Ob-gyns, PAs (n = 8)</strong></td>
<td>Content: Reflect key appointments, labs and tests, and ACOG guidelines Structure in weeks, then trimesters: To match how ob-gyns are trained in care Reduce word count: Don’t include so much detail that patients put off reading it</td>
<td>Promote adherence: Help patients see the important of attending appointments and tests Promote partnership: Help patients understand and participate in their prenatal care</td>
<td>Fast: No more than 2 minutes to fill out and review with patient Fits standard workflow: Make useful to all pregnant patients, not just subgroups Don’t raise questions that are outside of provider ability to solve</td>
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<td><strong>Nurses, MAs, technicians (n = 8)</strong></td>
<td>Promote insurance discussions: Insured patients need to know reimbursement for multiple labs and diagnostics; MCO patients need to know coverage is dynamic and often interrupts care over 9 months Clarify the need for multiple visits: Help patients see that each visit has a purpose, and some are urgent Ensure accuracy: AVSs often contain incorrect information (e.g., prescriptions), leading patients to ignore clinic documents Take it out of words: Make key information stand out, reduce the need to read</td>
<td>Not another job: Nurses bear the brunt of paperwork and audits, so they need cost tools to be the province of someone else, not them Make it feel like a part of care: Nurses say their job is to care for the patient and work together with them; if costs are a barrier, help nurses fit this into discussions</td>
<td>Fast: The first prenatal visit is information intensive—30 minutes of information– but we don’t always have 30 minutes of time Promote rapport: Residents rotate monthly, so create a tool that helps patients build rapport quickly Help patients speak up: Most patients want to keep appointments and have a healthy child, but need permission to tell the ob-gyn what will realistically work for their lives Incorporate patients in the planning, rather than handing off a prefilled treatment plan</td>
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<td><strong>Frontline staff (n = 4)</strong></td>
<td>Clarify the whole care plan: Highlight all upcoming appointments, labs, and tests so patients are clear on what’s ahead Draw attention to key content: AVSs contain the same content but are hard to read, and many patients miss key details Convey appointment duration: Help patients anticipate long appointments because they have kids and other obligations to plan for</td>
<td>Provide dignity to all patients: Clear information about what to expect at the appointment can help offset the stress of wait times, unpredictable processes, and lack of communication by staff, which can be more pronounced in clinics serving Medicaid patients</td>
<td>Speed checkout: Patients often don’t catch all of the details stated in the exam, leading to confusion at checkout and time spent confirming next steps Increase communication and coordination among ob-gyns, staff, and patients: Some patients wait up to 3 hours, with little information about wait time, leading to friction with staff</td>
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<tr>
<td><strong>Executives and managers (n = 4)</strong></td>
<td>Keep to the guidelines: Litigious culture requires that ob-gyns stay with guideline-based care above all Promote insurance discussions: ACA plans, Medicaid can change every 30 days; patients need to know this can disrupt care</td>
<td>Tie to compensation: Patient satisfaction scores and participation in departmental policies drive provider bonuses; Keep ob-gyns focused on billable services: MBAs/financial service departments are a less expensive resource to address costs</td>
<td>Help doctors initiate the conversation, but be efficient: Conversation has to conclude elsewhere, with social services, billing, insurance, etc. Promote visit adherence: Formulas to correct for no-show rates don’t always work and reduce profitability</td>
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ACA = Affordable Care Act; ACOG = American College of Obstetricians and Gynecologists; AVS = after-visit summaries; MA = medical assistant; MCO = managed care organization; ob-gyn = obstetrician-gynecologist; PA = physician assistant.
Figure 2. Final cost conversation support tool that features a checkbox format that fits both low- and high-risk pregnancy care (1); descriptions of tests and procedures, including estimated times and preparation tips (2); a timeline for all appointments (3); a planning worksheet on the back page, away from the treatment section, orienting patients to indirect costs (4); insurance and treatment questions to help patients initiate cost conversations with clinicians and payers (5); and support phone numbers for services on the front cover (6).
Framework and Tool to Facilitate Cost-of-Care Conversations During Prenatal Care

strated more intense forecasting needs because they have less financial resiliency. Women with high-risk pregnancies demonstrated need because frequency and duration of appointments drive up indirect costs and, as a result, stress participants at multiple income levels. Using these findings, we developed a tool and framework to inform cost-of-care conversations during prenatal care. Future research is needed to determine whether the use of the tool improves patient satisfaction, adherence, and clinical outcomes.

Our study had limitations. First, the effect of the tool during prenatal care needs to be tested. Second, we collected data from a small group of stakeholders at a single clinical site. Finally, generalizability of our findings to other settings is uncertain.

Our findings offer lessons for consideration. First, clinicians and patients appear willing to consider cost conversations if those conversations could help patients understand and adhere to their care plans. Second, indirect costs were poorly understood by staff in our study. Whereas categories of indirect cost—parking, transportation, childcare, lost wages, meals—were known, all staff expressed surprise at the estimated costs to attend appointments. This is significant because patient efforts to mitigate these costs would require advance knowledge, and staff did not have this knowledge to share. Finally, our findings suggest that cost conversations need system-level support to take root in practice. Specifically, cost conversations require adequate time during appointments, changes in reimbursement models and performance measures, and administrative buy-in from health systems.

Further study could help health systems more precisely define the proximal effects of indirect costs on patients’ experiences, health outcomes, and hospital operations. Participants in this study suggest these costs influence adherence, quality of life, and perceptions of care. Estimating indirect costs could inform a more systematic approach to providing patient supports, such as parking, transportation, or more localized care. For clinicians, a more accurate tally of indirect costs could offer an effective entry point for cost-of-care conversations, and contribute to the patient-provider partnership.

In sum, designing cost-of-care conversations to address indirect costs, especially for patients with visit-intensive treatment plans, offers a new opportunity for clinicians to engage in empathic, person-centered care.

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