Published in final edited form as:

Womens Health Issues. 2017 ; 27(4): 441–448. doi:10.1016/j.whi.2017.01.007.

Understanding High Utilization of Unscheduled Care in Pregnant Women of Low Socioeconomic Status

Pooja K. Mehta, MD, MSHP^{a,*}, Tamala Carter^b, Cjloe Vinoya, BS^c, Shreya Kangovi, MD, MSHP^{b,d}, and Sindhu K. Srinivas, MD, MSCE^e

^aRobert Wood Johnson Clinical Scholars Program, University of Pennsylvania/ Department of Veterans Affairs, Philadelphia, Pennsylvania

^bPenn Center for Community Health Workers, Philadelphia, Pennsylvania

^cMixed Methods Research Laboratory, University of Pennsylvania, Philadelphia, Pennsylvania

^dDepartment of Internal Medicine, University of Pennsylvania Perelman School of Medicine, Philadelphia, Pennsylvania

^eDepartment of Obstetrics & Gynecology, University of Pennsylvania Perelman School of Medicine, Philadelphia, Pennsylvania

Abstract

Background—Pregnant high utilizers of unscheduled care may be at particular risk for poor perinatal outcomes, but the drivers of this association have not been explored from the patient perspective.

Purpose—We sought to understand maternal preference for unscheduled hospital-based obstetric care to inform interventions and improve value of publicly funded care during pregnancy.

Methods—We conducted a comparative qualitative analysis of in-depth semistructured interviews. Low-income pregnant women presenting to an inner city hospital-based obstetric triage unit were purposively sampled, categorized as either high or low utilizers of unscheduled care, and interviewed about challenges faced in obtaining pregnancy care and reasons for choosing between unscheduled versus scheduled care delivery.

*Correspondence to: Pooja K. Mehta, MD, MSHP, Department of Obstetrics & Gynecology, Boston University School of Medicine, 85 East Concord Street, 6th floor, Boston, MA 02118. Phone: 617 414 5184; fax: 617 414 7300. pooja.mehta@bmc.org (P.K. Mehta). Pooja K. Mehta, MD, MSHP, is Assistant Professor, Obstetrics and Gynecology, Boston University School of Medicine. She studies vulnerable patient perspectives on maternity/reproductive health care, social support and complex care coordination in health care delivery innovation, and impact of policy on health outcomes.

Tamala Carter, CHW, is a community-based interviewer, University of Pennsylvania Mixed Methods Research Laboratory, and Penn Center for Community Health Workers. She has lived in Philadelphia for her entire life and has decades of experience with community outreach

Cjloe Vinoya, BS, is a research assistant at the Mixed Methods Laboratory at the University of Pennsylvania. She has expertise in project management, data management, qualitative analysis, and data presentation.

Shreya Kangovi, MD, MSHP, is Assistant Professor, Internal Medicine, University of Pennsylvania, and founding executive director, Penn Center for Community Health Workers. Her research examines patient perspectives on socioeconomic determinants of health/health care use, and the efficacy of community health workers.

Sindhu K. Srinivas, MD, MSCE, is Associate Professor, Obstetrics and Gynecology, University of Pennsylvania, and Director, Obstetrical Services, Hospital of the University of Pennsylvania. She conducts obstetric prospective studies, answering important clinical questions in the areas of health disparities, preeclampsia, and preterm birth.

The authors have no conflicts of interest to disclose.

Results—Demographically, high utilizers were similar to low utilizers, but were more likely to report adverse childhood experiences ($p = .01$). All 40 participants reported resource constraints and perceived hospital-based unscheduled obstetric care to be more accessible than outpatient prenatal care. Beyond this, high ($n = 20$) and low ($n = 20$) utilizer narratives differed significantly. Two distinct high utilizer profiles emerged. Some high utilizers repetitively used unscheduled hospital-based services owing to psychosocial determinants. Other high utilizing participants were driven by severe experiences of illness insufficiently addressed by outpatient prenatal care. Low utilizer narratives demonstrated high self-efficacy and social support compared with high utilizers.

Conclusions—Low-value, unscheduled, hospital-based care utilization by pregnant women of low socioeconomic status was driven by unmet clinical and psychosocial need.

Implications for Policy and/or Practice—Tailored community-focused innovations that use unscheduled visits as signals of risk may improve value of both outpatient and inpatient maternity care and better address adverse perinatal outcomes in vulnerable subgroups.

Individuals who are racial/ethnic minorities and of low socioeconomic status (SES) disproportionately experience poor pregnancy outcomes in the United States (Bryant, Worjolah, Caughey, & Washington, 2010). Prenatal care has been hypothesized to be a key mediator in perinatal outcome, particularly low birthweight, based on a key Institute of Medicine report (Krans & Davis, 2012; Preventing Low Birthweight, 1985). However, despite increased access to and utilization of prenatal care (Coley & Aronson, 2013) and growing expenditures on hospital-based obstetric care (Huynh et al., 2013), maternal and neonatal health disparities are worsening over time (Howell, Zeitlin, Hebert, Balbierz, & Egorova, 2013).

Low-income women and those of minority status are particularly at risk for late presentation to scheduled prenatal care despite broader access to insurance coverage that pays for prenatal care (Bryant et al., 2010). Cost, transportation, perception of low value of prenatal care by patients, and poor institutional practices have been identified as key barriers to prenatal care utilization (Mazul, Salm Ward, & Ngui, 2016; Tucker Edmonds, Mogul, & Shea, 2015). Tailoring prenatal care models to those who face disproportionate barriers and risk has been suggested as a way to adjust “undifferentiated” prenatal care delivery to further impact perinatal outcomes such as birth-weight and preterm delivery rate (Krans & Davis, 2012).

Approaches that “hot spot,” or take repetitive utilization of unscheduled care into account to identify the high-cost, high-need patient have gained currency in chronic care models (Blumenthal, Chernof, Fulmer, Lumpkin, & Selberg, 2016), with interventions that deliver care coordination and support to potential high utilizers showing improved outcomes and reduced costs (Gross, Brenner, Truchil, Post, & Riley, 2013; Master, Simon, & Goldfield, 2003). Such approaches and interventions are becoming more common as health systems shift toward value-based payment models that reimburse for health outcomes rather than services utilized by a patient, thus incentivizing control of cost with maintenance of quality (Blumenthal et al., 2016).

However, approaches that use levels of utilization to stratify risk are understudied in the obstetric literature. Obstetric triage providers on labor and delivery provide a “gateway” policy-mandated screening platform for labor evaluation, management of pregnancy complications, emergent obstetric conditions, and nonobstetric emergencies (Angelini & Howard, 2014). Based on limited secondary data, pregnant high utilizers of the emergency department or of unscheduled, emergency obstetric services in labor and delivery triage units are more likely to be of minority race. They are also more likely to report histories of lower SES, recent abuse, higher stress, depression, lower self-esteem, and conditions like hyperemesis gravidarum, gestational diabetes, and preterm labor (Bloom, Curry, & Durham, 2007; Grajkowski, Dolinsky, Abbott, & Batig, 2016; Kilfoyle, Vrees, Matteson, Phipps, & Raker, 2014).

No study has yet attempted to elucidate prospectively the ways in which high utilizers of hospital-based unscheduled obstetric care may be different from demographically similar pregnant women who do not use unscheduled care until an obstetric indication arises. To understand if the link between psychosocial determinants and “hot spots” of care utilization noted in nonpregnant adults (Kangovi, Barg, Carter, Long, et al., 2013b; Mautner et al., 2013) applies to an obstetric population, we conducted a hypothesis-generating mixed methods study focused on eliciting low SES pregnant patient perspectives on care. Our objective was to identify differences in barriers to and promoters of perinatal health in high versus low utilizing pregnant women of low SES and describe how and if these barriers drove care utilization.

Materials and Methods

We conducted this comparative study using in-depth semi-structured interviews, clinical data, and validated scales. We obtained approval from the University of Pennsylvania Institutional Review Board.

We recruited participants from the obstetric triage unit of the Hospital of the University of Pennsylvania from March to August 2014. This urban unit receives unscheduled visits for women after 16 weeks of gestational age. Insurance status was used as a proxy measure for SES. Participants were eligible if they were uninsured or Medicaid insured, English speaking, and pregnant.

We used purposive sampling to create two study groups. The “high utilizer” group consisted of women at 16 weeks gestation or greater who reported four or more unscheduled visits during the current pregnancy. We selected four visits as an inflection point because this represented the upper 10% of utilization of obstetric triage services in our system during the year before the study period. This percentile cutoff and the corresponding visit number have been used in the few published studies that retrospectively examine factors associated with high utilization of unscheduled services during pregnancy (Bloom et al., 2007; Grajkowski et al., 2016). The threshold of four or more emergency visits in 1 year is also most commonly used in the non-obstetric literature on frequent emergency utilization (LaCalle & Rabin, 2010). The second group of “low utilizers” were recruited at 36 weeks gestation or greater. The difference in criteria for enrollment in these two groups was designed to assure

that the women in the “low utilizer” group had completed a pregnancy without frequent use of unscheduled services. In this way, we were able to achieve purposive sampling of distinct study groups for comparison. Participants were approached in person at the point of care and utilization history was based on participant self-report and confirmed with chart abstraction (Kennedy, Leigh-Brown, Torgerson, Campbell, & Grant, 2002). Information on presenting concern and visit diagnosis was extracted from the health record and categorized according to an obstetric triage acuity scale ranging from 1 (most acute) to 5 (least acute) (Smithson et al., 2013).

Participants gave written informed consent. A community health worker trained in qualitative interviewing by the Mixed Methods Research Laboratory at the University of Pennsylvania conducted 40-minute semistructured interviews in private, after introducing herself as a community health worker and interviewer (Mixed Methods Research Lab/ Perelman School of Medicine at the University of Pennsylvania, 2014). In keeping with studies showing that community health workers with shared life experiences with study populations demonstrate effective empathetic interviewing styles (Thoits, 1995), our interviewer was a female lay health worker from a low-income community who did not previously know participants, with experience interviewing from multiple other published qualitative studies relating to low-income patient perspectives on hospital-based care (Kangovi, Barg, Carter, Levy, et al., 2013a; Kangovi, Barg, Carter, Long, et al., 2013b; Kangovi et al., 2014).

Given an established link between adverse childhood experiences and high utilization in the nonobstetric literature (Mautner et al., 2013), we assessed all participants for history of adverse childhood experiences (Felitti et al., 1998). We also assessed for presence of social support (Mitchell et al., 2003). Finally, given literature suggesting that women experiencing unintended pregnancy are more likely to be late to or dissatisfied with prenatal care (Humbert et al., 2011), participants were administered a measure of pregnancy intention (Robbins et al., 2014). In keeping with mixed methods methodology, these quantitative data were used to contextualize our primary qualitative findings using accepted triangulation methods. We sought to collect quantitative scale data on a pilot basis to inform future survey research designed to confirm the hypotheses generated by the qualitative portion of this study, and lend face validity to our findings (Kaplan, 2016).

We used the integrated model of behavior as the conceptual model for our semistructured interview guide (Glanz, Rimer, & Viswanath, 2008). This framework examines a person's intentions, knowledge, and constraints to understand why a behavior is or is not performed. Our interview guide was pilot tested on five pilot participants before commencement of study enrollment. All participants received a \$15 gift card after completion of the interview. We recruited participants until thematic saturation in each study arm was achieved. No repeat interviews were conducted.

We compared baseline characteristics of high and low utilizers using the χ^2 or Fisher exact test for dichotomous variables and t-tests for continuous variables in STATA 13.0 (StataCorp, College Station, TX).

Qualitative interviews were audiotaped using an audio recorder in the hospital and transcribed by a professional agency with no knowledge of research goals. No one was present at the time of the interview other than the community-based interviewer and the participant. The community-based interviewer collected field notes that were reviewed with research staff routinely. We used a modified grounded theory approach to develop a codebook that included major themes emerging from a close reading of responses by two readers, and a priori codes capturing factors known to influence a patient's frequent return to the hospital (Kangovi, Barg, Carter, Long, et al., 2013b). Two trained members of the study team coded data using standard qualitative software (NVivo 10.0). Interrater reliability was calculated and all codes for which a κ of less than 0.5 were identified. These discrepancies were discussed and resolved by consensus with a final average interrater κ of 0.81. The Gelberg-Anderson model of health care utilization in vulnerable populations was used to contextualize analysis and sort participant perceived barriers to perinatal health into accepted domains to assist with interpretation of findings. These domains included health status, health behaviors, health system navigation, psychosocial factors, resources for daily life, and neighborhood/community factors (Gelberg, Andersen, & Leake, 2000).

To validate our findings, we used member checking, a technique where the interviewer calls study participants and discusses results, confirming the relevance of findings to participant views and experience. We then explored qualitative differences in responses across groups using the NVivo matrix function to identify the number of high versus low utilizers who endorsed main themes. Such quantification using rudimentary counts of discrete observations of domains represented is a way to assist with representing qualitative evidence compactly, triangulate with quantitative findings, and reveal patterns to assist with comparison between groups (Kaplan, 2016; Sauder, 2016). Two coders independently used coded transcripts and data to further subgroup participants by shared characteristics with consensus.

Results

Of 238 women approached in obstetric triage, 66 were eligible. Twenty-six declined because they did not have time to complete an interview ($n = 11$), were not interested ($n = 11$), or felt too much pain to participate ($n = 4$). Forty participants enrolled and were categorized as either high or low utilizers.

There were no sociodemographic differences between the utilization groups (Table 1). Our sample was predominantly African American, reflecting the subset of the Medicaid-insured population served by our study site. High utilizers were more likely to be discharged home after the index triage visit; differences in visit acuity approached but did not attain significance. Differences in gestational age at time of study interview confirmed success of the intended study design to enroll low utilizers later in pregnancy to confirm that they did not become high utilizers over the course of pregnancy. Differences in completion of scheduled outpatient prenatal and postpartum visits were not significant in this small sample.

High utilizers were significantly more likely to report adverse childhood experiences, even in this small sample. They scored similarly on a social support scale as low utilizers.

Differences between high and low utilizers' self-report of pregnancy intention were not significant in this small sample (see Table 2).

Qualitatively, high utilizers were more likely to face barriers from multiple established domains—4.6 domains in high utilizers versus 2.9 domains in low utilizers, shown in Table 3 (Gelberg et al., 2000). Coding revealed further subpopulations within high utilizers: those whose narratives largely reflected psychosocial vulnerabilities during pregnancy and those whose narratives centered on illness. Both subgroups were distinct from low utilizers.

High Utilizers versus Low Utilizers: Common Themes

Many participants in both groups articulated positive experiences with outpatient prenatal care: “I like the fact that I'm finding out that my baby is okay.” However, all participants perceived that obstetric triage services were more accessible than outpatient prenatal care (Table 4). For example, in one case, unexpected interruptions in insurance coverage led to preference for a triage visit: “I'd have just went to my doctor's office... And then I would have been told I'd have to pay \$150.00 out of my pocket just because my insurance doesn't cover it anymore.” A hospital-based obstetric triage unit was also the most convenient place to receive timely care: “I didn't call. I just figured since I'm around this area and I'm feeling that pain for 2 days now, why not just come over.”

Although participants in both groups were consistent users of prenatal care, timely prenatal appointments were perceived by all participants as being unavailable: “If they did walk-ins that would make it easy, but they don't.” Clinic capacity was perceived as being limited: “Having more providers at one clinic would probably help just because it wouldn't be so hard to get an appointment.”

Narratives revealed an unacceptable lack of continuity in prenatal care. “The doctors and midwives...change so much you might come 1 day and hear from one and you're like, oh my god, please just let her stay or let him stay, and then... you don't even see the person anymore.” Some participants felt insufficiently engaged during clinic visits: “It's boring. I pee and they listen to the heartbeat and that's it.” Finally, having limited resources was a barrier for women in both utilization groups (Table 3).

High Utilizers: Unique Themes

Narratives regarding adverse childhood experiences disproportionately emerged in some high utilizers ($n = 10$) and were often triggered by pregnancy. One participant linked difficulty coping with her pregnancy to memories of abuse by a parent: “When I first talked about being pregnant, it was ‘I'm pregnant with these things.’ And I was resentful and I was angry and my depression was really kicking in and they wouldn't give me meds, which prompted a suicide attempt.” Although some low utilizers also discussed having experienced adverse childhood experiences, their narratives revealed coping mechanisms. One low utilizer who had grown up in the foster system after being sexually abused by multiple family members stated, “I've had traumatic experiences, but it don't make it hard. I really don't blame my past. It don't stop me, I do what I need to do.” She reflected on the beneficial effect of years of therapy and a strong belief in self on helping her to build trust and positive relationships.

High utilizers were more likely to share narratives of dysfunctional relationships and distrust, for example, in the form of negative partner relationships and intimate partner violence. In contrast, low utilizers were more likely to discuss positive supportive relationships with partners and family members as facilitators of health, transport, and support during pregnancy.

Limited positive social support in high utilizers contributed to caregiver burden: “I was mainly worried about my children eating, I didn't worry about myself.” Psychosocially vulnerable high utilizers also discussed using multiple hospitals owing to transient lifestyles, relationships, and housing, fragmenting care. High utilizers showed poor self-efficacy in coping with the challenges of pregnancy and sought care for reassurance. “I like to have somebody tell me everything is going good. To have somebody to talk to when things aren't going good.”

A majority of participants classified the current pregnancy as unintended (see Table 2), but high utilizer narratives specifically revealed ongoing ambivalence and anxiety regarding pregnancy: “I was just shocked... I'm ready to have my body back.” For others, difficulty coping during pregnancy manifested as dependence on illicit substances: “They said it is an addiction and I need to cut down. But I feel like now you're taking away my comfort spot.”

A second subset of high utilizers ($n = 10$) focused on concrete experiences of health issues and symptoms as primary drivers of preference for immediate hospital-based care. These high utilizers often endorsed self-efficacy, positive social support, and experience with health system navigation as promoters, but described challenges with specific health issues that brought them back to the hospital: “I usually have [the seizures] when I'm asleep. Afterwards, I have a lot of memory loss and I'm, you know, sort of woozy for a few days... It's hard for me to take care of myself.” Such experiences of illness affected attitudes toward pregnancy: “I wish I was normal. I see other people just go through pregnancy and they make it look so easy.”

These high utilizers reported lack of coordination of services as a key barrier: “I just find it very tedious to keep repeating the same thing over and over and over again to different doctors... I just be like, don't you all talk to each other?” Another participant shared, “You won't see a doctor until at least an hour after you get here. That can be really frustrating, especially when you're high risk, because you probably have other doctor's visits to go to.”

Many in the illness-driven high utilizer group came to the hospital because they perceived that key technical services and qualified providers were not available in prenatal clinic, especially ultrasound and fetal monitoring: “I'd rather come to the hospital so that I know that what's going on and they can monitor my pregnancy and monitor my baby.” Perceptions regarding accessibility and quality of outpatient prenatal care contributed to participants bypassing the prenatal clinic altogether: “If I go to my prenatal clinic, then I will have to make an appointment and wait for my doctor. And, my doctor's not there on Mondays, so I will have to wait and just go to the hospital because that's probably what she was going to tell me to do anyway.”

High utilizers also shared narratives of being dissatisfied with hospital-based unscheduled care, with specific stories suggesting low-value care and fragmentation. One reflected on having to immediately drive to a second hospital after a 7-hour visit that did not lead to a diagnosis: “I went to [hospital 3] because the first time I went to [hospital 2], I felt like I didn't receive the help or attention that I was looking for.”

Another participant felt that she received better care when she reported recent intimate partner violence than when she went to the hospital with physical symptoms because “nobody was judging me.” High utilizers reported feeling stigmatized for returning to the hospital repeatedly. Finally, high utilizers were more likely to report negative neighborhood features such as violence and blight as barriers to feeling well: “Every time you turn around, somebody is getting killed around there.”

Low Utilizers: Unique Themes

Low utilizer narratives were consistently distinct from those of both groups of high utilizers. Low utilizers saw pregnancy as a positive opportunity for change: “Even though it was unexpected doesn't mean your life is over... being pregnant actually makes you strive more, [be] more determined about how you want your life to be.” Low utilizers reported resource constraints owing to poverty, but were more goal oriented, motivated, and had wider social supports to rely on during pregnancy. They were also more likely to report positive neighborhood attributes as promoters.

Discussion

High utilizers of hospital-based obstetric triage services in our population showed a rational preference for hospital-based unscheduled care driven by limited outpatient access and cumulative barriers faced in the delivery system and community, when compared with demographically similar low utilizers. Our findings suggest that all low-income minority pregnant women in the United States do not face the same challenges or respond to challenges homogenously. High utilizers of unscheduled hospital-based obstetric care in our sample were demographically similar to low utilizers, but represented unique sub-populations based on specific unmet needs. Narratives demonstrated either poorer self-efficacy or greater medical complexity, and related use of low-value care during pregnancy, where low-value care can be defined as poor outcomes relative to cost from a consumer and systems perspective (Porter, 2010). Our analysis is broadly relevant as those who study frequent emergency utilization have called for attention to be paid to unique subpopulations that may demonstrate different need, cost, and health profiles in the context of their communities and health systems (LaCalle & Rabin, 2010).

This exploratory, single-site study was conducted in an inner-city setting in the United States. Our findings are not generalizable beyond a demographically similar population—by design exclusively low income, to focus on a population at known risk for disproportionately poor outcomes. It has been well-established that disparities in both accessibility and acceptability of prenatal care independently affect African American or Black women when compared with other low-income women in the United States (Bryant et al., 2010; Tucker Edmonds et al., 2015). Aspects of care such as health system trust and perceived racism, in

addition to social determinants of health and differences in health status, have been implicated in these disparities (Attanasio & Kozhimannil, 2015; Gadson, Akpovi, & Mehta, 2016). Given our study population's composition of 95% self-identification as African American or Black, our findings may not be generalizable to all low-income or Medicaid-insured women seeking scheduled prenatal or unscheduled obstetric care.

We selected a mixed methods design to generate hypotheses regarding preferential use of hospital-based care. An inherent limitation of this design is that prevalence of our findings cannot be known without further research.

The degree to which our findings are specific to women of low SES also cannot be determined, because we did not compare findings in women of low versus high SES in this study. Of 66 eligible study participants, 26 declined participation; we did not have consent to review the charts of those who declined to explore potential differences between those who accepted and those who declined study participation. Finally, findings may be subject to social desirability bias given that interviews were conducted in a health care setting. This limitation is mitigated by the fact that a demographically similar community health worker not involved in clinical care conducted all interviews and follow-up.

Our study's strengths include use of a mixed methods design and comparative qualitative approach to generate hypotheses as to why high utilizers experience unmet need during the vulnerable and formative period of pregnancy, a time when women are thought to have open access to the health system, proximal maternal and neonatal outcomes are implicated, and health behaviors for the life course are formed (Lu et al., 2010).

Our participant perspectives suggest an inherent tension. Individuals may prefer hospital-based unscheduled services to meet a variety of immediate health, social, and behavioral needs, whereas from an individual provider and health system perspective, these needs may not warrant immediate care if the visit is of lower acuity. Attention to the potential psychosocial significance of obstetric triage and emergency care has focused mostly on screening for domestic violence (Lutgendorf, Thagard, Rockswold, Busch, & Magann, 2012). Models responding to a range of additional vulnerabilities and social determinants demonstrated in triage could be impactful.

Adverse childhood experiences significantly contributed to psychosocial vulnerability in our participants. A history of adverse childhood experiences has been shown to be common among adults and has been linked to substance abuse, depression, cardiovascular disease, diabetes, cancer, and premature mortality (Felitti et al., 1998), as well as utilization patterns in nonpregnant adults (Arnow, Hart, Hayward, Dea, & Barr Taylor, 2000). In pregnant women, adverse childhood experiences have a dose-dependent relationship with risky behaviors (Chung et al., 2010), preterm birth (Leeners, Stiller, Block, Gorres, & Rath, 2010), and unintended pregnancy (Dietz et al., 1999).

Our qualitative findings shed light on potential mechanisms for these associations. For some participants, the physical and social state of being pregnant itself invoked prior trauma. Social networks and relationships meant support for some and dysfunction for others (Thoits, 1995); these differences in attachment, trust, and relationship formation combined

with predisposing risk and neighborhood factors could inform design of health delivery systems that are more tailored to the needs of the vulnerable. Such nuances may also explain variable participant response to existing perinatal programs in other evaluations (Holland, Xia, Kitzman, Dozier, & Olds, 2014). Early identification of at-risk individuals through screening or utilization patterns could be an effective strategy to improve perinatal outcomes and bring greater value into outpatient, hospital-based and community-based care.

Implications for Practice and/or Policy

For our participants, “access” was about more than simply getting in the door. Current policy opportunities may be leveraged to address barriers faced by low-income pregnant women by 1) expanding capacity and available appointments in prenatal clinics, 2) improving provider continuity in outpatient prenatal care, 3) incorporating on-site fetal assessment where possible, 4) enabling sharing of electronic health records between delivery hospitals and prenatal clinics, 5) harmonizing outpatient care, hospital-based services, community-based resources, and home visitation in low-income neighborhoods, and 6) recognizing the secondary gains of hospital use for psychosocially vulnerable women by incorporating community-focused social support into care delivery innovations.

Several of these recommendations are consistent with action areas identified by a recent Expert Panel on Improving Maternal and Infant Health Outcomes in Medicaid and the Children's Health Insurance Program (Applegate, Gee, & Martin, 2014). The Centers for Medicare and Medicaid Services Innovation Center also recently funded a model designed to support “clinical-community collaborations” that decrease low-value utilization by addressing “upstream social and environmental determinants of health” and tracking utilization across time to identify high-risk groups (Alley, Asomugha, Conway, & Sanghavi, 2016). Opportunities for such population approaches to improved quality of care abound but have been underutilized in obstetrics but are highly relevant as Medicaid programs move toward new quality metrics and accountable care models.

Conclusions

The obstetric triage visit may be an opportunity to intervene on behalf of particularly vulnerable subpopulations at risk for poor perinatal outcomes and use of low-value care despite access to outpatient prenatal care. The signal of risk demonstrated by low-income, high-utilizing pregnant women and a shifting policy landscape freshly focused on value-based care and social determinants call for novel approaches that respond to the perspectives of low SES patients themselves. Directly responding to the barriers highlighted by low SES people during pregnancy could inject greater value into care and better address vexingly persistent perinatal disparities in the United States.

Acknowledgments

The authors thank Dr. Shimrit Keddem and the Mixed Methods Research Laboratory at the University of Pennsylvania for technical and methodological assistance, and Drs. Jeffrey Brenner, Judith Bernstein and Judy Shea for their thoughtful review of this manuscript.

Funding statement: This work was supported by the Robert Wood Johnson Clinical Scholars Program and the University of Pennsylvania Leonard Davis Institute of Health Economics Pilot Grant Program. Funding sources played no role in study design, data collection, analysis, or interpretation of data.

References

- Alley DE, Asomugha CN, Conway PH, Sanghavi DM. Accountable health communities – addressing social needs through Medicare and Medicaid. *New England Journal of Medicine*. 2016; 374(1):8–11. [PubMed: 26731305]
- Angelini D, Howard E. Obstetric triage: A systematic review of the past fifteen years: 1998–2013. *MCN. American Journal of Maternal and Child Nursing*. 2014; 39(5):284–297. quiz 298–289.
- Applegate M, Gee RE, Martin JN Jr. Improving maternal and infant health outcomes in Medicaid and the Children's Health Insurance Program. *Obstetrics & Gynecology*. 2014; 124(1):143–149. [PubMed: 24901270]
- Arnow BA, Hart S, Hayward C, Dea R, Barr Taylor C. Severity of child maltreatment, pain complaints and medical utilization among women. *Journal of Psychiatric Research*. 2000; 34(6):413–421. [PubMed: 11165309]
- Attanasio L, Kozhimannil KB. Patient-reported Communication Quality and Perceived Discrimination in Maternity Care. *Med Care*. 2015; 53(10):863–871. [PubMed: 26340663]
- Bloom T, Curry MA, Durham L. Abuse and psychosocial stress as factors in high utilization of medical services during pregnancy. *Issues in Mental Health Nursing*. 2007; 28(8):849–866. [PubMed: 17729170]
- Blumenthal D, Chernof B, Fulmer T, Lumpkin J, Selberg J. Caring for high-need, high-cost patients - An urgent priority. *New England Journal of Medicine*. 2016; 375(10):909–911. [PubMed: 27602661]
- Bryant AS, Worjoh A, Caughey AB, Washington AE. Racial/ethnic disparities in obstetric outcomes and care: Prevalence and determinants. *American Journal of Obstetrics & Gynecology*. 2010; 202(4):335–343. [PubMed: 20060513]
- Chung EK, Nurmohamed L, Mathew L, Elo IT, Coyne JC, Culhane JF. Risky health behaviors among mothers-to-be: The impact of adverse childhood experiences. *Academic Pediatrics*. 2010; 10(4): 245–251. [PubMed: 20599179]
- Coley SL, Aronson RE. Exploring birth outcome disparities and the impact of prenatal care utilization among North Carolina teen mothers. *Womens Health Issues*. 2013; 23(5):e287–294. [PubMed: 23993476]
- Dietz PM, Spitz AM, Anda RF, Williamson DF, McMahon PM, Santelli JS, et al. Kendrick JS. Unintended pregnancy among adult women exposed to abuse or household dysfunction during their childhood. *JAMA*. 1999; 282(14):1359–1364. [PubMed: 10527183]
- Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*. 1998; 14(4):245–258. [PubMed: 9635069]
- Gadson A, Akpovi E, Mehta PK. Exploring the social determinants of racial/ethnic disparities in prenatal care utilization and maternal outcome. *Seminars in Perinatology*. 2016 in press.
- Gelberg L, Andersen RM, Leake BD. The Behavioral Model for Vulnerable Populations: Application to medical care use and outcomes for homeless people. *Health Services Research*. 2000; 34(6): 1273–1302. [PubMed: 10654830]
- Glanz, KE, Rimer, BK., Viswanath, K., editors. *Health behavior and health education: Theory, research, and practice*. 4th. San Francisco: John Wiley & Sons; 2008.
- Grajkowski AM, Dolinsky BM, Abbott JL, Batig AL. The pregnancy “super-utilizer”: How does a high-risk depression screen affect medical utilization? *Journal of Maternal, Fetal, and Neonatal Medicine*. 2016:1–5.
- Gross K, Brenner JC, Truchil A, Post EM, Riley AH. Building a citywide, all-payer, hospital claims database to improve health care delivery in a low-income, urban community. *Population Health Management*. 2013; 16(Suppl 1):S20–25. [PubMed: 24070246]

- Holland ML, Xia Y, Kitzman HJ, Dozier AM, Olds DL. Patterns of visit attendance in the nurse-family partnership program. *American Journal of Public Health*. 2014; 104(10):e58–65. [PubMed: 25122021]
- Howell EA, Zeitlin J, Hebert P, Balbierz A, Egorova N. Paradoxical trends and racial differences in obstetric quality and neonatal and maternal mortality. *Obstetrics & Gynecology*. 2013; 121(6): 1201–1208. [PubMed: 23812453]
- Humbert L, Saywell RM Jr, Zollinger TW, Priest CF, Reger MK, Kochhar K. The effect of pregnancy intention on important maternal behaviors and satisfaction with care in a socially and economically at-risk population. *Maternal and Child Health Journal*. 2011; 15(7):1055–1066. [PubMed: 20652384]
- Huynh L, McCoy M, Law A, Tran KN, Knuth S, Lefebvre P, et al. Duh MS. Systematic literature review of the costs of pregnancy in the US. *Pharmacoeconomics*. 2013; 31(11):1005–1030. [PubMed: 24158771]
- Kangovi, S., Barg, FK., Carter, T., Levy, K., Sellman, J., Long, JA., Grande, D. Challenges faced by patients with low socioeconomic status during the post-hospital transition. *Journal of General Internal Medicine*. 2013a. <http://dx.doi.org/10.1007/s11606-013-2571-5>
- Kangovi S, Barg FK, Carter T, Long JA, Shannon R, Grande D. Understanding why patients of low socioeconomic status prefer hospitals over ambulatory care. *Health Affairs (Millwood)*. 2013b; 32(7):1196–1203.
- Kangovi S, Grande D, Carter T, Barg FK, Rogers M, Glanz K, et al. Long JA. The use of participatory action research to design a patient-centered community health worker care transitions intervention. *Healthcare*. 2014; 2:136–144. [PubMed: 26250382]
- Kaplan, S. Mixing Quantitative and Qualitative Research. In: Elsbach, KD., Kramer, RM., editors. *Handbook of qualitative organizational research: Innovative pathways and methods*. New York: Routledge; 2016. p. 423–432.
- Kennedy AD, Leigh-Brown AP, Torgerson DJ, Campbell J, Grant A. Resource use data by patient report or hospital records: Do they agree? *BMC Health Services Research*. 2002; 2:2. [PubMed: 11825347]
- Kilfoyle KA, Vrees RA, Matteson KA, Phipps MG, Raker CA. Nonurgent emergency department use during pregnancy: Associated factors and implications. *Obstetrics & Gynecology*. 2014; 123(Suppl 1):150S.
- Krans EE, Davis MM. Preventing low birthweight: 25 years, prenatal risk, and the failure to reinvent prenatal care. *American Journal of Obstetrics & Gynecology*. 2012; 206(5):398–403. [PubMed: 21889122]
- LaCalle E, Rabin E. Frequent users of emergency departments: The myths, the data, and the policy implications. *Annals of Emergency Medicine*. 2010; 56(1):42–48. [PubMed: 20346540]
- Leeners B, Stiller R, Block E, Gorres G, Rath W. Pregnancy complications in women with childhood sexual abuse experiences. *Journal of Psychosomatic Research*. 2010; 69(5):503–510. [PubMed: 20955870]
- Lu MC, Kotelchuck M, Hogan V, Jones L, Wright K, Halfon N. Closing the Black-White gap in birth outcomes: A life-course approach. *Ethnicity & Disease*. 2010; 20(1 Suppl 2):S2–62. 76.
- Lutgendorf MA, Thagard A, Rockswold PD, Busch JM, Magann EF. Domestic violence screening of obstetric triage patients in a military population. *Journal of Perinatology*. 2012; 32(10):763–769. [PubMed: 22301524]
- Master R, Simon L, Goldfield N. Commonwealth Care Alliance. A new approach to coordinated care for the chronically ill and frail elderly that organizationally integrates consumer involvement. *Journal of Ambulatory Care Management*. 2003; 26(4):355–361. [PubMed: 14567280]
- Mautner DB, Pang H, Brenner JC, Shea JA, Gross KS, Frasso R, Cannuscio CC. Generating hypotheses about care needs of high utilizers: Lessons from patient interviews. *Population Health Management*. 2013; 16(Suppl 1):S26–33. [PubMed: 24070247]
- Mazul, MC., Salm Ward, TC., Ngui, EM. Anatomy of good prenatal care: Perspectives of low income African-American women on barriers and facilitators to prenatal care. *Journal of Racial and Ethnic Health Disparities*. 2016. <http://dx.doi.org/10.1007/s40615-015-0204-x>

- Mitchell PH, Powell L, Blumenthal J, Norton J, Ironson G, Pitula CR, et al. Berkman LF. A short social support measure for patients recovering from myocardial infarction: The ENRICH Social Support Inventory. *Journal of Cardiopulmonary Rehabilitation*. 2003; 23(6):398–403. [PubMed: 14646785]
- Mixed Methods Research Lab/Perelman School of Medicine at the University of Pennsylvania. [Accessed: September 1, 2015] What is mixed methods research?. 2014. Available: www.med.upenn.edu/mmrl/
- Porter ME. What is value in health care? *New England Journal of Medicine*. 2010; 363(26):2477–2481. [PubMed: 21142528]
- Institute of Medicine; Division of Health Promotion and Disease Prevention. Preventing low birthweight. Washington, DC: National Academies Press; 1985. Committee to Study the Prevention of Low Birthweight.
- Robbins CL, Zapata LB, Farr SL, Kroelinger CD, Morrow B, Ahluwalia I. Prevention. Core state preconception health indicators - pregnancy risk assessment monitoring system and behavioral risk factor surveillance system, 2009. *MMWR Surveillance Summaries*. 2014; 63(3):1–62.
- Sauder, CMM. Counting Qualitative data handbook of qualitative organizational research. New York: Sage; 2016.
- Smithson DS, Twohey R, Rice T, Watts N, Fernandes CM, Gratton RJ. Implementing an obstetric triage acuity scale: Interrater reliability and patient flow analysis. *American Journal of Obstetrics & Gynecology*. 2013; 209(4):287–293. [PubMed: 23535239]
- Thoits PA. Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior*. 1995:53–79. Spec No 35. [PubMed: 7560850]
- Tucker Edmonds B, Mogul M, Shea JA. Understanding low-income African American women's expectations, preferences, and priorities in prenatal care. *Family and Community Health*. 2015; 38(2):149–157. [PubMed: 25739062]

Table 1
Demographic Characteristics of Pregnant High Versus Low Utilizers of Unscheduled Care

	Low Utilizers (<i>n</i> = 20)	High Utilizers (<i>n</i> = 20)	<i>p</i> Value
Age, y (mean)	25.0	25.5	.75
Race, <i>n</i> (%)			
African American/Black	19 (95)	19 (95)	1.0
Education, <i>n</i> (%)			
Less than high school	4 (20)	1 (5)	.07
High school/equivalent	11 (55)	11 (55)	
Some college	5 (25)	5 (25)	
Collegiate/higher	0 (0)	3 (15)	
Sexual orientation, <i>n</i> (%)			
Heterosexual	19 (95)	17 (85)	.23
Bisexual	0	3 (15)	
Lesbian	1 (5)	0	
Relationship status, <i>n</i> (%)			
Single	7 (35)	6 (30)	1.0
Dating	5 (25)	5 (25)	
Partnered and/or living with partner	6 (30)	6 (30)	
Married	2 (10)	2 (10)	
Separated	0 (0)	1 (5)	
Insurance status, <i>n</i> (%)			
Currently insured	18 (90)	19 (95)	1.0
Insured before pregnancy	16 (80)	12 (60)	.30
Parity			
Mean no. prior births	1.65	1.15	.35
Primiparous, <i>n</i> (%)	6 (30)	7 (35)	.74
Visit history			
No. of unscheduled visits (mean)			
Self-reported at study visit	1.1	5.9	<.0001
In system by end of pregnancy	1.8	7.5	<.0001
Gestational age at study visit, wk (mean)	38.8	29.3	<.0001
Discharged after study visit, <i>n</i> (%)	10 (50)	16 (80)	.04
Obstetric Triage Acuity score (mean)	3.05	3.70	.07
Prenatal visits in system (mean)	5.4	9.2	.01
Postpartum follow-up visit, <i>n</i> (%)	7 (35)	12 (60)	.11

Source: Authors' analysis.

Table 2
Key Psychosocial Factors by Utilization Status: Scale Measures

	Low Utilizers (<i>n</i> = 20)	High Utilizers (<i>n</i> = 20)	<i>p</i> Value
Adverse Childhood Experiences Measure	0.85	2.6	.01
ENRCHD Social Support	30.3	28.1	.07
Pregnancy intention, <i>n</i> (%)			.11
Unintended/mistimed	17 (85)	11 (55)	
Intended	2 (10)	5 (25)	
Declined response	1 (5)	4 (20)	

Source: Authors' analysis

Table 3
Barriers to Perinatal Health Endorsed by Pregnant Women of Low Socioeconomic Status by Utilization Status

Theme	Percent Endorsing Theme Within Profile 2: Low Utilizer Group (n = 20)	Percent Endorsing Theme within Profile 1: High Utilizer Group (n = 20)	Representative Quote
Health status	45.0	95.0	"Since the beginning, I was extremely nauseous. It was disabling. I wasn't able to do anything, like cook or clean or pay attention to my kids."
Health behaviors	60.0	90.0	"I do forget to take my Lovenox. I forget to take that. And it's because I be doing so much and I think about so much at one time, I think about oh, I got to do this, oh, I got to do that."
Health system navigation	65.0	90.0	"I guess it takes two or three weeks to get an appointment so if I have an issue I can't talk to them right away about it which is probably why I visited the ER so much. Just because I can't always get in to see my doctor because it takes so long to get an appointment with her."
Psychosocial factors	45.0	85.0	"My mom used to let her boyfriends put their hands on me. And that's not cool in my book. Whereas, I'm your child, you should chastise me yourself. I have been raped twice. I was raped at 20 and I was raped at 24. Well, now, just in February. It messes with me a lot."
Resources for daily life	65.0	75.0	"It's difficult because I don't have a job. I get money from Welfare. I get food stamps. I get WIC... I've had plenty of times where it's been times where I've had no electricity. Right now, I need a hot water heater. I still need to figure out how to make arrangements with the water company and the gas company."
Neighborhood and community	15.0	25.0	"I feel unsafe because I have a child on the way and who's to say someone wouldn't try to take him or a child in my family. I just - people are crazy out here and that makes me feel unsafe. The gun violence. People decide to shoot any time they feel like it. That's what makes me feel unsafe, the gun violence and the different kidnappings. The cops don't even make me feel safe."
Mean number barrier domains	2.9	4.6	

Source: Authors' analysis

Table 4
Reasons for Preferential Use of Hospital-Based Unscheduled Obstetric Care Over
Outpatient Prenatal Care Among Pregnant Women of Low Socioeconomic Status

Theme	Representative Quote
Affordability: relationship of prices of services to ability to pay	"I used to go to [clinic] and they don't take [insurance plan] anymore, so now I'm 13 days until my due date and I have to find another health care provider to go for the rest of my prenatal care and that don't make sense to me. I just found out today, because I wouldn't have came here. I'd have just went to my doctor's office and then I would have been told I'd have to pay \$150 out of my pocket just because my insurance doesn't cover it anymore."
Accessibility: relationship of the location of services to the location of patients	"It's just a process that goes along with it—getting there. Either driving, getting on the bus, something. A lot of the times I can't drive myself and I so then I have to park so far away because every spot around here is like you have to pay the meter or if you park in the hospital parking lot you have to pay them and that's an issue for me, having to pay for everything."
Accommodation: patients' perceptions of how health care is organized	"A couple times I had questions and I can't call my prenatal office, because they don't stay there. So I guess [I want] a little bit more access to having doctors I can call."
Availability: relationship of the volume and types of existing resources to patients' needs	"I believe in the hospital, you know, if anything goes wrong. Everything is available to you, where it isn't in the clinic."
Acceptability: relationship of patients' attitudes about what care should be like to actual characteristics of clinicians/facilities	"Every time I turn around there is different doctors. Nobody wants to deal with different doctors and keep answering the same thing... They make you feel like a science project, and I'm not a science project... I have seen at least six different doctors. I don't know none of them. That's sad."

Source: Authors' analysis. The five dimensions of "access" are drawn from a model described by Roy Penchansky and J. William Thomas in Penchansky R, Thomas JW. The concept of access: definition and relationship to consumer satisfaction. *Med Care*. 1981; 19(2):127–40.