A National Conversation on Maternal Mortality and Pregnancy-related Deaths

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Introduction

Maternal Mortality is a worldwide issue that serves as a visible health indicator of the overall status of a nation’s health care system (Hogan, et al, 2010; King, 2012; Rueda-Clausen, Campbell, & Baker, 2011). Although the United States leads in medical advances, the maternal mortality rate is approximately 12.7 per 100,000 births, which ranks 28th amongst all nations that keep such records, according the World Health Organization (Callaghan, 2011, WHO, 2014). Of these pregnancy-related deaths, it has been estimated that at least half could have been prevented (King, 2012). Even more troubling are the racial disparities within these statistics, with black women experiencing a pregnancy-related death at a 3-4 times higher rate than whites (Creanga, et al., 2014). In 2010, New York State reported a staggering maternal death rate of 58.2 deaths per 100,000 among black women compared to only 15 deaths per 100,000 for white women (Kacica, 2012).

Among the leading causes of death for women of childbearing age are stroke, cancer and heart disease (CDC, 2011, 2013). It is well established that untreated chronic diseases may negatively affect pregnancy and birth outcomes (Creanga, et al., 2014). Chronic conditions that are not addressed during preconception care often result in adverse health outcomes both during and after pregnancy, thus playing a significant role in maternal mortality rates. Women with preexisting, yet undiagnosed conditions are more likely to experience cardiovascular diseases after the pregnancy (CDC, 2011). While screening for gestational diabetes has become nearly universal in the United States, almost 50% of women that are diagnosed will go on to develop type II diabetes after their pregnancy (CDC, 2011). This statistic is likely confounded to a certain degree by preexisting diabetes that had gone undiagnosed. This failure to identify and address such issues prior to pregnancy suggests a need for a paradigm shift in the clinical management of contraception to include preconception health screening and education.
Table 1: Leading causes of maternal mortality (CDC, 2013)

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<tr>
<td>• Cardiovascular diseases, 14.6%</td>
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<tr>
<td>• Infection/sepsis, 14.0%</td>
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<tr>
<td>• Noncardiovascular diseases, (e.g. infectious, respiratory, gastrointestinal, endocrine, hematologic), 11.9%</td>
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<tr>
<td>• Cardiomyopathy, 11.8%</td>
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<td>• Hemorrhage, 11.0%</td>
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<td>• Hypertensive disorders of pregnancy, 9.9%</td>
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<td>• Thrombotic pulmonary embolism, 9.4%</td>
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<td>• Cerebrovascular accidents, 6.1%</td>
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<td>• Amniotic fluid embolism, 5.4%</td>
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<td>• Anesthesia complications, 0.6%</td>
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While there has been limited success in reducing overall maternal mortality rates in the United States (CDC, 2013; Hogan, et al, 2010), there has been an increase in awareness of the complex interplay of individual risk behaviors and detrimental social interactions that may also contribute to maternal mortality (Creanga, et al., 2014). In addition to potential chronic conditions, a woman’s risk of dying from a pregnancy-related event may be affected by certain individual behaviors, perceptions, and level of education in addition to familial, cultural, and community influences. More so, provider and system-level issues have also come to the forefront as potential contributors to maternal mortality.
A woman’s perception of her own health status is critical to her decision-making process, because her personal behaviors can significantly alter her pregnancy-related mortality risk. Personal lifestyle choices, including physical activity, diet, and substance abuse, are modifiable behaviors often rooted in one’s self-perceived state of health. Family and cultural influences also impact maternal mortality and pregnancy-related risks. Intimate Partner Violence (IPV) contributes to maternal deaths and stems from negative stress and lifestyle behaviors that are associated with domestic violence, assault, and substance abuse. Tragically, IPV can result in death during the perinatal period, which complicates the definition of maternal mortality. Environmental stressors, that have physical and psychological impacts on maternal health, often contribute to higher rates of maternal mortality. Low socioeconomic status is also a maternal health indicator that contributes to stress-associated pregnancy complications (Anachebe, 2006).

Given such a complex interaction between multiple levels of influence across time, a life course perspective is an appropriate framework for intervention to reduce maternal mortality. Education and awareness provided to women by their health care professionals should focus on effective strategies to improve preconception care for women of childbearing age. Improvement in early diagnosis and treatment of pre-existing diseases is essential to reducing maternal deaths (Anachebe, 2006). Physicians, nurses, mid-level providers and health professionals must invest in the overall health of their patients by remaining current and applying the appropriate recommendations for care in the preconception, antepartum, intrapartum and postpartum periods. Work is underway to address disparities in care, including interventions that are culturally tailored to address patient education and follow-up care in targeted populations. Health care professionals are key stakeholders in developing cultural competency and applying these strategies to reduce such blatant health disparities.

Maternal mortality review committees monitor the rates and risk factors for maternal deaths in a number of states, providing important recommendations to state agencies and health care providers (Berg, 2011; King, 2012). State Perinatal Quality Collaboratives (PQCs) have been established in many of the states in an effort to improve pregnancy outcomes for women
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and newborns by investigating and addressing causes of perinatal mortality and morbidity (CDC, 2013; King, 2012). PQCṣ often include general pediatricians, neonatologists, obstetricians, perinatologists, midwives, nurses, and representatives from hospital systems and state health departments. Additional leadership is provided through targeted efforts within organizations such as American Congress of Obstetricians and Gynecologists, the Centers for Disease Control and Prevention’s Division of Reproductive Health, and the Association of Maternal and Child Health Programs (Creanga, et al., 2014).

The National Perinatal Association (http://www.nationalperinatal.org) was formed in 1977 to provide a multidisciplinary forum to identify and address issues in perinatal care and their relationship to maternal and infant outcomes. Membership includes neonatologists, nurses, nurse practitioners, midwives, pediatricians, obstetricians, family physicians, social workers, nutritionists, clinical geneticists, genetic counselors, developmental specialists, respiratory therapists, outreach workers, consumers, administrators, educators, legislators, and all others interested in perinatal health. The National Perinatal Association (NPA) promotes the health and well-being of mothers and infants to enrich families, communities and our world. It engages the broadest possible coalition to improve social, cultural and economic environments for the optimal health and well-being of mothers, infants and families. To this end, the Association has worked on a number of collaborative projects addressing a variety of topics including Late Preterm Infant Guidelines, Oxygen Management for Preterm Infants, and Respiratory Syncytial Virus Prevention. NPA has published position papers on a broad scope of topics in perinatal health, such as Palliative Care of Neonates, Substance Abuse in Pregnancy, Choice of Birth Setting, Intimate Partner Violence, and many other topics.

Methods

In 2012, NPA convened a group of experts in perinatal care and research to participate in a national conversation on maternal mortality and pregnancy-related deaths. Forty discussants, including pediatric, obstetric, and family physicians; neonatal, critical care, and family nurses and nurse practitioners; nurse midwives; lactation counselors; educators; lawyers; public
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administrators; public health professionals; and researchers from 15 states joined in a meeting to review the scope of causes for maternal deaths in the perinatal period, and to develop multi-disciplinary strategies to address maternal deaths in the United States.

Following presentations on Maternal Mortality Review (MMR) terminology and methodology, common causes of maternal mortality, and specific state and city investigations, discussants engaged in structured small group discussions with a focus on three areas - chronic disease, racial disparities, and intimate partner violence. The groups explored the impact of these areas on maternal mortality, current practices and opportunities for future interventions, and policy and educational messages to increase awareness and engagement in these issues. Small groups summarized their discussions with the larger group. The summit was audio recorded and six trained note takers captured key points and quotes throughout. The resulting notes were verified with audio recordings and coded within MAXQDA to identify the important considerations discussed in each area and common themes across the areas of Chronic Disease and Preconception, Racial Disparities and Cultural Specific Messaging, and Intimate Partner Violence (IPV).

**Results**

**Chronic Disease and Preconception**

The chronic disease group discussed the implications that chronic diseases have for the health of pregnant women, including the increased incidence of maternal mortality among women with hypertension, deep vein thrombosis, heart disease and diabetes. The group concluded that each client's perceptions about her own health status are critical to her decision-making process. The group further brainstormed about key messages, messengers, and stakeholders for future work with this group. The group also explored the timing and appropriate venues for client education regarding pregnancy risks associated with chronic health conditions.

*Individual Behaviors, Perceptions, and Education*
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The discussants agreed that the paradigm associated with ‘temporary’ disease during a pregnancy needs to be changed, and acknowledged that some women have chronic hypertension that is undiagnosed until pregnancy, when they finally receive medical care. Some discussed that the rates of intended pregnancies among women with chronic diseases is similar to that of the general population—about 50%—indicating that these women desire to follow the social norm to raise families. However, the specific reasons women choose to get pregnant despite significant medical risks to their own health are myriad and the key is to acknowledge and support the women who make this choice. Once a woman is pregnant, the provider's orientation should be to give the patient support rather than focusing on the potentially negative consequences of her underlying chronic disease. The provider can capitalize on opportunities for intervention by recognizing that pregnancy is a highly motivating time for a woman to change health behaviors, as she sees the newly forming life, whose health will be dependent on her health (Anachebe, 2006).

Women who already have diabetes or hypertension may not have clear information about the risks to them and to their baby if they get pregnant; they might act differently if they knew the risks to themselves or the baby, or they might still make the same reproductive choices. The important message to be delivered during preconception care is that any woman who has a chronic disease(s) should be cognizant of the complications during the pregnancy that can impact her health and that of her baby. Health educators can start with key messages for those critical conditions and complications that lead to maternal deaths and move forward with recommendations for interventions that can minimize or prevent related complications.

As a starting point, discussants advocated for a major shift in the clinical management of contraception. The group agreed that contraceptive care should be provided as a standard in primary health care, while stressing its importance in ultimately ensuring optimal maternal and fetal outcomes by allowing successful management of women's chronic health conditions prior to conception. About 62% of women of reproductive age are currently using some form of contraception, suggesting that about 30% of women are not using contraception (Jones, Mosher,
Discussants noted that there is a particular need for effective contraception in women with chronic diseases, with primary care providers and specialists able to play a key role in ensuring adequate contraception in this population of patients (Dunlop, et al., 2008). Despite normative expectations for childbearing, women with chronic diseases need the information to help them understand their specific risks associated with pregnancy. Primary Care Providers should discuss contraceptive options with women as part of comprehensive preventive care. For instance, PCPs may not be willing to prescribe hormonal methods of contraception for women with hypertension, even when they may already be prescribing a known teratogenic agent such as an ACE inhibitor for hypertension among women of reproductive age. Thus, by the time the woman is seen by an Obstetrician (OB) or Maternal Fetal Medicine (MFM) specialist, the period for preconception care and counseling are past, and prenatal care becomes the priority. The promotion of family planning should occur at all times and not just during or after pregnancy. Various states have instituted programs focusing on interconception care, particularly among those with chronic diseases. One challenge has been to include family planning as part of a chronic disease package, as many payers do not consistently and fairly cover contraception or contraceptive counseling. Hopefully this will be addressed by the requirement for free contraception under the Affordable Care Act. One question for debate thus becomes: is it better to target family planning efforts to patients with chronic diseases, or to all women of reproductive age.
A woman's own perception of her health plays an important role in the interaction of pregnancy with chronic disease. Women may not recognize their risk for chronic disease, for instance, that a high BMI is a risk for the occurrence of gestational diabetes in pregnancy. PCPs can play a key role in encouraging women to act upon modifiable risk factors; for example, as soon as a diagnosis of hypertension is made in a woman of reproductive age, a conversation should begin about the increased risk hypertension will play in pregnancy, and this messaging should continue during follow-up care. However, MFMs noted that about half of the women they see in pregnancy with chronic hypertension don't have a PCP or haven't seen a provider for some time before conception. One solution to this could be a patient-centered medical home to provide care to women continually before, during, and after pregnancy. The key is to link women to a provider if she doesn't have one, or to ensure follow-up with the one she already has, as well
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as to reshape both primary care and perinatal visits to better focus on overall maternal health. This suggestion ensures a continuous relationship and care between the women and her provider.

*Family, Community, & Societal Influences*

Another important public health message to disseminate is that although pregnancy may be portrayed as low-risk, the reality is that maternal mortality continues to be a major issue. Several discussants pointed out that our society emphasizes the beauty of pregnancy, but does a poor job discussing the complications of pregnancy in women who have chronic diseases. Health care heroics can make a pregnancy that is considered high-risk among health care providers, such as twins, seem normal to members of the public. As a result, a woman who gives “informed consent” may not really be fully informed; one indication of this is the increase in the number of cesarean deliveries based on maternal demand. As noted by discussants, cesareans have been normalized, to the point they are not even viewed as major abdominal surgery, since “everyone knows someone” who has had a C-section. It is rare for the average person to know anyone that has died in pregnancy. Humans often make decisions and behave based on anecdotal evidence alone. People use the internet, family and friends to find health information, which they may or may not verify with trusted sources such as their health care providers. Patients need to be asked what they think about nurses, doctors and the overall healthcare delivery system, and data must be collected in these areas. A population approach would include offering messages about preconception health and risks that may occur during pregnancy to the general public and to targeted populations through sexual health education in schools, movie theater trailers, and other media outlets. There is a need to move outside of the usual “clinical” channels to get the messaging out into the general population. Interesting intervention venues and approaches exist for public education about other diseases, such as barbershops encouraging prostate cancer screenings, and African-American hairdressers discussing HIV transmission. Multiple approaches are required.

*Health care system issues, providers, and timing.*
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“Pregnancy is a lens through which overall health is displayed,” commented a discussant. Women get pregnant regardless of baseline health information provided about the risks of pregnancy and measures to prevent pregnancy. One example was provided about a population of Hispanic patients at one hospital who have Lupus. These patients often receive inconsistent prenatal care and end up in labor and delivery with previously unrecognized thrombocytopenia. Women with poorly managed pre-existing health conditions often have recurrent, extended hospital stays. Providers may simply recommend that certain women not get pregnant, but becoming a mother is an important component of their cultural identity of these women. Therefore, the message needs to be more nuanced and should include a dialogue with women about pregnancy and child rearing. It is a challenge to recognize that every woman has her own beliefs, values, and experiences that need to be honored, and that these may conflict with the beliefs and values of the health care providers. In spite of the emphasis put on pregnancy for women in today’s society, individual patients need to know that getting pregnant may not be an easy and natural condition for them. Another issue that was highlighted in the discussion was that most women don’t come in for preconception counseling, and high risk OBs don’t get the opportunity to do preconception counseling. Perinatologists care for high-risk patients usually only once they are already pregnant, which eliminates their opportunities for preconception counseling and counseling about the advisability of pregnancy in a particular woman’s case. Once a woman is pregnant and has a high-risk pregnancy, the provider should be hopeful and advocate for the best possible outcome. If providers choose to reinforce the negative aspects of a woman’s situation, many women will stop seeking prenatal care. The goal for a woman with a high risk pregnancy is to keep her healthy and engaged in prenatal care. Perinatologists are more knowledgeable about what may happen to women in pregnancy than any other providers, but women are usually referred to them too late during the course of the pregnancy to optimize their expertise.

“The postpartum period is the most missed opportunity in medicine,” commented another discussant. The postpartum period is a key time to address any chronic diseases that were
identified during or exacerbated by pregnancy. First, there is a need to re-evaluate the timing of the postpartum visit. If a woman has a chronic disease, the postpartum visit is not just the last prenatal visit, but the first visit of the rest of the patient's life. There are a lot of opportunities for postpartum intervention. Patients may say, "My blood pressure is only high when I'm pregnant," but if pregnancy is the only time they see a doctor, to the patient it seems pregnancy-related. The onus is on the provider to ensure continued care through the postpartum period in order to make the diagnosis of the chronic disease in order to counter the myth that says, “it only happens to me in pregnancy.” Specific postpartum screening tools and guidelines would help facilitate this process. Most insurance plans authorize that women can receive care for a number of weeks postpartum, but options for women who were uninsured in pregnancy are more severely limited.

Insurance status also affects where people go for care. Although women should be told to consult with their provider instead of waiting until the problem gets out of control then seeking emergency room care, women still seek care in the emergency room (ER). When women use the ER for primary care issues, pregnancy-related issues are often inadequately addressed and managed because the emergency room staff is not typically focused on obstetric patients. Current efforts to educate ER personnel on pregnancy-related strokes have shown progress. Many women presenting to the ER should be directed to obstetrical triage instead of the ER; the area in which they ultimately receive care is often being based on the individual's complaint.

Hospital size can also affect the care women receive. For example, smaller community hospitals focus on labor and delivery patients in 48 hour timeframes, and may also lack the resources to focus on maternal care or complications. The extent of registered nurse (RN) discharge teaching may not be equivalent across levels of hospital care. The regionalization of perinatal care should incorporate considerations of a hospital’s capabilities to care for complicated maternal health issues, in addition to considering whether or not the hospital has a Neonatal Intensive Care Unit (NICU). The neonatal intensive care unit (NICU) is another postpartum setting to intervene in future high-risk pregnancies. Hospitals may focus resources in
NICU as income generators, but it is important to realize that babies who populate intensive care units come from mothers with more complicated health problems than the average healthy mother who has a normal birth at term. Hospitals may want to provide NICUs for the patients in their catchment area, but may not put an equivalent amount of resources into providing an appropriate level of care to the mothers, potentially jeopardizing the mother’s health. The best maternity hospitals may not have the best NICUs, thus pregnant women and providers may be forced to decide whose care is more important and whose health can be better addressed based on the hospital’s resources.

There are silos between medical professionals, meaning that various groups of professionals may not interact much with each other, and this negatively impacts communication between disciplines. NICU nurses, as well as postpartum nurses can be drivers of appropriate maternal care. Informing all involved health specialists of a woman’s reproductive history is a priority so that both she and her baby can receive individualized care. Another problem is that our current data sources do not provide information on whether or not women are given discharge instructions. Internists and primary care practitioners may take patients off of their medications when they get pregnant, and tell the patients to have their OB providers make further decisions about these medications; this may not get done.

Doctors also train in silos, and many practitioners don’t know what the best practices are in disciplines outside their own. Given that guidelines produced by the American College of Obstetricians and Gynecologists (ACOG) are not prescriptive, how can the provision of adequate care be assured in the face of both clinician and patient autonomy? From the physician's standpoint, medical residents are very receptive to learning, but even they are not always up to date on the latest guidelines and research in a busy practice. Suggestions to approach this issue were to create a formal curriculum for medical residents, and/or to sensitize community based educators to these issues. Development of a formal curriculum for medical residents involved in perinatal care would require the availability of experts that can add to the curriculum and have time to teach the information. Perinatal and antepartum protocols to reduce mortality can be
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generated. Protocols are challenging to develop because it is hard to show that addressing one care issue impacts a complex problem, and because there are difficulties in calculating risks for individual patients. Protocols can be included as part of quality improvement programs wherein compliance and outcomes are both monitored.

*Model programs, opportunities and stakeholders*

A number of stakeholders were identified that could help convey health messages regarding the impact of chronic disease on maternal health to women across the lifespan. One obvious partner is Text4baby; it was suggested that the group explore their preconception messaging and provide recommendations. Text4health has a pilot project in Cincinnati. Other venues for health education include faith communities and parish nurses, businesses (barbers/hair stylists, public restrooms, liquor stores, grocery) and traditional and social media. Important policy level stakeholders are legislators, advocacy groups (e.g. Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), March of Dimes), Department of Education (high schools, school nurses, school clinics), and insurance companies.

Additionally, all medical providers, including physicians (ER, family practice, internal medicine, obstetric, pediatric, fertility specialists), pharmacists, dentists, home health nurses, and behavioral/mental health providers are clearly stakeholders. Birth-related professionals (obstetricians, certified birth educators, doulas, lactation counselors, midwives, NICU and postpartum nurses) can develop and implement improved protocols for counseling and educating women of childbearing ages about their individual health risks. Finally, programs providing interconception care services such as WIC, Planned Parenthood, family planning clinics, and Healthy Start can provide integration and education across the silos of care. Pediatricians' offices are a natural place to reach mothers in the postpartum period and beyond. Mothers are comfortable with pediatricians because they care for the health of the whole family. Some pediatric practices are continuing to care for patients up to age 25, making pediatricians natural candidates for provision of preconception care. Another suggestion is to put Healthy Start nurses in pediatric offices. There are 18 states with state perinatal quality collaboratives, and more
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states are developing them. These can be expected to improve health messaging to women as well. Some examples of city and state programs are described in Table 3.

**Racial Disparities and Cultural Specific Messaging**

This group came together to discuss issues contributing to glaring racial disparities in maternal mortality (Callaghan, 2011; Kacica, 2012). The issues that arose ranged from policy, organizational, community, and to individual levels of influence. The facilitator began by asking the group provocative questions about the nature and causes of racial disparities in maternal mortality. One discussant explained that “morbidity rates are similar, mortality is different.” Others agreed that “Inequality of care is quite obvious and sometimes cannot be helped; there is a clear difference to how providers care for their patients based on their prejudices and/or assumptions.” There is also an issue of poorer overall health in minority groups, echoing the other conversation related to chronic disease. Minorities frequently experience poor nutrition due to presence of food deserts and fast food restaurants targeting poor neighborhoods. Others noted that, “Disparities exist on many more levels than just those between racial and ethnic groups.” Social support for perpetuation of conditions leading to racial disparities in health outcomes, and institutionalization of practices leading to disparities are significant issues that need to be addressed.

Furthermore, the group discussed how cultural messaging could contribute to maternal deaths. For example, the definition of maternal health is different cross-culturally and medically (e.g. some cultures deem women unclean until 42 days postpartum). The definitions of maternal health pre- and post- pregnancy are not based on medical facts. Tribal communities do not regularly report maternal mortality; some states are working with these communities. More effort needs to be directed to changing and improving health messaging surrounding pregnant women and mothers, and messaging needs to be delivered in such a way as to garner the attention and interest of both the consumer and her community. Discussants noted that communities don’t understand what the problems are, at least from the perspective of health care providers. Key information should be reiterated, and every opportunity should be taken to help
women identify and discuss their personal health risks. Specifically in reference to body size, health care providers have a hard time accepting that community norms are very accepting of big women; providers automatically identify these women as obese based on medical criteria. As participants pointed out, ‘big women don't automatically see themselves as sick or unhealthy,” and because the prevalence of hypertension and diabetes is so much higher in communities of color, living with chronic disease is the community norm. Informal leaders of varying communities need to be better educated, knowing that it takes at least three visits or efforts until one gains the community's/patient's trust. The message from community leaders should be that they are supporting women, not disparaging them or “shaking our fingers at them.” People within a community without medical backgrounds, but who look like the target population, can be trained to bring messages to the community serving as ambassadors that work with the community on a grassroots level. Training personnel to be a support system for mothers while seeking treatment will be difficult and expensive, but it could make an impact. Additionally, the mother’s immediate community needs to be included during care; if other family members are included, women will be less likely to encounter barriers to making positive health changes in their lives. Messages need to be tailored to various populations and involve everyone in a woman’s family, including male partners, parents, cousins, etc., so that a woman's entire support system is poised to support her health behaviors on every level, including breastfeeding. Therefore interventions need to include something to attract women’s partners as well; having that buy-in helps the empowerment process and support for parents.

*Medical care, coverage and timing*

One recommendation is to change the whole approach to healthcare to improve communication. For example, parents can be given the information they would normally get postpartum before delivery of their child, and then have follow up visit sooner than the usual 6 weeks postpartum. It's equally important to teach medical residents about ethics and the health of their patients. Provider/patient satisfaction may increase awareness and break down negative self-efficacy walls. Some providers may become numb to the issues after seeing the same
problems over and over with specific populations, adopting the attitude that 'I can't do it anymore, they're all the same.' Health care providers need to remember that all women are not the same. Local providers can be trained on how to hone in on issues affecting people in their communities, and scale their care according to people's individual needs. The more satisfied and happy the provider is in their role, the better the care they provide. How do physicians gain confidence to communicate effectively with a diverse community, especially if they are not from that community? One answer is to improve cultural diversity training. Another strategy is to share what works well (as well as what doesn't work well) including data, tool kits, messaging.

Documentation that aligns with the care that is provided and is tailored to specific fields within the electronic medical record (EMR) and other medical records, protocols that are beneficial and specific to the patient's needs, and tools to improve communication are all needed. A simple tool could be employed prenatally, follow the patient into labor, and continue to be utilized through the postpartum period to ensure health problems don’t fall through the cracks; it could dictate the type of care a patient would receive. Such protocols exist, but it is uncertain whether providers follow them. Additionally, some type of continuum record, such as perinatal risk assessment and intervention (PRAISE), can change how discharges are conducted, starting from the beginning of a patient's journey and following them home after birth. Many forms utilized for documentation are based on needs for billing patients and other administrative tasks, not to deliver optimal healthcare. An improved template for charting could be designed to meet both administrative needs and patients' needs; it must be created with the thought that completing forms should not take providers' away from their time with the patient.

Racism continues to be an issue in the provision of healthcare, and different groups may receive differing levels of care based on their skin color or the language they speak. Providers need to be aware of the risk of treating patients differently based on skin color, and make conscious efforts to overcome those biases.

Medicaid is also an issue affecting the type of care women receive, because many low-income patients are not covered before or after their pregnancy, limiting their access to

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comprehensive care. Women are not receiving healthcare coverage before pregnancy because they cannot afford it. It is difficult to find a specialist willing to care for women 42 days postpartum. It is also important for patients to become comfortable with their providers. How can patients' confidence in their providers be increased? Providers may become discouraged because pregnant patients may understand the information they provide, but have other priorities and different cultural beliefs that interfere with their follow-through. Talking to patients about health issues is not easy; some accept the information and some do not. People from diverse backgrounds may respond to messaging that is directed uniquely toward them. A variety of different tactics need to be utilized in reaching women, because different women respond to different messages (their children, spouses, community, future, etc.). Solo physicians may become particularly frustrated when they are unable to communicate with patients effectively, or don't have sufficient resources to address multi-faceted needs of patients.

Stakeholders and model programs

This group recommended multilevel interventions targeting societal inequities, broad cultural messages, community-specific issues, family and social networks, health care systems, and individual health care providers’ internal processes and biases impacting relationship dynamics with their clients. Social marketing approaches can also reach a broad population. The "Live It – Change It" campaign (Arizona Department of Health Services, 2012) is promoted in hair salons, churches, and other venues that desire to participate; the grassroots approach makes the messaging personal and leads to more accountability within the community and its members. Michelle Obama's campaign “to get kids moving” is a great example of endorsing a new social norm. Messages do not have to be delivered in school-based educational formats, but must generate basic levels of awareness in order to create new norms. Subliminal marketing messages to improve health behaviors, similar to tactics such as using floor markers in grocery stores, providing food signs next to stairs/elevators, and encouraging people to take stairs can be employed.
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Adopting the Centering Model of providing healthcare can get both providers and patients working towards common goals and simultaneously involve the community. Centering teams could become specific disease champions or specialists and focus on that message as they rotate to different mothers as needed. In this model, the case worker gives the main message; this is followed by individualized assessment and treatment for each woman. Additionally, one-stop shops can incorporate support systems to build mothers’ capacity and knowledge against negative factors as well as to build protective factors.

Finally, the workgroup suggested creating a working task force to collect information, toolkits, and clinical, prevention, and life course data to disseminate to other professionals. “PRAISE” (a surveillance tool for chronic conditions) has been successful in improving communication and treatment between providers and mothers (Hawaii: http://innovation.cms.gov/initiatives/MIPCD/MIPCD-The-States-Awarded.html). Additionally, the NPA publication “Transcultural Aspects of Perinatal Care” is a great resource in this area.

Much can be learned from patients who were ‘near misses’, especially through identifying what factors led to their survival. "Part of the communication problem is just listening, very simply," stated a discussant. Qualitative data can be a starting point in analyzing reasons for maternal deaths, but listening to information presented that comes straight from the population being served can also be useful. Table 3 includes some examples within specific states and cities addressing racial disparities in maternal mortality.

Other partners in the struggle to reduce racial disparities among women of childbearing age include legislators who can advocate for better policies; businesses, such as grocery stores that can be encouraged to open stores in urban food deserts; and fast food restaurants that can be encouraged to provide healthier options for customers. All of these measures can lead to improvements in the general health of populations at risk. It is important to have the monetary funding to influence change as well as large organizational champions and stakeholders with deep pockets.

**Intimate Partner Violence (IPV)**
The group examining the role of intimate partner violence in maternal mortality began by discussing general issues around the context of the woman’s life (power issues, lifestyle, social and health issues, family planning), and comorbidities (substance abuse). Next the group identified opportunities for screening and referral to services including wellness care in addition to prenatal care. Finally, additional stakeholders and partners were identified.

**Individual Behaviors, Perceptions, and Education**

Intimate partner violence (IPV) contributes to maternal death in a number of ways. It is critical to remember that the violence imposed on a pregnant woman by a partner, including death, is more prevalent than physiological risks of pregnancy (Chang, et al, 2005). Therefore, it is imperative that every provider of care in the perinatal period continually assess for IPV.

If a woman is being abused, she may not have a support system to help her through her pregnancy which could result in a noncommittal, prenatal routine and an improper diet (Velez, Montoyo, Jansson, Walters, Svikis, Jones, Chilcoat, & Campbell, 2006). The woman may live in a threatening environment and may have other survival, safety or family needs that take precedence over her prenatal care. Women being abused by their partners are at risk for other co-morbidities, such as substance abuse by the woman or her partner (Creanga, et al., 2014). Group members discussed the potential dangers that could occur if a woman’s partner is involved in drug use or a street lifestyle including woman’s death due to the woman’s or her partner’s use of drugs or alcohol.

There are many psychological factors that influence health before and during pregnancy, including isolation and economic dependency. All of these factors lead to poor health overall. A PRAMS (Prenatal Risk Assessment Measurement System) study on intimate partner violence (IPV) found many adverse health reactions to IPV, including high blood pressure, vaginal bleeding, and urinary tract infections (Silverman, Decker, Reed, & Raj, 2005).

**Family, Community, & Societal Influences**
Unintended pregnancy is another important consideration for women experiencing intimate partner violence. Some have observed an increase in IPV after a pregnancy is confirmed due to changes in the mother’s physical appearance, or a jealous partner after the baby is born (i.e., if the partner does not approve of breastfeeding). Reproductive coercion is common in IPV situations, including lack of access to contraceptives, refusal to allow use of birth control, and partner disapproval of an abortion. Thus, women impacted by IPV are at higher risk for poor neonatal outcomes, in addition to maternal death. There are also issues surrounding cultural awareness and differences among ethnic and racial groups in perception of intimate partner violence. One discussant commented that some providers and programs perceive the issue of IPV as primarily affecting Hispanics and African Americans and forget to address the white non-Hispanic population. Additionally, violence in affluent areas, served by private practices, can be under-reported.

Health care system issues, providers, and timing

A number of suggestions were put forth in this area, including mandated prenatal screening for IPV, and continual screening during critical points in a pregnancy, combined with case management, risk assessment, and referral. Screening should include looking for signs of IPV and also substance abuse. A discussant commented that physicians are often uncomfortable in this area because they lack training in skills to obtain a psychosocial history and also lack education about trauma experienced by abused woman. This highlights the importance for healthcare providers to understand the psychological as well as physical changes that women experiencing IPV suffer from. For example, many victims stay with the perpetrator because they may not have any other options. Providers should not judge a patient's choice, but rather provide tools, skilled assessments, and local or national hotline referrals with continual loopbacks to see if the referrals are working. Additionally there is a need for comprehensive women's preventive services within the constraints that are often present in IPV situations. These services include behavioral and social risk assessment as well as identifying prescription drug abuse through signs such as replacing lost drugs frequently and accidental overdose.
Prenatal visits should provide protected opportunities for information sharing, disclosure, and follow up for concerns. The challenge is that the woman may fear answering questions about paternity or past pregnancy if her partner is present, or if there is a lack of confidentiality during her visit. Providers must make it a systematic routine to ask IPV-related questions and overcome reluctance to discuss and treat such topics. Providers can modify appointment scheduling with the addition of co-visits with behavioral health specialists (e.g., every Tuesday see the identified IPV patients in their practice) so that there are others in the office with expertise. Additionally, in regards to Emergency Room care, it is important to have advocates in the ER with experience in domestic violence cases who are able to dissect the situation and determine safety planning for the affected woman. Although location and privacy can be challenging in this type of setting, these are opportunities that need to be utilized for intervention.

Medical records review and electronic charting can help with universal screening. Part of the challenge is confidentiality: records are sealed/de-identified, and perpetrators cannot be identified. Another challenge in records is related to insurance companies. Coding is an issue; services needed by a woman affected by IPV may not be payable, and sexual abuse is not reported. If insurance companies were willing to reimburse for IPV injury treatment and other services, reporting would increase.

Promising Practices and Partners

There are limited resources (tailored programs and care coordination), particularly in big versus small counties, to adequately address IPV across the lifespan, in relation to perinatal health. One suggestion is to combine individual and community involvement by engaging additional stakeholders, including policymakers, providers, community organizations and agencies. At the provider level, professional organizations such as ACOG can garner greater involvement and provide guidance. During prenatal and postpartum visits, providers can talk to patients about the risk factors of IPV, possible referrals for services, and discuss a reproductive life plan. The 6-week postpartum checkup may be the key visit to reinforce changes that may be
difficult to manage postpartum, as well as to provide screening for depression. Information about IPV screening, referral, and risks can be folded into education programs including shaken baby awareness campaigns, healthy baby classes, family empowerment, behavioral health, safe sleep campaigns, and safe caregiver education programs (Table 3).

**Summary**

Concurrent themes emerged from this workgroup that addressed personal, societal and systems issues, including: 1) a woman’s own beliefs about childbearing and those of the significant others in her life; 2) societal and cultural beliefs and perceptions; 3) health disparities; 4) the role of health care providers; and 5) medical systems challenges. The latter includes insurance and billing driving provider documentation and data collection; disciplinary silos among health care professionals: primary care, obstetrics, labor/delivery, postpartum care, emergency room doctors, nurses, community health workers, and home visitors. The group concluded that women need ongoing, culturally sensitive messaging and education related to risks and interventions. A life course perspective is needed to identify the causes of maternal death and points for intervention including family planning; preconception, interconception, perinatal, and postpartum care; and long-term health planning. Several programs were highlighted that use innovative ways to reach out to patients and providers. Additionally, recommendations were given for tracking and using data. This paper includes a summary of each group discussion followed by overall recommendations and next steps.

**Stakeholders**

A first start is raising the awareness among policymakers and actively participating in the policy process, including health care policy. Secondly, much can be done to reduce maternal mortality by improving systems and practices among health care, behavioral health, and other service providers. Community agencies and businesses, schools, and the media can also provide important health education and access to services through information and referrals.

A life course perspective is critical in addressing all three of these areas impacting maternal morbidity. Influences at all socio-ecological levels impact the health of mothers and
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their babies, and interventions - including effective contraception and other women's health services- should be available and appropriately recommended across the lifespan.

Health care systems and providers

Training and communication between PCPs and reproductive and specialty health providers must improve. The impact of care provision in silos can be minimized by improving health records and communication protocols, arranging innovative care delivery models (regionalization, and co-location of services), and disseminating best practices and standards through provider organizations and networks.

National Perinatal Association and Pregnancy-Associated Mortality Review (PAMR) Committees

The main issue in maternal mortality, was succinctly stated; discussants lamented that the “same women are dying over and over…didn’t we already review this case?” Because the problem so distinctly apparent, interventions are called for. Some suggested that PAMR reviews be moved into the implementation phase of the mortality review cycle. Others noted that PAMR committees are not adequately designed and funded for effectively implementing change.

Secondly, there are difficulties in calculating risks, because of the way data is collected. How do we identify new risk factors, and educate new doctors in risk reduction techniques? Individual cases of maternal mortality are easily identifiable, but there needs to be improved understanding of the context of how many mothers are at risk. Some form of specific postpartum screening tool should be developed so that future health risks can be identified. One suggestion is to get an emergency room (ER) doctor on the PAMR committee - and work with them and their peers. It is crucial to ensure the ER doctors have an obstetrician (OB) they can consult with, because patients go back to the ER (for example, with deep vein thrombosis), but don’t get the proper follow-up care. The labor and delivery area of a hospital may never be notified that a former obstetrical patient was in the ER – until she comes back dead. Finally, how can patient perceptions be captured and addressed? There is little training or empowerment for women or providers.
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The NPA agrees that there should be a working task force that reads the literature and identifies programs with promising results nationwide, collects information and improves tools to disseminate to other professionals, and contributes to social marketing campaigns through various dissemination strategies.

Although maternal mortality continues to be a significant health problem in the U.S., if all stakeholders were to work in an interdisciplinary fashion to develop appropriate political and medical policies and guidelines, as well as to emphasize the need for improved education of both women desiring to get pregnant and the community at large, maternal death rates could be lowered.

Table 3: Promising practices and programs described by participants

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<th>Promising Practices and Programs</th>
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<td>Chronic Disease and Preconception Health</td>
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- New York State has a strong model for regionalization for high-risk mothers (from a regulatory perspective); other states do not seem to have the political will to try these regulatory regionalization attempts. In New York, attempts at perinatal quality improvement have been monitored with protocols in place and compliance and outcome data collected. (http://www.health.ny.gov/community/pregnancy/health_care/prenatal/). Additionally, New York City has a nurse-family partnership and this model is being piloted elsewhere in the state (http://www.nursefamilypartnership.org(locations/New-York).

- In Minnesota, the Abbott network of 15 hospitals has initiated a risk identification tool and provides targeted OBGYN interventions and resources for women at risk for cardiovascular disease. So far 3,000 women are enrolled with promising early results (http://www.allinahealth.org/ahs/medicalservices.nsf/page/MN_Perinatal_Physicians#services).

- In Ohio, primary care doctors and case coordinators are on-site and coordinate referrals in a one-stop shop setting that is being piloted in four projects across the state. They have yet to include OB providers in these medical homes.

- North Carolina also established a medical home OB component through Medicaid and the Medicaid Family Planning Waiver. In the South, discussion about family planning can be culturally taboo. This is a progressive Southern state that is willing to implement provisions of Medicaid differently to be able to discuss family planning.

- One way to engage providers that Blue Cross/Blue Shield has tried in Tennessee is to follow quality indicators for maternal fetal medicine; by providing pay for performance, they are more able to ensure that women diagnosed with gestational diabetes get a two-hour glucose
tolerance test at their 6 week follow up appointment. Programs have also worked with patients during the postpartum period on weight loss management. Tennessee has a “Nurses for Newborns” program that sends nurses into families’ homes after birth, but program nurses currently focuses only on the babies.

- In Georgia, mothers of preterm infants receive some interconception care after pregnancy and are encouraged not to immediately get pregnant again. Women are given education to prevent future high risk pregnancies. In general, primary care providers don't give preconception care much thought and little attention is paid to putting patients on effective contraception. There is a state-funded program in Georgia to provide interconception care for mothers with a preterm birth (particularly for those with a chronic medical condition). However, referral from the OB providers into this program has been low, and women often do get pregnant again. The need is to educate and give an option to women to not get pregnant in the future. Although Medicaid could encourage participation in a family planning case management program, under current guidelines women would not receive coverage long enough to receive full benefit.

- Florida as a state is locked into managed care for Medicaid, limiting entitlement. Women with chronic illnesses have died during pregnancy; some women, whose chronic illnesses render them quite ill, have been told not to get pregnant. From a regulatory perspective, Florida is a de–regionalized system and there is little political will to change the system. The state-funded Florida Healthy Start program provides interconception care to address chronic diseases; a family planning nurse goes to participants’ homes and administers contraception. Compliance is good in part because women can stay in the program for two years; however,
there is low participant buy-in because many women are reluctant to accept chronic disease status.

**Intimate Partner Violence**

- Some states have laws requiring providers to show a DVD to parents on Shaken Baby Syndrome, and what can be done to prevent it.
- In Wisconsin emergency rooms, every pregnant woman gets seen by an obstetrician, resulting in improvements in cost effectiveness and care.
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