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Improving Pregnancy Outcomes through Maternity Care Coordination: A Systematic Review

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A B S T R A C T

Background: Care during pregnancy is multifaceted and often goes beyond traditional prenatal care from an obstetrical care provider. Coordinating care between multiple providers can be challenging, but is beneficial for providers and patients. Care coordination is associated with decreased costs, greater patient satisfaction, and a reduction in medical errors. To our knowledge, no previous review has examined maternity care coordination (MCC) programs and their association with pregnancy outcomes.
Methods: Using a search algorithm comprised of relevant MCC terminology, studies were identified through a systematic search of PubMed, Scopus, ClinicalTrials.gov, and Google Scholar. Studies meeting eligibility criteria (e.g., defining the care coordination components and examining at least one quantitative outcome) were fully abstracted and quality rated using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.
Main Findings: Thirty-three observational studies of MCC were included in this review. Quality scores ranged from 27% to 100%. Most studies included strategies with a team approach to decision making and/or individual case management. Social service referrals to outside organizations were also common. Twenty-seven studies reported infant birth weight as a main outcome; 12 found a significant improvement in birth weights among care coordination participants.
Conclusions: Roughly one-third of the included studies reported improved birth weights among care coordination participants. However, it remains unknown what effect care coordination strategies have on patient and provider satisfaction in the prenatal care setting, two aspects of maternity care that may advance the quality and utilization of prenatal health services.

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In 2012, there were more than 3.9 million births in the United States, 98.6% of which took place in a hospital (Martin, Hamilton, Osterman, Curtin, & Mathews, 2013). Care during pregnancy is multifaceted and often goes beyond traditional prenatal care from an obstetrical care provider. Because pregnancy is associated with numerous physical and psychological conditions, and because the incidence of advanced maternal age increases and pregnancies are complicated by chronic conditions such as obesity, pregnant women often require care from specialists and other nonobstetric providers (Centers for Disease Control and Prevention, 2014). Considering that 6% of women in the United States do not receive prenatal care until their third trimester, other services during pregnancy, including maternal education and counseling on healthy behaviors, represent untapped opportunities to increase health outcomes through a variety of interventions (U.S.

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Department of Health and Human Services & Health Resources and Services Administration Maternal and Child Health Bureau, 2013). Pregnant women may also elect additional care from providers such as midwives or doulas; nearly 10% of women elected to have a certified nurse-midwife attending their birth in 2009 (Declercq, 2012). Coordinating care between these multiple providers can be challenging owing to differences in geographical locations, informational technology systems, and organizational structures (McDonald et al., 2007).

Care coordination is defined as "the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services" (McDonald et al., 2007) to "achieve safer and more effective care" (Agency for Healthcare Research and Quality [AHRQ], 2014). Established care coordination strategies are associated with decreased health care costs, greater patient satisfaction with health care, and a reduction in medical errors (Centers for Medicare & Medicaid Services, 2014; Craig, Eby, & Whittington, 2011). There has been a recent surge in attempts to understand the methods and organizational factors that enable and sustain coordination strategies through program development and funding initiatives within health care systems (Craig et al., 2011; McDonald et al., 2007). Care coordination successes vary based on patient populations and their needs, but they often report changes in health outcomes. Previous evaluations of care coordination have included changes in patient self-care, rates of prescription compliance, and cost of health care spending (Thomas, 2012).

Care coordination can occur in many different settings; clinical care coordination within ambulatory care practices refers to the bridging of care transitions across settings, within provider teams, and among care participants (McDonald et al., 2014). The Centers for Medicare & Medicaid Services, the Department of Veterans Affairs, and many large health insurance companies have implemented different facets of care coordination (McDonald et al., 2007). In particular, the Affordable Care Act includes provisions for implementing care coordination to improve health and promote cooperation between providers (House Office of the Legislative Counsel & US House of Representatives, 2010).

Care coordination has demonstrated benefits in diverse clinical settings, such as mental health services, in patients with heart failure and diabetes, and in elderly and homeless populations (McDonald et al., 2007). Through the lens of Donabedian's Quality Framework (Donabedian, 2005), maternity care coordination (MCC) can positively affect health outcomes through established structures of care, such as clinics and birthing centers. Coordination strategies are then put into effect through processes of care, where care delivery and coordination through various components, such as team decision making and case management, are implemented to influence and improve the medical care provided to the patient and the costs associated with that care (Donabedian, 2005). To our knowledge, no previous study has reviewed MCC strategies.

The objective of this paper is to understand whether MCC programs are associated with measureable improvements in pregnancy outcomes and to describe the specific components of MCC programs most frequently used. We used an adapted version of the AHRQ definition of care coordination to identify MCC strategies. We synthesize studies reporting on MCC in clinical settings and examine the various MCC strategies used within ambulatory practice settings and among clinical participants.

Materials and Methods

Search Strategy: Literature Search and Article Identification

Studies were identified through searches of PubMed, Scopus, ClinicalTrials.gov, and Google Scholar in consultation with a research librarian using search terms related to pregnancy (prenatal, maternity, pregnancy) and care coordination (including care coordination, care integration, cooperative behavior, care collaboration, care management, care navigator). This search incorporated key terms related to care coordination as identified by AHRQ (McDonald et al., 2007).

This initial search identified articles published from April 1950 through January 2015. Additionally, reference lists from the articles identified for inclusion in the systematic review were assessed to determine if any other articles not recognized in the initial database searches met inclusion criteria.

Study Selection: Inclusion and Exclusion Criteria

Because care coordination definitions vary between disciplines, we used an adapted version of the AHRQ interpretation. The AHRQ definition is purposively broad to encompass components used in many coordination strategies, with components ranging from care tasks (e.g., defining clinical teams of providers), to coordination activities (e.g., providing individual case management) and support of those coordination activities (e.g., providing access to social services; McDonald et al., 2014). Here, we were most concerned with examining organization and collaboration between providers caring for one pregnant woman, given the likelihood of concurrent care during pregnancy. Thus, studies were included if they clearly described clinical care coordination strategies that incorporated decision making, communication, referrals to other sources of care, or collaboration on care management decisions regarding patient care between multiple providers or the provider and patient (AHRQ, 2014); were published in English and were conducted in the United States; the study population was composed of pregnant women; and the results included at least one quantitative pregnancy outcome measure such as infant birth weight, gestational age at delivery, maternal outcomes, or costs associated with maternity care. Nonempirical studies, such as case reports, letters to the editor, editorials, and reviews, as well as studies that focused only on home visitation care were excluded. Because our goal was to examine measureable results, we excluded qualitative studies. For studies that evaluated the same coordination program, the most recently published study was selected for inclusion.

Data Abstraction

Data were abstracted by one reviewer (A.R.K.D.). Initially, studies were evaluated for inclusion and exclusion criteria. Studies that met all eligibility criteria were further abstracted and assessed for study quality and key data elements using a standardized form. Abstracted data included characteristics of 1) the population sampled, such as stage of pregnancy at enrollment and subject demographics, 2) the providers involved in the care coordination program (e.g., obstetricians and certified nurse-midwives), 3) the care coordination components used, and 4) major outcomes, as described.