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## How to Build a Better Health Care System for Women and Neonates? Integrate Midwives

The American College of Nurse-Midwives (ACNM) and the American College of Obstetricians and Gynecologists (ACOG) issued a joint statement in 2011 expressing the shared opinion that optimal women's health care in the United States involves collaboration among licensed, independent providers (ACNM & ACOG, 2011). However, regulations in 27 states restrict the practice of midwives, which limits access to midwifery care (American Association of Nurse Practitioners, 2018). Recently, an innovative study was published in which health outcomes for women living in each state were compared to the degree to which midwives were integrated into the health care systems of that state (Vedam et al., 2018). Vedam et al. defined an integrated maternity care system as one that "facilitates the full exercise of scope of practice, autonomy, self-regulation, and collaboration across disciplines" (2018, p. 3) and used the Midwifery Integration Scoring System (MISS) to rate midwifery independence and collaboration with physicians across various domains in different care systems.

To develop the MISS, a team of researchers from a variety of disciplines and nations began by identifying 110 laws within seven domains that affect practice environments for midwives (Vedam et al., 2018). Domains included scope of practice, provider autonomy, governance, access to referral and medications, patient safety, quality, and access to maternity care providers across birth setting. After consulting with 92 state regulatory experts to verify that the practical implementation of state laws matched their coding of the data, the researchers developed scoring rubrics for each law to reflect the range of

possible practices in each state and the District of Columbia. Examples of these laws included whether the state licenses certified nurse-midwives (CNMs), certified midwives (CMs), and certified professional midwives (CPMs) versus only one or two of those; availability of Medicaid reimbursement for each type of midwife and for births occurring in and out of hospital; whether there are challenges with reimbursement at any given site; and prescriptive authority for a comprehensive versus limited list of medications. Next, they narrowed the list from 110 to the 50 most relevant laws then assigned scores to each measure so that the highest possible overall score, which reflected the greatest possible integration of midwives within the state health system, equaled 100. The MISS scores for all states ranged from 17/100 (North Carolina) to 60/100 (Washington).

Each state's MISS score was then used to examine the relationships between midwifery integration and a variety of other variables using publicly available federal data (Vedam et al., 2018). Midwife integration variables included midwife density (per 1,000 state births); proportion of births across settings (hospital, birth center, home birth) for different types of midwives (CNM/CM or CPM/direct entry midwives); and the degree to which that state had an increase in out-of-hospital births from 2004–2014. Finally, MISS scores were compared with a variety of perinatal outcomes, including rates of spontaneous vaginal birth, cesarean, vaginal birth after cesarean, induction of labor, preterm birth, LBW neonates, neonatal mortality, and breastfeeding at birth and 6 months. After calculating correlations, racial and ethnic disparities were taken into account by controlling for the proportion of births to non-Hispanic Black women in each state.

The authors found several important relationships among midwifery integration, access to care, and patient outcomes. With respect to access, there were moderate to large positive correlations

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between MISS scores and density of CNMs/CMs ( $r_s = 0.495$ ,  $p = .001$ ), density of CPMs ( $r_s = 0.459$ ,  $p = .001$ ), proportion of midwife-attended births in all locations ( $r_s = 0.431$ ,  $p = .001$ ), proportion of midwife-led births in community (birth center or home) settings ( $r_s = 0.509$ ,  $p = .001$ ), and higher recent increases in rates of community births ( $r_s = 0.328$ ,  $p = .02$ ). These findings indicate that higher midwifery integration is associated with greater availability of caregivers and birth options and that midwives are more likely to practice in states that facilitate integration of midwives into the health care system.

Higher midwifery integration scores also correlated with better perinatal outcomes in hospitals and community birth settings. In hospital settings, the researchers found moderate to strong positive correlations between MISS scores and rates of spontaneous vaginal birth ( $r_s = 0.556$ ,  $p = .01$ ), vaginal birth after cesarean ( $r_s = 0.483$ ,  $p = .01$ ), breastfeeding at birth ( $r_s = 0.474$ ,  $p = .01$ ), and breastfeeding at 6 months ( $r_s = 0.524$ ,  $p = .01$ ). By contrast, they found negative correlations between MISS scores and rates of cesarean ( $r_s = -0.375$ ,  $p = .01$ ), labor induction ( $r_s = -0.350$ ,  $p = .05$ ), preterm birth ( $r_s = -0.556$ ,  $p = .01$ ), and neonates born with low birth weight ( $r_s = -0.299$ ,  $p = .05$ ).

In community birth settings, MISS scores were positively correlated with spontaneous vaginal birth ( $r_s = 0.435$ ,  $p = .01$ ), vaginal birth after cesarean ( $r_s = 0.528$ ,  $p = .01$ ), breastfeeding at birth ( $r_s = 0.593$ ,  $p = .01$ ), and breastfeeding at 6 months ( $r_s = 0.533$ ,  $p = .01$ ). By contrast, MISS scores were negatively correlated with rates of cesarean ( $r_s = -0.627$ ,  $p = .01$ ), preterm birth ( $r_s = -0.455$ ,  $p = .01$ ), low birth weight ( $r_s = -0.388$ ,  $p = .01$ ), and neonatal mortality ( $r_s = -0.364$ ,  $p = .01$ ).

After controlling for the proportion of births in each state by non-Hispanic Black women, [Vedam et al. \(2018\)](#) found that the degree of midwife integration into the health care systems of different states significantly predicted 11.6% of neonatal mortality, 8.1% of preterm birth, and 10.7% of breastfeeding at birth ( $p < .05$ ). Relationships between midwife integration and cesarean birth and low-birth-weight neonates were not significant when researchers considered race and ethnicity in their models. Interestingly, MISS scores were negatively correlated with the state proportion of births to non-Hispanic Black women ( $r_s = -0.370$ ;  $p = .007$ ), which indicated

that midwifery integration was significantly better in states with fewer births to Black women.

This study is unique because the use of the MISS score allowed consideration of the combined effects of interacting systems factors across multiple domains that affect access to care and perinatal outcomes within individual states. Results of several prior studies support this study's findings. For example, [Yang, Attanasio, and Kozhimannil \(2016\)](#) found that compared with women in states without full practice authority for CNMs, women in states with full CNM practice authority had lower odds of cesarean birth (adjusted odds ratio [aOR] 0.87;  $p = .016$ ), preterm birth (aOR 0.87;  $p < .001$ ), and low birth weight (aOR 0.89;  $p = .001$ ). Using publicly available data from New York State hospitals, [Attanasio and Kozhimannil \(2018\)](#) found that hospitals with midwives had lower rates of some procedures (e.g., cesarean and episiotomy) and suggested that the presence of midwives may influence the culture of the organization towards lower utilization of resources. In a qualitative study, [Phillippi, Myers, and Schorn \(2014\)](#) found that while insurance coverage was the most important driver of access to care, women in Appalachia overcame access barriers if care was compassionate, unrushed, and generally woman-centered. [Shaw et al. \(2016\)](#) characterized the United States and other national maternity care systems, detailed a comprehensive list of drivers of woman-centered care, and associated superior outcomes and greater efficiency with more integrated care for women who are low risk and living in rural areas.

Using a systems-oriented approach, the [Vedam et al. \(2018\)](#), [Yang et al. \(2016\)](#), and [Phillippi et al. \(2014\)](#) study findings provide support for an integrated system that is strategically designed to allow for woman-centered care and inclusive of licensed, regulated caregivers and settings designed for women who are low risk. Perhaps the most exciting part of this innovative study is the interactive, state-by-state, online resource, Birth Place Lab, which can be used to help communicate this vision of integrated midwifery care to colleagues, consumers, and policy makers ([Division of Midwifery, University of British Columbia, 2018](#)). Midwives and advocates can use the interactive tables and maps on this website to share their state's midwifery integration scores and health outcomes with policy-makers, health care providers, and women. As it becomes clearer that "the best outcomes for

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