Assessment of interprofessional collaboration at birth centers: Do collaborative practices influence clinical outcomes?

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Introduction

- Interdisciplinary collaboration in teaching and practice has been urged in women's health for more than four decades[1]
- Collaboration is perhaps defined best by the World Health Organization:

  "Collaboration occurs when two or more individuals from different backgrounds with complementary skills interact to create a shared understanding that none had previously possessed or could have come to on their own"[2]
- Interprofessional collaborative care can lead to improved patient outcomes and satisfaction through greater access, lower cost, improved patient choice and higher quality care.[3]
- Key elements of successful collaboration have been described at length, with major themes being
  - mutual respect, trust and equity in relationships[3]
  - clear means of communication, including written guidelines and mechanisms to resolve conflict[4]
  - a commitment to teamwork and a shared vision of quality care [5]

Materials and Methods

- The AABC Perinatal Data Registry (AABC PDR) collects demographic, process and outcome data from AABC member birth centers at four key points during a pregnancy[6]
- AABC also conducts periodic surveys of all known birth centers that collect practice level data about practice structure and birth center characteristics[7]
- We created measures of collaboration by combining AABC survey questions that queried collaborative actions undertaken by participating birth centers, using three key elements of successful collaboration as a guide- *respect, communication* and *teamwork* (Table 1)
- Practice-level collaborative activities were linked with clinical outcomes. These outcomes were compared to a control group of birth centers that do not participate in the collaborative activities
- Clinical outcomes for all women admitted to a birth center for intrapartum care were evaluated, as well as the subgroup of low risk women (Table 3). Indicators evaluated include rates of cesarean section, induction of labor, intrapartum transfer and 5 minute Apgar scores <7

Table 1. Measures of Collaboration

Key element of collaboration	AABC survey question included as indicator
Panel A: Respect, trust and equity	• Participate in Quality Assurance activities with the OB department, including review of non-birth center cases • Attend social events with hospital OB staff and providers • Attend social events with providers and staff from collaborating physicians' office
Panel B: Communica-tion	• Formally review transfers, collaborating physician assumes care • Formally review transfers, another physician assumes care • Formally review of transfers, another midwife assumes care • Formally review transfers, birth center midwife continues care
Panel C: Teamwork	• Birth center staff conduct emergency transfer drills with hospital staff

Results

Low risk women (Table 2)

- Birth centers who attend social events with their collaborating physicians/departments, *a measure of respect, trust and equity*
  - significantly lower rates of intrapartum transfer
  - significantly increased rates of induction of labor
  - trend towards increased cesarean section rate
- Participating in formal review of transfers with collaborating physicians/departments, *a measure of communication*
  - no statistically significant impact on clinical outcomes
- Birth centers that conduct emergency transfer drills, *a measure of teamwork*
  - significantly lower rates of induction of labor

Table 2. Birth outcomes- Low risk women

Collaborative activities of BC reflecting:	Cesarean section	Induction of labor	Intrapartum Transfer	5 minute Apgar <7
Panel A: Respect, trust, equity	1.38 [0.89, 2.12]	1.91** [1.35, 2.70]	0.57** [0.30, 1.08]	1.33 [0.83, 2,14]
Panel B: Communication	1.15 [0.71, 1.88]	0.85 [0.56, 1.28]	0.93 [0.47, 1.82]	0.78 [0.47, 1.28]
Panel C:Teamwork	0.90 [0.50, 1.63]	0.68** [0.47, 0.98]	1.08 [0.47, 2.49]	0.66 [0.35, 1.25]
N births	26,995	27,000	20,408	20,764
N sites	79	79	79	79

**indicates statistically significant to 5% level

Table 3. Low risk sample- excluded characteristics

Medical history	<16yrs, cervical or uterine abnormality, pre-gestational diabetes, hypertension, HIV+, substance abuse, seizures, smoker, thyroid disease
Pregnancy history	previous cesarean, pre-eclampsia, IUGR/LBW, pre-term birth, sensitization
Prenatal complications	anemia, abruption, previa, GDM A2, hypertension, hyperemesis, IUFD, IUGR, macrosomia, multiple gestation, malpresentation, maternal death, non-reassuring fetal status, pre-eclampsia, pre-term labor, pre-term ROM, vaginal bleeding, sensitization

All women admitted to birth center for intrapartum care (Table 4)

- Birth centers who attend social events with their collaborating physicians/departments, *a measure of respect, trust and equity*
  - significantly increased rates of intrapartum transfer
  - Trend towards increased rates of induction of labor
- Participating in formal review of transfers with collaborating physicians/department, *a measure of communication*
  - No significant impact on clinical outcomes
- Birth centers that conduct emergency drills, *a measure of teamwork*
  - Significantly decreased rates of cesarean section rates and induction of labor

Note: Table 2 and 4 controlled for demographic characteristics and medical risk factors

Table 4. Birth outcomes- All women admitted to birth center for birth

Collaborative activities of BC reflecting:	Cesarean section	Induction of labor	Intrapartum Transfer	5 minute Apgar <7
Panel A: Respect, trust, equity	1.06 [0.81, 1.38]	1.36 [0.87, 2,12]	1.38** [1.13, 1.70]	1.21 [0.88, 1.67]
Panel B: Communication	1.09 [0.83, 1.44]	0.99 [0.60, 1.61]	1.05 [0.82, 1.34]	1.10 [0.80, 1.51]
Panel C: Teamwork	0.75** [0.60, 0.94]	0.51** [0.30, 0.87]	1.06 [0.76, 1.47]	0.86 [0.62, 1.18]
N births	45,151	45,268	45,268	35,992
N sites	78	78	78	78

**indicates statistically significant to 5% level

CONCLUSIONS

- The results of this evaluation indicate that collaborative practices can have an impact on clinical outcomes, although the underlying mechanisms have not been defined
- There is evidence of improved outcomes in birth centers that practice emergency drills with their collaborating departments. This is consistent with the literature, which shows that simulation-based team trainings may consistently improve team performance[8]
- Birth centers that attend social events with their collaborating departments had significantly higher rates of intrapartum transfer when considering ALL women admitted for intrapartum care; however, they have a lower rate of intrapartum transfer for low risk women, which may be an indication of appropriate risk sorting
- Birth centers that participate in social events with their collaborating departments had significantly increased rates of induction of labor for their low risk clients
- One potential underlying mechanism could be that birth centers with closer social ties to their medical-minded colleagues may be influenced to pursue a more medical model themselves, as a long history of discrimination based on gender, social class and professional culture favors the medical model.[9]
- These findings may be influenced by whether a practice has hospital privileges, as a "soft call" decision to transfer or induce a client may be impacted if the birth center midwife can continue to care for her client

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