Current Commentary

Right-Sizing Prenatal Care to Meet Patients' Needs and Improve Maternity Care Value

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Prenatal care is one of the most widely used preventive care services in the United States, yet prenatal care delivery recommendations have remained largely unchanged since just before World War II. The current prenatal care model can be improved to better serve modern patients and the health care providers who care for them in three key ways: 1) focusing more on promotion of health and wellness as opposed to primarily focusing on medical complications, 2) flexibly incorporating patient preferences, and 3) individualizing care. As key policymakers and stakeholders grapple with higher maternity care costs and poorer outcomes, including lagging access, equity, and maternal and infant morbidity and mortality in the United States compared with other high-income countries, the opportunity to improve prenatal care has been given insufficient attention. In this manuscript, we present a new conceptual model for prenatal care that incorporates both patients' medical and social needs into four phenotypes, and use human-centered design methods to describe how better matching patient needs with prenatal services can increase the use of high-value services and decrease the use of low-value services. Finally, we address some of the key challenges to implementing right-sized prenatal care, including capturing outcomes through research and payment.

(Obstet Gynecol 2020;135:1027–37)
DOI: 10.1097/AOG.0000000000003820

More than 98% of the nearly four million women who give birth each year will receive prenatal care.[1] Although prenatal care is one of the most widely used preventive care services in the United States, recommendations for care delivery, including 12–14 office-based visits for low-risk women, have remained largely unchanged since World War II,[2] in spite of changes in population health and technology. The current prenatal care model could better

serve patients and the health care providers who care for them through addressing three key issues: 1) current prenatal care models were designed to prevent medical complications such as preeclampsia, not to optimize health and wellness; 2) patient preferences for health care engagement have evolved significantly in the past century; and 3) though guidelines advocate for "individualizing" care, how to do so is unclear. As a result, many patients receive the same "one size fits all" approach to care.[3] It remains unclear how to properly risk-stratify pregnant patients and determine what prenatal care models best meet their clinical, social, and financial needs.

The current model of prenatal care recommends 12–14 individual patient visits with a health care provider over the course of pregnancy. This standardized schedule of visits monthly until 28 weeks, every two weeks until 32 weeks, and weekly until delivery, has remained fixed despite limited supporting evidence.[3] Current prenatal care delivery recommendations are structured around medical care for the patient and fetus (eg, medical screening and management of complications). In this medical model, supportive care, including anticipatory guidance (education and preparation for pregnancy, birth, infant feeding, and parenting) and psychosocial support (screening and management of nonmedical factors such as mental health, substance use, housing, and nutrition) is often added on, rather than meaningfully integrated into prenatal care. By our back-of-the-envelope calculation, for a patient participating in routine prenatal care, the full complement of 12–14 visits–including travel time, parking, and additional laboratory testing and imaging–equate to almost one full week of missed work or childcare, before integrating additional psychosocial support. This may be too much care for some, not enough for others, and the wrong kind of care for patients with diverse support needs.

Key stakeholders in the United States are grappling with higher maternity care costs and poorer outcomes, including access, equity, and maternal and infant morbidity and mortality in the United States compared with other high-income countries.[4–7] Prenatal care, the backbone of maternity care, has the potential to improve pregnancy outcomes and reduce costs through "right-sizing"–matching patient needs with services delivered.[8,9] Others have noted the importance of tailoring prenatal care options based on patient needs,[10–12] and recent postpartum recommendations outline how comprehensive postpartum care can be "individualized and patient-centered."[13]

We propose a new framework for "right-sizing" prenatal care delivery in the United States. First, we introduce a conceptual model of patients' medical and support needs, illustrated through patient vignettes. Next, we describe how current prenatal care fails to match patients' needs with delivered services. We then show how tailored models of prenatal care can minimize overutilization of unnecessary services and optimize access to valuable nonmedical services. Finally, we identify challenges that must be overcome to successfully implement right-sized prenatal care.

RECONCEPTUALIZING PRENATAL CARE

We propose that optimal prenatal care should consistently attend to two types of patients' needs: medical and psychosocial. Merging patients' medical needs and support needs into a combined model of care can lead to improved patient phenotyping (Fig. 1A), which can then be used to match appropriate patients with appropriate services (Fig. 1B).

Instead of considering the full spectra of both medical and social needs, pregnant patients have traditionally been dichotomized as medically low-risk or high-risk.[3] To develop phenotypes, we consider both chronic medical conditions (eg, diabetes, hypertension, autoimmune disease) and pregnancy medical conditions (eg, gestational diabetes and fetal complications such as fetal growth restriction). The distinction between "low-risk" and "high-risk" is largely imprecise and includes a broad spectrum of diagnoses, from advanced maternal age to monochorionic monoamniotic twins. Importantly, medical risk can be dynamic. For example, a woman who develops gestational diabetes may have higher medical needs later in pregnancy. We also acknowledge that the terms "low-risk" and "high-risk" pregnancy have not been consistently defined in the literature and may vary across regions, institutions, and individual health care providers depending on available resources, training, and expertise.[14,15] This medical classification is important for determining 1) the appropriate prenatal care provider (ie, low-risk patients being seen by specialists in obstetrics and gynecology, family medicine practitioners, certified nurse midwives, and nurse practitioners; high-risk women being seen by general obstetrician–gynecologists and maternal–fetal medicine specialists) and 2) the appropriate intensity of medical screening and management services. In our current model, patients who are low-risk receive an intensive 12–14 visits and patients who are high-risk may receive more. There is no defined opportunity for care de-escalation (Fig. 1C). Although large integrated health organizations such as Kaiser Permanente and the Department of Defense, as well as health technology platforms such as BabyScripts, have implemented

Fig. 1. Patients' medical and support needs in pregnancy, medical and support services provision, current prenatal care provision, and the result of prenatal care tailoring. **A**. Patients' medical and support needs in pregnancy results in four key patient phenotypes. **B**. Medical and support services delivery in pregnancy can be combined into four key service delivery patterns. **C**. The current prenatal care model recommends a similar level of service provision for all patients, regardless of need. **D**. Tailoring prenatal care to match patients' needs could allow services to match patient phenotype.

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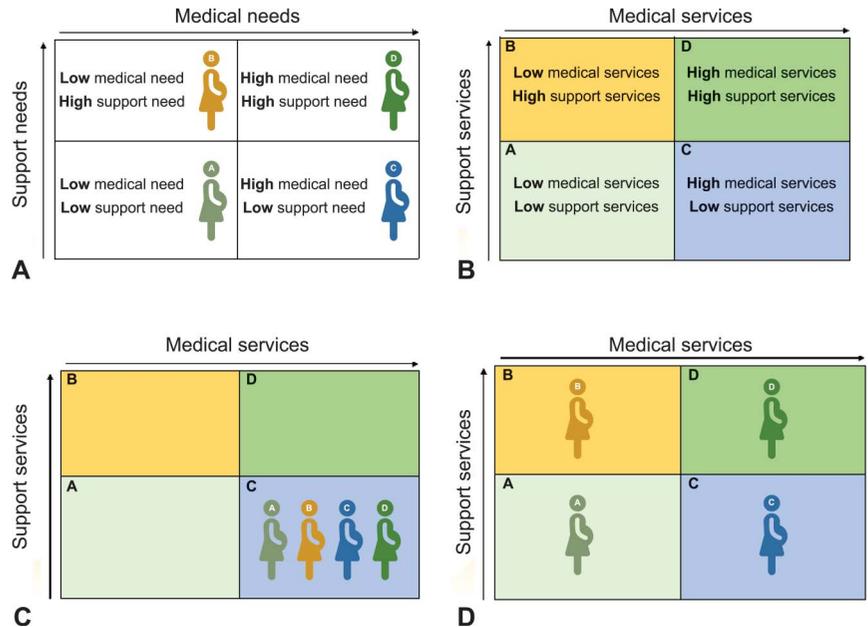
low-risk pathways, formal evaluations of these programs are lacking and are largely limited to feasibility, not pregnancy outcomes.[16–19]

This medical dichotomy, however, fails to acknowledge the strong influence of support needs on how patients consume and how health care providers deliver the key components of prenatal care. The support-needs axis is multidimensional and includes educational needs (eg, information on general health, pregnancy, labor, and delivery) and psychosocial needs (eg, substance use, mental health, housing, relationships, support networks, nutrition or food insecurity). Patients with low support needs may include multiparous patients with involved partners or close social ties, and few material or financial needs. In contrast, patients with high support needs may include nulliparous women who lack supportive networks of family and friends, or have difficulty accessing needed services such as stable housing or transportation. In our current model, many health care providers address social needs through additional prenatal visits.[20] Patients may also be offered social work visits or supportive services if they have high support needs and these services are available in their care setting. These are typically added to prenatal care cumulatively without coordination with other prenatal care services (Fig. 1C).

EXPLORING HIGH-VALUE SOLUTIONS THROUGH TAILORING

In failing to reliably match medical and support services with patient needs (Fig. 1C), our current system may result in overutilization of some services (such as pre-

natal care visits for women with low medical needs) and underutilization of others (such as anticipatory guidance for nulliparous women or psychosocial support for women with high social needs). This imbalance also affects health care providers, who face increasing pressures to provide more care in shorter visits. Providing unnecessary care or care that could be better delivered by another health care worker is, at best, inefficient and can increase frustration and burnout while detracting from other value-generating activities.

Right-sizing could improve prenatal care value (broadly defined as cost per outcome) through two key mechanisms: 1) reducing costs through decreasing the provision of unnecessary services and integrating care to prevent service duplication, and 2) improving the quality of care for all patients by delivering the most effective interventions—particularly for high-risk patients who could benefit most from allocated resources (Fig. 1D). As illustrated in Figure 2, we can ensure high-risk patients receive needed care, and low-risk patients have greater care flexibility, by better balancing medical and support services between patients. We have purposefully not included a defined quantity of care, but rather, simply wish to illustrate the possible effect of redistributing services.

Reducing Unnecessary Medical Services

Contrary to intuition, more prenatal care may actually be harmful for medically low-risk patients. In a retrospective analysis of more than 7,000 medically low-risk patients who delivered at term in a single academic
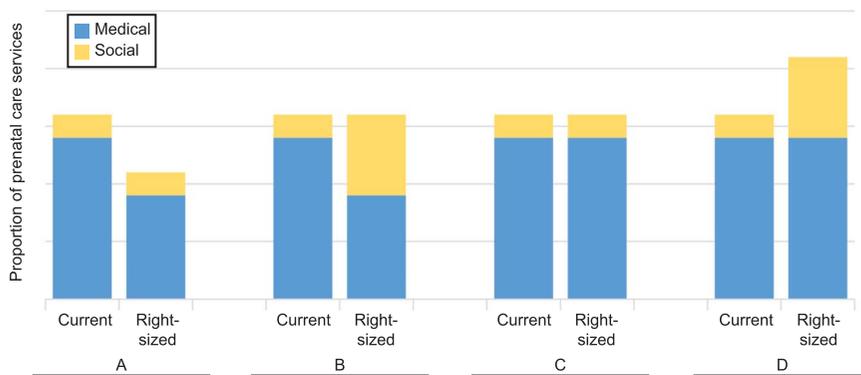
Fig. 2. Distribution of medical and psychosocial services across all four patient types in the current and right-sized prenatal care model.

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institution, more than 10 prenatal visits for low-risk patients was associated with increased interventions such as ultrasound scans and cesarean delivery, without improvement in outcomes.[21] Additionally, multiple studies have demonstrated the safety of reducing prenatal care in this population to eight to 10 visits,[15,22] A recent scoping review of low-risk prenatal care guidelines in the United States and eight peer countries demonstrated that the United States recommends more prenatal care visits but similar content (eg, psychosocial support and anticipatory guidance) as other countries.[23] Finally, many patients prefer fewer prenatal visits than currently recommended: in a survey of 300 postpartum women, more than half reported they would prefer having less than 12 prenatal visits.[24] Services that provide no additional benefit and have been associated with unnecessary intervention are by definition low-value and should be reconsidered.

This low-value care has important consequences for patients, health care providers, and the health system overall. By rough calculation, for a low-risk patient, four additional prenatal visits equate to eight hours of unnecessary care and travel–equivalent to a full day of work. For a health care provider caring for 40 low-risk pregnant patients a year, four fewer visits per patient would allow them to care for an additional 20 low-risk patients. If we conservatively assume that 25% of the almost four million women who deliver each year are medically and socially low-risk, almost four million "extra," potentially low-value prenatal care visits are recommended by current guidelines. Prenatal care visit payments are conservatively estimated at $89–$98 per visit, potentially resulting in more than $3.9 billion in excess spending.[25]

There are many existing but under-used approaches to moving medically low-risk patients to more appropriate medical and social services (Table 1 for definitions of alternative prenatal care models). One strategy, already employed by health networks such as Kaiser Permanente[26] and the State of Michigan Quality Improvement Consortium,[27] is simply reducing visit number to eight to nine scheduled visits for medically low-risk women. Organizations such as the World Health Organization also advocate for a minimum of eight prenatal visits for low-risk patients.[28] Another approach is to move some prenatal care out of a clinical setting. Connected care models that use a reduced in-person visit schedule coupled with remote monitoring and private messaging with support staff have shown increased patient satisfaction and reduced stress, with similar maternal and fetal outcomes.[22] Similarly, early work on telemedicine has demonstrated safety, acceptability, and cost savings (Barbour KD, Nelson R, Esplin MS, Varner M, Clark EAS. A randomized trial of prenatal care using telemedicine for low-risk pregnancies: patient-related cost and time savings [abstract]. Am J Obstet Gynecol 2017;216:S499.).[29] Shifting part of prenatal care services away from traditional, costly medical settings provides more flexibility for the patient while freeing health care providers to care for more complex patients.

Increasing Necessary Support Services

For patients with high support needs, current strategies include increasing total number of prenatal appointments or layering on additional social services. Both of these approaches have shortcomings. Excess medical visits may detract from time needed to access support services, perform self-care, attend work, or manage childcare responsibilities. Additional support services, although potentially helpful, are often provided by medical professionals without appropriate training to address issues such as housing or food insecurity. Other health care team members (eg, social workers) may be better equipped to address social needs and allow for improved resource allocation in the clinic. Unfortunately, this redistribution of tasks is often limited by payment models, which are not currently designed to

Table 1. Description of Prenatal Care Models

Care Model	Description	Example(s)
Individual	A patient goes to a clinic or office and sees her maternity care provider on her own for 12–14 planned visits; a nurse checks the patient's blood pressure and the fetal heart rate; the provider helps coordinate medical and social care needs	Current model of care[3]
Reduced visit schedule	A patient goes to a clinic or office and sees her maternity care provider on her own for 7–11 planned visits; a nurse checks the patient's blood pressure and the fetal heart rate; the provider helps coordinate medical and social care needs	Kaiser Permanente[26] and State of Michigan[27]
Pregnancy medical home	A patient meets with her team of maternity care providers, nurses, and social workers; the nurse checks the patient's blood pressure and the fetal heart rate; the team helps coordinate visits and other medical and social care needs	Community Care of North Carolina[58] and StrongStart[59]
Group	A patient meets with a group of other patients with similar due dates; the woman has time alone with her maternity care provider to check the fetal heart rate and discuss any issues; the majority of the visit is done with all of the patients together; the team helps coordinate medical and social care needs	Centering Pregnancy[60] and StrongStart[24]
Telehealth	A patient meets with her maternity care provider through a phone call or video from her home or other convenient location; the woman checks her own blood pressure and the fetal heart rate and shares this information with her provider; the provider helps coordinate medical and social care needs	University of Utah Virtual Care[56]
Connected care	A patient has a reduced number of individual appointments; between visits, she can check her own blood pressure and the fetal heart rate and share this information with her provider; the team helps coordinate medical and social care needs	OB Nest[57]

provide adequate reimbursement for nonmedical services (see the Payment Models section).[4]

Models of prenatal care that combine medical and social support may best serve patients with high support needs. Group prenatal care may be helpful for patients who are seeking additional social connection and has been implemented in a variety of populations (medically low-risk; patients with gestational diabetes, human immunodeficiency virus (HIV), or substance use; adolescents; and racial and ethnic minorities).[30–34] Prospective observational studies have noted decreased preterm birth rates and lower psychosocial stressors, particularly in low-income and minority populations, and several randomized controlled trials are ongoing.[35–38] For patients who prefer individualized care, pregnancy medical homes, which provide medical and social services together through one coordinated team, may be preferable. Group care and pregnancy medical homes are acceptable to patients, have equal to or improved outcomes, and reduce costs when compared with routine services.[30]

Applying Right-Sizing to Our Patient Vignettes

To better illustrate the patient archetypes described above, we developed vignettes based on the findings of Project Joy, a human-centered design project that evaluated patients' prenatal care experiences. This work included 12 patient and 12 health care provider interviews from a diverse academic medical center, as well as journey mapping of both current and ideal prenatal care states. These archetypes are not meant to be comprehensive, but serve as examples for the need to right-size care (Boxes 1–4). We have created four key phenotypes: low medical and social needs (Box 1); low medical and high social needs (Box 2); high medical and low social needs (Box 3); and high medical and social needs (Box 4). We will apply the right-sizing strategies for prenatal care explored above to each of the vignettes to highlight their influence on prenatal care delivery and experience.

Caring for patients like Patient A (low medical, low social needs) in our current model may lead to overutilization of medical care. Patients may be burdened by the traditional visit schedule and find that the opportunity costs outweigh the benefits of multiple visits. Caring for these patients is straightforward, but patient and health care provider time and effort required for frequent appointments may be disproportionate to the low clinical benefit. Reduced visits schedules and connected care models allow

Box 1. Models of Prenatal Care, Supporting Patient Vignettes, and Health Care Provider Experience: Patient A

Patient Medical and Support Needs

Medical needs: low
Few or no medical and fetal complications
Support needs: low
Multiparous with good support OR
Nulliparous with strong health literacy or social networks

Patient Vignette

Thirty-three-year-old woman, G2P1, who had a previous uncomplicated pregnancy and vaginal delivery. She and her partner made the joint decision that, with their son in preschool, Patient A's parents moving into town, and new allowances for family leave in their respective jobs, it was a good time to have a prepregnancy counseling visit, remove the intrauterine device, and get pregnant again. Both Patient A and her partner feel well-supported by family and friends, are very open with their provider about their concerns throughout the pregnancy, and are avid consumers of information through pregnancy books and apps. During the previous pregnancy, they appreciated the relationships they developed with their provider team.

Provider Experience

Patient A's provider team is excited to be part of her pregnancy and appreciates the couple's openness and preparation. Patient A's visits are quick and easy for her provider, who often spends more time documenting the visit than in the room. The provider often feels she is not contributing much to Patient A's care, aside from checking the fetal heart rate, since she and her husband are so prepared.

Right-Sizing Result

Decreasing unnecessary visits reduces both patient and provider burden. Flexible models decrease the opportunity cost for patients while freeing providers to care for more complex patients.

Potential Models*

Reduced visit schedules
Connected care
Telemedicine

*See Table 1 for care model descriptions.
Vignettes created using Project Joy Psychosocial Factors and Dynamic Patient Modes Framework.

Box 2. Models of Prenatal Care, Supporting Patient Vignettes, and Health Care Provider Experience: Patient B

Medical need: low

Few or no medical and fetal complications

Support need: High

Educational and psychosocial needs including low health literacy, homelessness, poverty, mental illness, isolation

Patient Vignette

Twenty-eight-year-old woman, G0, who presents for prenatal care at 15 weeks. She was surprised to discover she was pregnant when she went to the emergency department for an upper respiratory infection. She says that she is moving forward with this pregnancy on her own. Her medical history is significant for mild asthma, well-controlled with an albuterol inhaler that she has used more frequently recently because she is staying on her uncle's couch and his apartment has mold. She also attempts to leave the visit early because she needs to get to a job interview and asks you to write a letter certifying that she is pregnant because it may help her case with the housing authority. She is receptive to the involvement of social work but insists that she needs to leave now.

Provider Experience

Care for Patient B is fragmented, with much of the care delivered through triage over multiple providers in the group. Prenatal appointments always run late, and her providers feel they cannot adequately address her educational and psychosocial needs. Providers feel that are playing catch-up at every interaction and have not been able to fully discuss plans for delivery or postpartum and make sure she has resources in place for support. Feedback from the social work team also describes that Patient B misses scheduled appointments.

Right-Sizing Result

Reducing unneeded medical care and better care coordination allows more time for social services. Patient services are matched with the appropriate provider, reducing provider and patient frustration.

Potential Models*

Group prenatal care
Pregnancy medical homes

*See Table 1 for care model descriptions.
Vignettes created using Project Joy Psychosocial Factors and Dynamic Patient Modes Framework.

Box 3. Models of Prenatal Care, Supporting Patient Vignettes, and Health Care Provider Experience: Patient C

Medical need: high

Chronic medical conditions, pregnancy or fetal complications

Support need: low

Multiparous with good support OR
Nulliparous with strong health literacy or social networks

Patient Vignette

Thirty-two-year-old woman, G3P2, with chronic hypertension and obesity who presents for prenatal care at 8 weeks. She had prepregnancy care, and her blood pressure is well-controlled on labetalol. She and her husband have been walking regularly with their 3- and 6-year-old children for exercise and are excited to complete their family. They remember all of the testing and fetal monitoring from their first pregnancy and have reliable support from their neighbor, who can help watch the kids when Patient C has appointments. She asks her provider about aspirin for preeclampsia prevention, which she learned about through her own research.

Provider Experience

Care for Patient C requires additional medical expertise, which her providers are able to provide through her regularly scheduled visits. They appreciate frequent visits to discuss potential complications from her medical comorbidities and review the additional testing and fetal monitoring required for her chronic hypertension. This also provides time to address routine care elements such as family planning needs.

Right-Sizing Result

High medical care utilization is needed for adequate management of comorbidities and complications. Patients do not require additional coordination and social support but may appreciate the flexibility of models that allow for remote monitoring or fewer in-person visits.

Potential Models*

Connected care
Telemedicine

*See Table 1 for care model descriptions.
Vignettes created using Project Joy Psychosocial Factors and Dynamic Patient Modes Framework.

Box 4. Models of Prenatal Care, Supporting Patient Vignettes, and Health Care Provider Experience: Patient D

Medical need: high

Chronic medical conditions, pregnancy or fetal complications

Support need: high

Educational and psychosocial needs including low health literacy, homelessness, poverty, mental illness, isolation

Patient Vignette

Thirty-year-old woman, G0, at 26 weeks of gestation, presenting to discuss her new diagnosis of gestational diabetes. She responds with unusual calmness to her new diagnosis, until you review additional visits with nutrition, a maternal–fetal medicine specialist, and ultrasound scans. Patient D then quietly admits that it takes a lot of effort for her to leave her house and she feels overwhelmed by all of the new appointments she will need to schedule. She is also worried about coordinating with her job. She voices these concerns all with a level of detachment. Her Edinburgh Postnatal Depression Scale score is 15. She denies safety concerns or suicidal ideation. She takes the contact information for the social worker, but when she arrives for her next appointment reports she has not yet called because she did not have time.

Provider Experience

Care for Patient D is challenging; it is difficult to identify how best to support her through this pregnancy because she is difficult to engage and has not been receptive to additional support resources. The provider team is able to adequately address her medical care but worry they are not providing the support she needs. The provider team is relieved that Patient D will have more contact with teams through management of gestational diabetes mellitus. However, the team is concerned about adding new faces to her team since she has not been responsive to social work.

Right-Sizing Result

Integrating social support into prenatal care may facilitate patients' ability to achieve needed medical care while reducing the overall care burden. Coordinated services may require additional services, which are needed in this high-risk population.

Potential Models*

Pregnancy medical homes

*See Table 1 for care model descriptions.
Vignettes created using Project Joy Psychosocial Factors and Dynamic Patient Modes Framework.

these patients to move through pregnancy unburdened by unnecessary medical care.

Caring for patients like Patient B (low medical, high social needs) in our current model may also lead to overutilization of medical care while failing to meet support needs. Brittany may choose group prenatal care for the community support and appreciate the additional coordination of services. Fewer medical visits allow her to focus on resources for finding secure housing and employment.

Caring for patients like Patient C (high medical, low social needs) in our current model likely represents the right care balance. Frequent visits are important for the additional medical monitoring and counseling she needs based on her chronic hypertension. Patients like Patient C might be open to connected care, remote monitoring, or telemedicine as part of their prenatal care experience to lessen their travel burden.

Caring for patients like Patient D (high medical, high social needs) in our current model may represent the appropriate delivery of medical services, but lack support services and integration of care. These patients may prefer pregnancy medical homes–team-based care models where patients maintain privacy by meeting individually with their health care provider but have additional support with coordination of medical and social services to improve adherence to complex treatment plans.[39,40] Increasing investment in these complex patients is crucial for improving pregnancy outcomes at a time when maternal morbidity and mortality continue to increase in the United States.

BARRIERS TO CARE TAILORING

Assessing Patient Needs

The goal of matching services to patient needs first requires accurately identifying those needs. Medical needs may be easily captured through health history and pregnancy-related screening. Social determinants of health, however, have been less frequently incorporated into routine risk assessment. Organizations such as the American College of Obstetricians and Gynecologists, the American Association of Family Physicians, and the American Academy of Pediatrics advocate for screening for social determinants of health.[41] Though surveys show health care providers support social screening, barriers such as lack of time to perform screening and inadequate resources and referral options for support services may impede universal implementation.[42,43] Several screening tools currently exist, including the 10-item Health LEEDS questionnaire highlighted in Committee Opinion No. 729, "Importance of Social Determinants of Health and Cultural Awareness in the Delivery of Reproductive Health Care"; however, validation and adaptation of education and social needs screening tools in the obstetric population are notably absent in the literature.[44,45]

We also must acknowledge that not all patients will be forthcoming about their needs. Barriers to disclosure might include legal concerns in the case of undocumented patients, issues with parental custody in the case of maternal substance use disorder, or stigma in the case of mental health disorders.[46] As clinicians, we must aim to be culturally sensitive and open to allow our patients a safe space to discuss their needs. As a first step, we must start by asking patients. As in the case of Patient D, we may never know that she is suffering from depression unless we ask.[47,48]

Our proposal for right-sized prenatal care requires a rigorous way to continuously assess patients' prenatal medical and psychosocial risks over the course of their pregnancy so they can receive the care model best suited to their needs.

Assessing Prenatal Care Outcomes

One challenge in identifying shortcomings of the traditional prenatal care model and opportunities for right-sizing is the lack of rigorous research evaluating the quality of prenatal care and its outcomes. This is the result of two challenges in the field, which can be understood in the context of Donabedian's[49] framework for measuring quality.

The first is a process measure issue: we lack adequate quality measures to capture the essential elements of care, instead relying on indices that capture the timing of prenatal care initiation and the number of visits.[50] Although such indices may reflect important elements of quality, they do not capture whether the patient received recommended medical or psychosocial care. The second is an outcomes measure issue, which includes limited outcome measures and the empirical challenges of attributing outcomes to the quality of care received. The evaluation of these right-sized models requires the use of well-designed randomized controlled trials to minimize confounding from selection of patients into different prenatal care models.

Rigorous evaluation is needed to understand where these models can be most effective, the heterogeneity of their influence on different patient populations, and how new models can be leveraged to mitigate the stark racial and ethnic disparities in quality of obstetric care and outcomes.[51] Right-sized prenatal care may help mitigate disparities by more adequately addressing women's health and community-specific social determinants. Coupling these new models with implicit bias training

could be particularly effective in improving health equity.[52] In addition, new models should be adaptable to a wide range of geographic and health care settings across the country. For example, group prenatal care may be a solution that can be adopted more widely, but the curriculum covered, visit number, and who is delivering that care may be specific to each locality.

Payment Models

Innovation toward the right-sizing of prenatal care is only possible in the context of a payment system that rewards health care providers for less traditional care models. A fee-for-service payment system that only compensates health care providers for specific documented services can encourage overutilization of prenatal testing and often undercompensates (or does not compensate at all) for psychosocial support services.

Many payers, including both private health insurers and state Medicaid programs, have moved toward bundled payments, wherein the health care provider group that attends the delivery receives a lump sum payment for the delivery, prenatal care, and postnatal care (with different amounts for vaginal and cesarean deliveries).[53] With bundled payments, health care providers have more discretion to provide traditionally undercompensated services that they believe may benefit their patients.[54] However, bundled payments present a number of challenges, including setting the right reimbursement benchmark and defining included services for the bundle, incentivizing under-provision of necessary care, and penalizing hospitals that serve more vulnerable and high-risk patients.[55] In addition, bundled payments must be accompanied by sufficient monitoring to maintain quality of care or incentives to improve the care provided.[53]

Nevertheless, without more flexible payment models, some of the current innovations in low-risk prenatal care services, such as the University of Utah's virtual prenatal care program, the Mayo Clinic's OB Nest, and Project Joy at the Beth Israel Deaconess Medical Center, would have been challenging.[56,57] As we develop new models of right-sized prenatal care, we need to work hand-in-hand with payers and policymakers to tailor the payment system to reward for the value of the care that we provide.

CONCLUSION

Women who present for prenatal care have unique needs that can be met efficiently and effectively through right-sized prenatal care. Our theoretical model identifies four key patient phenotypes based on medical and support needs and the corresponding services required to meet them. We have identified several candidate care models for each combination of services; however, future work will be needed to accurately phenotype patients and identify the specific care models that work best for each patient type. Additionally, how to implement these models in diverse medical systems and the resulting influence on maternity care value is yet to be seen.

Tailored care requires mechanisms to best identify patients' needs and match them with appropriate services. Universal social determinants of health screening, along with medical screening, will be crucial for comprehensively identifying patients' needs throughout the pregnancy episode. These screenings must be conducted in the context of safe, supportive health care provider relationships to facilitate patient disclosure. Further work is needed to develop and incorporate tools that identify specific patient preferences, in addition to risk factors, for prenatal care delivery.

Failing to account for different patient needs results in overutilization of some resources and underutilization of others. Reducing unnecessary services for some patients frees resources and improves access for the most complex patients, who are at the highest risk of suffering from maternal morbidity and mortality in pregnancy, delivery, and the postpartum period. Looking to other high-income countries such as the United Kingdom and Australia, or within our borders in organizations such as Kaiser Permanente, may provide new insights on resource allocation.
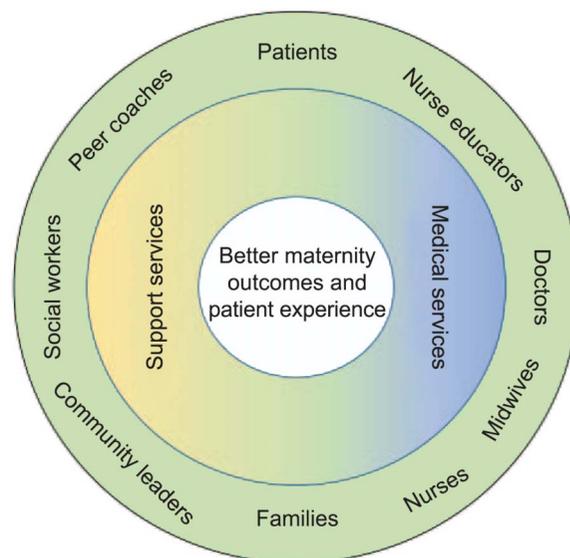

Fig. 3. Integrated model of prenatal care delivery.
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Identifying an appropriate match between needs and services, however, is just the beginning. Better integration of medical and support services across teams will be crucial for developing prenatal care systems that break through silos and provide comprehensive care throughout the pregnancy (Fig. 3). We must ensure new models are inclusive of all patients and address the needs of populations that differ by geography, culture, age, experience, and practice setting. Including the voices of patients, their health care providers, and their communities will ensure prenatal care is designed for the people it is meant to serve.

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