West Virginia Quality Collaborative for Eliminating Non-Medically Indicated Elective Deliveries Prior to 39 Weeks Gestation

This report summarizes an effort undertaken in the state of West Virginia to reduce the number of elective deliveries prior to 39 weeks gestation. These deliveries were found to represent a significant percentage of the overall deliveries in the state and present both a clinical and economic issue due to the increased risk for maternal and neonatal complications that accompanies them.

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WEST VIRGINIA QUALITY COLLABORATIVE FOR ELIMINATING NON-MEDICALLY INDICATED ELECTIVE PRETERM DELIVERIES PRIOR TO 39 WEEKS GESTATION

BACKGROUND AND AIM

Rates of Cesarean section (C-section) and labor induction have increased dramatically in the United States over the past decade. In fact, between 1990 and 2008, the rate of labor induction increased 140% (1). The rate of C-sections has increased every year over the past 12 years, for a total increase of 56% between 1996 and 2008 (1,2).

West Virginia has also experienced an increase in labor induction and C-sections and has higher rates than the nation. In 2008, 35.9% of births occurring in West Virginia were induced (up from 31.3% in 2001), compared to 23.1% nationwide (1). During the same year, more than one-third (35.4%) of West Virginia births were delivered by C-section (up from 26.6% in 2001), compared to 32.3% nationwide (1,2). In addition, 45.3% of inductions and 55.9% of C-sections in West Virginia occurred prior to 39 weeks gestation (full-term) in 2008.

There is concern that many of these inductions and C-sections are not medically necessary and may be resulting in avoidable negative birth outcomes. In fact, in 2008, 58.4% of West Virginia births occurring prior to 39 weeks gestation had no documented medical risk factor. Guidelines of the American Congress of Obstetricians and Gynecologists (ACOG) do not support non-medically indicated elective deliveries prior to 39 weeks gestation. These births present both a clinical and economic challenge due to the increased risk for maternal and neonatal complications that accompany them.

PROJECT SUMMARY

The West Virginia Health Care Authority (HCA), in partnership with the West Virginia Health Improvement Institute, the West Virginia Perinatal Partnership, and the West Virginia Chapter of the March of Dimes, developed and implemented a collaborative to study and address the issue of non-medically indicated elective deliveries prior to 39 weeks gestation. In doing so, CSI Solutions, LLC, was utilized to launch the six month project that engaged 14 of the state's 30 hospitals that deliver babies. The participating hospitals represented 70% of the total deliveries in the state.

This report summarizes the activities and results of the initiative. Six months after the implementation of the Collaborative, the rate of elective deliveries prior to 39 weeks without a medical indication had decreased by more than 50%. One year after the completion of the Collaborative, the reduction has been maintained.

METHODOLOGY

The methodology used for the West Virginia initiative (see Figure 1) was a modification of the original Breakthrough Series (BTS) methodology. The original BTS methodology (see Figure 2) was developed by the Institute for Healthcare Improvement and has been demonstrated to provide a successful approach to introducing and testing changes intended to improve aspects of the health care delivery system. It includes a community of interested parties working together to improve a common set of goals and measures. A learning environment is created for the sharing of evidence based best practices, strategies and tactics for innovations. The model includes several important design attributes including:

- Use of evidence based change packages that allow participants to focus on easy to implement opportunities for improvement;
- Structured monthly reporting on a common core set of measures;
- Technical assistance from expert faculty and subject matter experts;
- The use of web-based technology to assist in communication and shared learning among the various communities and to support a knowledge management portal where resources, reports, and documentation of best practices can be housed and shared;
- Monthly telephonic and periodic face-to-face learning opportunities to accelerate learning and adaptation of concepts to the local environment.

Figure 1

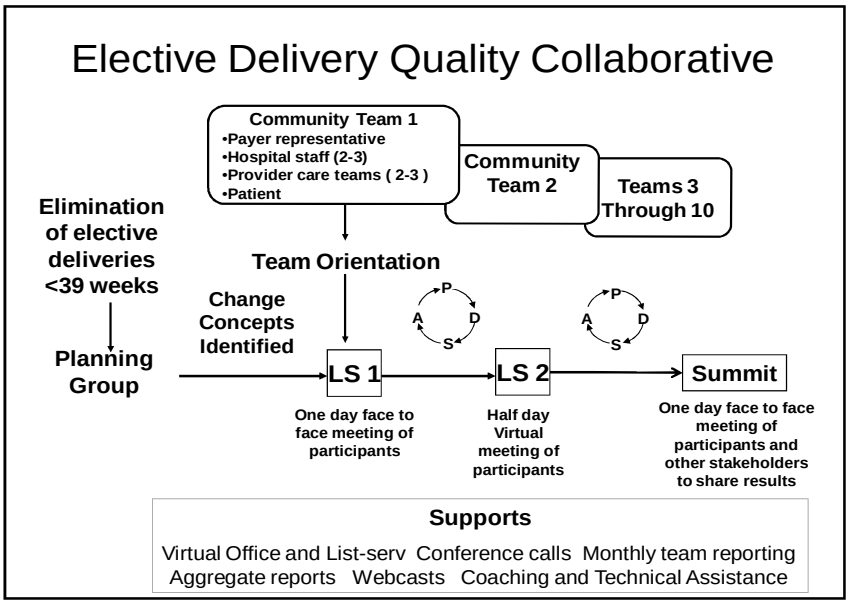
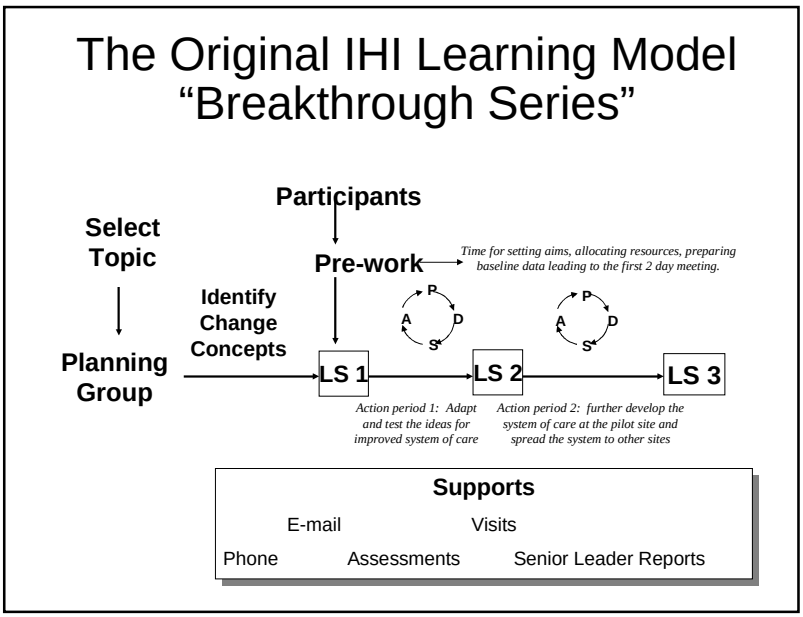


Figure 2



The Collaborative process was focused around several face-to-face learning sessions. In between the structured learning sessions were "action periods." During action periods, teams used the Model for Improvement to re-design and improve the care delivery systems within their communities. The Model for Improvement is a strategy for testing, implementing, and spreading practice innovations. It includes use of plan-do-study-act (PDSA) cycles for rapid cycle improvement.

Throughout the process, the Collaborative teams interacted with each other and with the Collaborative leadership through learning sessions, listservs, conference calls, a virtual office, and sharing of reports. During action periods, a listserv and virtual office were helpful for sharing tools and lessons learned, obtaining answers to questions, generating ideas for addressing barriers, and identifying resources.

The West Virginia initiative began with the engagement of CSI Solutions, LLC, a consulting group with expertise in quality improvement methodologies, and the appointment of a Planning Group to advise on various aspects of the project. The Planning Group included a broad set of stakeholders, including two OB-GYN physician co-chairs, primary care providers, hospital representatives, payer representatives, and a representative from the West Virginia Chapter of the March of Dimes. The Planning Group was responsible for review and endorsement of the charter, determining participation, and review of progress throughout the initiative.

PARTICIPATION

After review of the hospital-specific data, the Planning Group decided to invite all 30 hospitals in the state with obstetrical services to participate in the collaborative. Fourteen hospitals responded to this invitation. Each identified an interdisciplinary team including hospital staff and community OB-GYN providers and their staffs. The communities participating in the Collaborative are listed in Table 1. The participating hospitals represent more than 70% of the deliveries in West Virginia, and thus it was expected that improvement in these organizations would result in a reduction in the overall state rate of elective deliveries prior to 39 weeks.

Table 1
Quality Collaborative Participants

Community	Organization
Beckley	Raleigh General Hospital
Buckhannon	St. Joseph's Hospital
Charleston	CAMC
	Thomas Hospital
Huntington	Cabell Huntington Hospital
	St. Mary's Hospital
Lewisburg	Greenbrier Valley Medical Center
Morgantown	Monongalia Health System
	West Virginia University Hospital
Parkersburg	Camden Clark Hospital
Princeton/Bluefield	Princeton Hospital
Wheeling	Ohio Valley Medical Center
	Reynolds Memorial Hospital
Weirton	Weirton Medical Center

ACTIVITIES

A variety of activities were implemented during the initiative:

- All teams participated in a face-to-face learning session on January 23, 2009. Team members were introduced to the evidence base for decreasing deliveries prior to 39 weeks gestation, related West Virginia statistics, the role of the March of Dimes as a resource for educational materials, models for quality improvement, and case studies of organizations already making changes and improvements in their delivery rates. Time was also allocated for teams to plan for the upcoming action period.

  As part of this session, a harvesting exercise was completed to identify change concepts and ideas that hospitals were using, or thought to be using, in their efforts to reduce the number of elective deliveries. These change concepts were augmented by change concepts developed by the Institute for Healthcare Improvement specifically to address C-section rates, as well as change concepts presented by a national perinatal expert who participated in the learning session. The change concepts and ideas were packaged into a "change package" that was distributed to the hospitals. Participants used these concepts and ideas and tailored them to their own environment. Throughout the initiative, hospitals tested the change concepts and implemented those that resulted in improvements. The most common change ideas resulting in improvement are listed in the "Lessons Learned" section.

- All participants were entered into a listserv, an automatic mailing list that can be used to enhance communication between the teams and project team. When e-mail is addressed to a LISTSERV mailing list, it is automatically broadcast to everyone on the list. The result is similar to a newsgroup or forum except that the messages are transmitted as e-mail and are therefore available only to individuals on the list. Teams shared questions and information via the listserv.

- All participants participated in the virtual office, a communication system that allows teams to stay connected with the project team and each other during the action periods. Important documents such as guidelines and standards, as well as tools, such as induction and C-Section bundles, and forms were posted by staff or by participants for easy access. Presentations and data were also posted to the virtual office.

- Teleconferences took place monthly and were an opportunity for teams to discuss their successes and barriers and to share project progress. The project team also disseminated information and addressed questions during the calls.

- Calls with individual teams were made throughout the process to check on progress and assess need for technical assistance.

- A final report was presented by each team during a webinar on June 1, 2009. The teams received updated data and provided a report of their progress during the final part of the Collaborative. Each team presented a storyboard that detailed Collaborative experience and had the opportunity to share information about their results, challenges, most helpful changes, and plans for sustaining gains after completion of the Collaborative.

MEASUREMENT

The primary goal of the Collaborative was to eliminate deliveries when the gestational age of the infant is less than 39 weeks and there are no medical indications documented.

Initially, progress toward meeting the goal was to be measured using data collected and logged by each participating hospital. The log was to indicate the infant's gestational age; whether the method of delivery was vaginal or C-section; whether the labor was induced; whether there were medical indications for induction or C-section; and if the infant was admitted to the regular newborn nursery or the neonatal intensive care unit. Because this approach was deemed difficult and time consuming for the teams, it was decided that data recorded on the birth certificate would be used as the data source for this project.

Hospital teams chose to implement change concepts to reduce inductions and/or C-sections prior to 39 weeks when there were no medical factors that necessitated the delivery. Therefore, based on the information recorded on the birth certificate, the following indicators were used to assess progress toward meeting the project goal:

- Elective Inductions <39 Weeks = Births that were induced prior to 39 weeks gestation with no documented medical risk factor on the birth certificate.
- Elective C-sections <39 Weeks = Non-induced births delivered by C-section prior to 39 weeks gestation with no documented medical risk factor or complication.

Together, elective inductions and elective C-sections represent the total non-medically indicated elective deliveries prior to 39 weeks gestation.

Each month, birth certificate data were obtained from the West Virginia Health Statistics Center's Office of Vital Statistics. Historical data from 2008 was collected as a baseline measure to be compared to data obtained during and after the implementation of the Collaborative. Each month, the data were graphed and made available to the Collaborative participants.

Appendix A includes a copy of the West Virginia birth certificate used to collect the 2008 and 2009 data presented in this report. Included on the birth certificate are the medical risk factors and complications that can be documented at the time of delivery.

RESULTS

In 2008, 29.0% of all births occurred prior to 39 weeks gestation with no documentation of a medical risk factor. Certainly, some of these births occurred naturally due to the spontaneous onset of natural labor. However, a proportion of these births were electively delivered prior to 39 weeks when there was no medical indication necessitating the delivery. During the Collaborative, hospitals chose to implement policies and procedures aimed at reducing elective inductions and/or elective C-sections that occur prior to 39 weeks.

In 2008, before the initiation of the Collaborative, 2,929 of the 21,443 (13.7%) births that occurred in West Virginia were non-medically indicated elective deliveries prior to 39 weeks gestation (see Figure 3). In 2009, the total number of elective deliveries prior to 39 weeks decreased by 53.3%, to 6.4% of total births. These declines in elective deliveries impacted the overall percent of births that occurred prior to 39 weeks with no medical risk factor, which decreased from 29.0% in 2008 to 18.3% in 2009.

Between 2008 and 2009, a decrease was observed for both elective inductions and elective C-sections prior to 39 weeks gestation (see Figure 4). The rate of elective inductions prior to 39 weeks declined 60.2%, from 9.3% in 2008 to 3.7% in 2009. The rate of elective C-sections prior to 39 weeks declined by more than one-third, from 4.4% in 2008 to 2.7% in 2009.

Figure 3
Non-Medically Indicated Elective Births Prior to 39 Weeks Gestation West Virginia 2008 and 2009

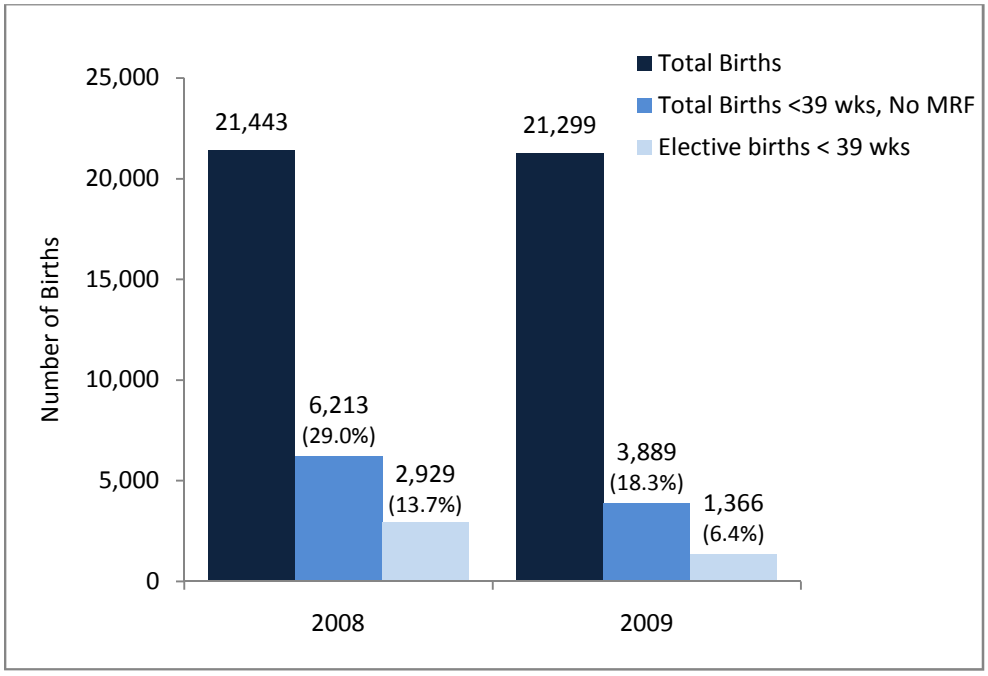
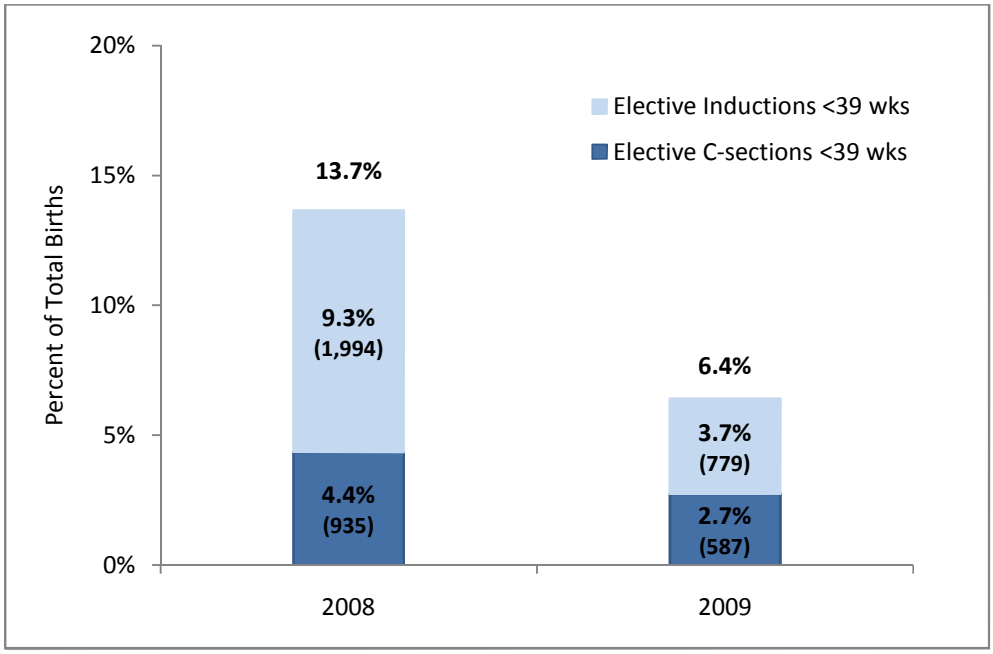


Figure 4
Non-Medically Indicated Elective Births Prior to 39 Weeks Gestation
by Type, West Virginia 2008 and 2009



The decline in total non-medically indicated elective deliveries prior to 39 weeks occurred primarily between January and June 2009, during the implementation of the Collaborative (see Figure 5). This decline was mostly attributable to a decrease in elective inductions prior to 39 weeks, which decreased from 8.3% to 2.7% of total births between January and June 2009.

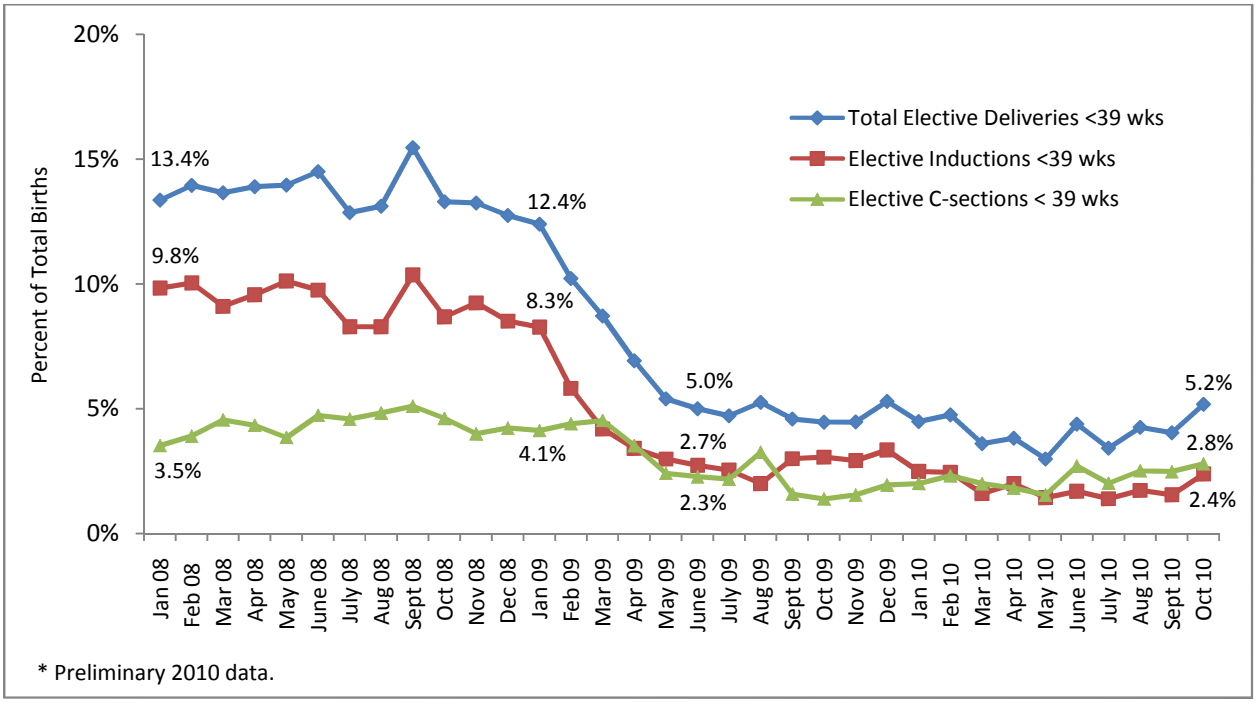
It is likely that the declines observed during the Collaborative are a result of a combination of changes in coding/documentation practices and changes in practice patterns. However, the following results indicate that a true change in practice patterns occurred, resulting in fewer elective deliveries prior to 39 weeks gestation.

Between 2008 and 2009:

- The percent of births prior to 39 weeks decreased by 18%, while births with a documented medical risk factor increased 14%.
- The percent of births prior to 39 weeks ***with no*** medical risk factor declined 37%, while births prior to 39 weeks ***with a*** medical risk factor increased 10%.
- There was an overall decline of 6.1% in the percent of labor inductions. The percent of inductions prior to 39 weeks ***with no*** medical risk factor declined 60%, while the percent of inductions prior to 39 weeks ***with a*** medical risk factor remained stable (see Figure 6).

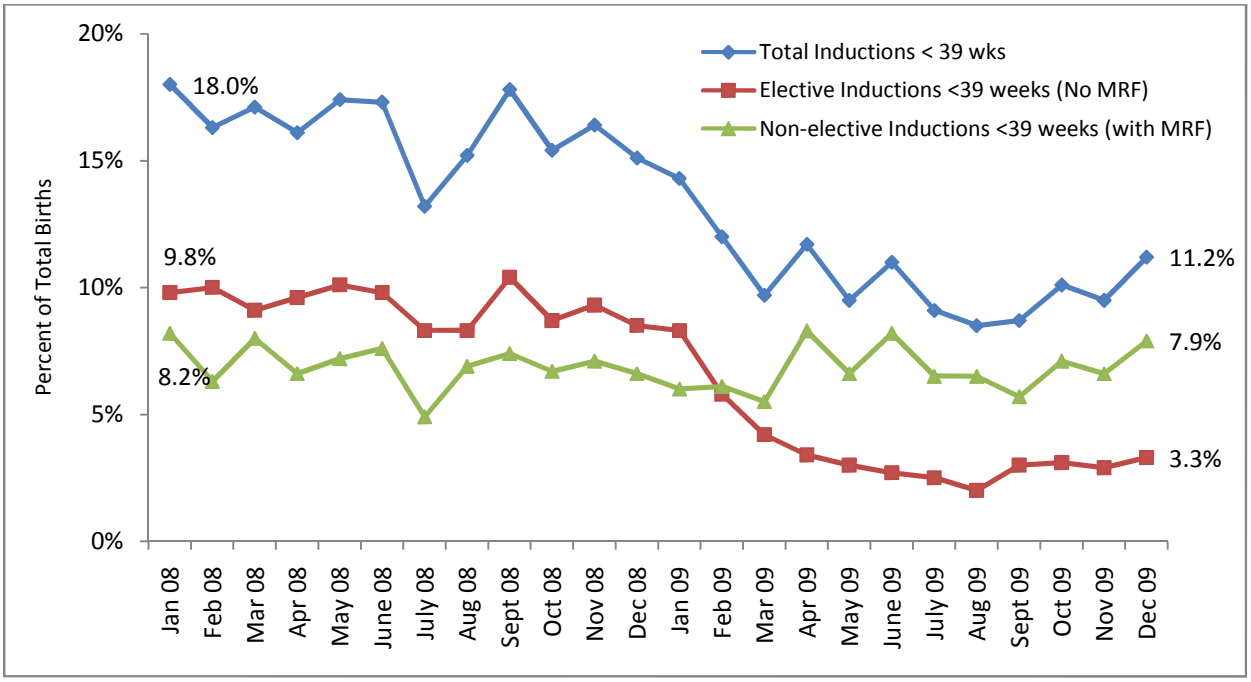
Since the end of the initiative, the overall declines have been maintained (see Figure 5). These results suggest that the changes adopted by hospital personnel positively impacted the rate of non-medically indicated elective deliveries prior to 39 weeks in West Virginia. Continuous monitoring and reporting of the data is essential to sustaining the positive results of the Collaborative.

Figure 5
Non-Medically Indicated Elective Births Prior to 39 Weeks Gestation by Month
West Virginia January 2008 – October 2010*



* Preliminary 2010 data.

Figure 6
Labor Inductions Prior to 39 Weeks Gestation by Month
West Virginia 2008 – 2009



LESSONS LEARNED

While all of the participants in the Collaborative achieved some level of success, this was not achieved without overcoming a number of barriers. Some of those most commonly cited included individual physicians and the patients themselves. The patients put pressure on the physicians because they want to schedule deliveries for convenient times, perhaps due to work or family issues. They may not fully understand the risks to themselves or their babies if delivery takes place before 39 weeks. Physicians may agree to the mother's request, or may want to schedule for their own convenience as well. Better communication and education of patients, providers, and staff were considered to be the best ways to overcome these barriers. The March of Dimes demonstrated and offered some excellent educational materials for patients, as well as staff and providers. Participants also suggested adopting guidelines, including those for uniform calculation of gestational age or promulgated by the ACOG, and enforcing guidelines using peer review, as methods related to success.

Another major barrier identified, though one more easily addressed, involved how staff may record or enter birth data. Staff education on data collection and recording, as well the use of uniform data collection forms or flow sheets, can overcome this barrier.

A third barrier was the birth certificate form itself. Participants felt that there should be some update to the information collected so that statistical information contained is consistent with quality measures. This issue played out in inconsistencies between birth certificate data and information captured through internal hospital flow sheets or retrospective chart audit. It was reported by several teams that their manual review of hospital records revealed no deliveries prior to 39 weeks with no risk factors. However, the data reported on the birth certificate did not support this result. The state software for entering birth certificate information does not differentiate between elective procedures < 39 weeks and spontaneous labor < 39 weeks. This would seem to indicate that the numbers may actually be lower than reported from the birth certificate information and more work may be needed to ascertain the true numbers. As a result, the West Virginia Perinatal Partnership formed a committee to recommend solutions to address these issues. In 2010, the Office of Vital Statistics implemented revisions to the data collection section of the West Virginia birth certificate to accommodate the reporting of elective inductions and scheduled C-sections (see Appendix B).

The change package provided to participants included fairly general ideas that could be tested in the local environment of each hospital. Some of those that were successfully applied to drive improvement include the following:

- Education for patients, staff, providers, hospital administration, and the community. These took place in a variety of modalities, including one-on-one patient education, classes, and public awareness campaigns. Materials from the March of Dimes were frequently used. Education for providers and staff on policies and guidelines, such as the ACOG recommendations, were also effective.
- Setting policies of “no exceptions” for inductions and C-sections < 39 weeks if there is no medical reason.
- Medical record reviews and peer reviews of all elective deliveries < 39 weeks with no maternal risk factors and making sure reviews are continuous, sharing the information with providers, and continuous monitoring.
- Induction reservations and scheduling forms which clearly delineate standards and guidelines for inductions and C-sections; utilizing uniform flow sheets and checklists.
- Institutionalization of standardized induction and C-section bundles.
- Standardizing criteria and documentation, especially gestational age criteria.

STEPS NOW BEING IMPLEMENTED

The progress made during the collaborative period was significant and it is important to assure that these gains are not lost. Follow up as recommended by the planning group should include maintaining a regular system of monthly data aggregation and reporting to the state's hospitals. To reinforce the work and spread an understanding of the issues and risks involved in non-medically indicated elective deliveries prior to 39 weeks gestation, a number of strategies have been undertaken. These include:

- Poster development through the March of Dimes;
- Connecting with the Text4Baby initiative to include some specific messaging about elective deliveries prior to 39 weeks;
- Media involvement;
- Identification of education and awareness materials that can be provided to hospitals and provider offices;
- Encouraging hospitals to continue their review of all elective deliveries prior to 39 weeks.

Finally, consideration should be given to building on the momentum created by the success of this initiative to create a platform and approach for addressing other issues in the state.

REFERENCES

1. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Mathews TJ, Osterman MJK. Births: Final data for 2008. National vital statistics reports; vol 59 no 1. Hyattsville, MD: National Center for Health Statistics. 2010.
2. Menacker F, Hamilton BE. Recent trends in cesarean delivery in the United States. NCHS data brief, no 35. Hyattsville, MD: National Center for Health Statistics. 2010.

Appendix A

West Virginia Certificate of Live Birth, 1989 - 2009

ID: **INFORMATION FOR MEDICAL AND HEALTH USE ONLY**

25a. Mother's Social Security No.		25b. Father's Social Security No.		25c. Do you want Social Security No. issued to your child? Yes/No	
26a. Was HBV Given? Yes/No	26b. If yes, give date	27a. Was Serologic test for syphilis performed? Yes/No	27b. If yes, date performed	27c. If no, state reason	
27d. Name of serologic test		27e. At what laboratory?		27f. Was approved solution placed in eyes? Yes/No	

	28. OF HISPANIC ORIGIN \(specify no or yes if yes specify Cuban, Mexican, Puerto Rican, etc.\)	29. RACE - American Indian, Black, White, etc. (Specify below)	30. EDUCATION (Specify only highest grade completed)	
			Elementary/Secondary (0-12)	College (1-4 or 5+)
MOTHER	28a.	29a.	30a.	30b.
FATHER	28b.	29b.	30c.	30d.

31. PREGNANCY HISTORY (Complete Each Section)			33. MOTHER MARRIED? At birth, conception, or any time in between (Yes/No)	34. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)
LIVE BIRTHS (Do not include this child)		OTHER TERMINATIONS \(Spontaneous and Induced at any time after conception\)	35. MONTH OF PREGNANCY PRENATAL CARE BEGAN - First, Second, Third, etc.(Specify)	36. PRENATAL VISITS - Total Number (If none, so state)
31a. Now Living	31b. Now Dead	32d.	37. BIRTHWEIGHT (Specify Unit)	38. CLINICAL ESTIMATE OF GESTATION (Weeks)
32a. DATE OF LAST LIVE BIRTH (Month/Year)		32e. DATE OF LAST OTHER TERMINATION (Month/Year)	39a. PLURALITY - Single, Twin, Triplet, etc. (Specify)	39b. IF NOT SINGLE - Born First, Second, Third, etc. (Specify)

40. APGAR SCORE		41a. MOTHER TRANSFERRED PRIOR TO DELIVERY? If yes, enter name of facility transferred from:
40a. 1 Minute	40b. 5 Minute	41b. INFANT TRANSFERRED? If yes, enter name of facility transferred to:

42a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (List all that apply)

00 - None
01 - Anemia
02 - Cardiac Disease
03 - Acute or Chronic Lung Disease
04 - Diabetes
05 - Genital Herpes
06 - Hydramnios/Oligohydramnios
07 - Hemoglobinapathy
08 - Hypertension, chronic
09 - Hypertension, Pregnancy Associated
10 - Eclampsia
11 - Incompetent Cervix
12 - Previous Infant > 4000 grams
13 - Previous Preterm or Small for for Gestational Age Infant
14 - Renal Disease
15 - RH Sensitization
16 - Uterine Bleeding
17 - Other

42b. OTHER HISTORY FOR THIS PREGNANCY (Complete all items)

Tobacco use during pregnancy

Average number of cigarettes per day

Alcohol use during pregnancy

Average number of drinks per week

Weight gained during pregnancy

43. OBSTETRIC PROCEDURES (List all that apply)

00 - None
01 - Amniocentesis Fetal Monitoring
02 - Electronic Fetal Monitoring
03 - Induction of Labor
04 - Stimulation of Labor
05 - Tocolysis
06 - Ultrasound
07 - Other

44. COMPLICATIONS OF LABOR AND/OR DELIVERY (List all that apply)

00 - None
01 - Febrile
02 - Meconium, moderate/heavy
03 - Premature rupture of membrane
04 - Abruptio placenta
05 - Placenta Previa
06 - Other excessive bleeding
07 - Seizures during labor
08 - Precipitous labor
09 - Prolonged labor
10 - Dysfunctional labor
11 - Breech / Malpresentation
12 - Cephalopelvic disproportion
13 - Cord prolapse
14 - Anesthetic complication
15 - Fetal distress
16 - Other

45. METHOD OF DELIVERY (List all that apply)

01 - Vaginal
02 - Vaginal birth after previous C-section
03 - Primary C-section
04 - Repeat C-section
05 - Forceps
06 - Vacuum

46. CONDITIONS OF THE NEWBORN (List all that apply)

00 - None
01 - Anemia
02 - Birth Injury
03 - Fetal alcohol syndrome
04 - Hyaline membrane disease / RDS
05 - Meconium aspiration syndrome
06 - Assisted ventilation < 30 minutes
07 - Assisted ventilation >= 30 minutes
08 - Seizures
09 - Other

47. CONGENITAL ANOMALIES OF CHILD (List all that apply)

00 - None
01 - Anencephalus
02 - Spinal Bifida/Meningocele
03 - Hydrocephalus
04 - Microcephalus
05 - Other central nervous system
06 - Heart malformations
07 - Other circulatory / respiratory
08 - Rectal Atresia / Stenosis
09 - Tracheo esophageal fistula /
10 - Omphalocole / Gastroschisis
11 - Other gastrointestinal anomalies
12 - Malformed genitalia
13 - Renal Agenesis
14 - Other urogenital anomalies
15 - Cleft lip / palate
16 - Polydactyly / Syndactyly / Adactyly
17 - Club foot
18 - Diaphragmatic hernia
19 - Other musculoskeletal /
20 - Down's syndrome
21 - Other chromosomal anomalies
22 - Other

Appendix B

West Virginia Certificate of Live Birth, Effective 2010

CERTIFIED/ ATTENDANT	9. I certify that this child was born alive at the place and time and on the date stated. Signature _____	10. DATE SIGNED (Month, Day, Year)	11. ATTENDANT'S NAME AND TITLE (If other than certifier) If yes, print) Name:_____ □ M.D. □ D.O □ C.N.M. □ Other Midwife □Other(Specify)_____

12. CERTIFIER'S NAME AND TITLE (Type/Print) Name □ M.D. □ D.O. □ Hospital Admin. □ C.N.M. □ Other Midwife □ Other(Specify)_____	13. ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route No., City or Town, State, Zip Code)

42a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)

None.....00 □
Anemia (Hct. <30/Hgb.<10) .....01 □
Cardiac disease .....02 □
Acute or chronic lung disease .....03 □
Diabetes .....04 □
Diabetes-prepregnancy diagnosis prior to this pregnancy ....05 □
Diabetes – gestational diagnosis this pregnancy.....06 □
Genital Herpes .....07 □
Hydramnios/Oligohydramnios .....08 □
Hemoglobinapathy .....09 □
Hypertension, chronic .....10 □
Hypertension, gestational-PHI, Preeclampsia11 □
HELLP .....12 □
Eclampsia .....13 □
Incompetent Cervix .....14 □
Previous Infant > 4000 grams .....15 □
Previous preterm or small for Gestational age infant.....16 □
Renal Disease .....17 □
RH Sensitization .....18 □
Uterine bleeding .....19□
Other (Specify)_____20 □
Unknown(Specify)_____21 □

42b OTHER RISK FACTORS FOR THIS PREGNANCY (Complete all items)

Tobacco use during pregnancy..... Yes □ No □
Average number cigarettes per day _____
Alcohol use during pregnancy.....Yes □ No □
Average number drinks per week _____
Weight gained during pregnancy _____lbs

43. OBSTETRIC PROCEDURES FOR THIS PREGNANCY (Check all that apply)

None.....00 □
Amniocentesis Fetal Monitoring ..... 01 □
Amniocentesis for Fetal lung maturity.02 □
Amniocentesis for chromosomal abnormalities/other.....03 □
Electronic Fetal Monitoring.....04 □
Induction of labor.....05 □
Elective Induction.....06 □
Non-Elective Induction-SROM.....07 □
Non-Elective Induction-for medical indications.....08 □
Non-Elective Induction-other(specify)....09 □
Stimulation (Augmentation) of labor.....10 □
Tocolysis.....11 □
Ultrasound.....12 □
Other.....13 □
Unknown.....14 □

44. COMPLICATIONS OF LABOR AND/OR DEVIER (Check all that apply)

None ..... 00 □
Febrile (> 100◦F. or 38◦C.) ..... 01 □
Meconium. Moderate/heavy ..... 02 □
Premature rupture of membrane (> 12 hours) .....03 □
Abruptio placenta .....04 □
Placenta previa ..... 05 □
Other excessive bleeding ..... 06 □
Seizures during labor ..... 07 □
Precipitous labor (< 3 hours) ..... 08 □
Prolonged labor (< 3 hours) ..... 09 □
Dysfunctional labor ..... 10 □
Breech/Malpresentation ..... 11 □
Cephalopelvic disproportion .....12 □
Cord prolapse ..... 13 □
Anesthetic complications ..... 14 □
Fetal distress ..... 15 □
Other(Specify) _____ 16 □
Unknown _____ 17 □

45. METHOD OF DELIVERY (Check all that apply)

Vaginal .....01 □
Vaginal Birth after previous C-section .....02 □
Primary C-Section .....03 □
Primary C-Section-scheduled .....04 □
Primary C-Section-unscheduled-spontaneous labor....05 □
Primary C-Section-unscheduled-SROM.....06 □
Primary C-Section-unscheduled-other (specified).....07 □
Repeat C-Section.....08 □
Repeat-C-Section-scheduled .....09 □
Repeat-C-Section-unscheduled spontaneous labor.....10 □
Repeat C-Section-unscheduled –SROM.....11 □
Repeat C-Section-unscheduled-other (specified).....12 □
Forceps.....13 □
Vacuum.....14 □
Method of Delivery is unknown.....15 □

46. ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)

None .....00 □
Anemia (Hct.< 39/Hgb. <13) .....01 □
Birth Injury .....02 □
Fetal Alcohol syndrome .....03 □
Hyaline membrane disease/RDS.....04 □
Meconium aspiration syndrome.....05 □
Assisted ventilation <30 min.....06 □
Assisted ventilation ≥ = 30 min.....07 □
Seizures .....08 □
Other(Specify) _____ 09 □
Unknown _____ 10 □

47. CONGENITAL ANOMALIES OF CHILD (Check all that apply)

None ..... 00 □
Anencephalus .....01 □
Spinal bifida/Meningocele .....02 □
Hydrocephalus ..... 03 □
Microcephalus..... 04 □
Other central nervous system anomalies (Specify) _____ 05 □
Heart malformations .....06 □
Other circulatory/respiratory anomalies (Specify) _____ 07 □
Rectal atresia/stenosis ..... 08 □
Tracheo esophageal fistula/Esophageal atresia .....09 □
Omphalocele/Gastroschisis .....10 □
Other Gastrointestinal anomalies (Specify) _____ 11 □
Malformed genitalia ..... 12 □
Renal agenesis ..... 13 □
Other urogenital anomalies (Specify) _____ 14 □
Cleft lip/palate ..... 15 □
Polydactyly/Syndactyly/Adactyly ..... 16 □
Club Foot ..... 17 □
Diaphragmatic hernia ..... 18 □
Other musculoskeletal/integumental anomalies (Specify) _____ 19 □
Down's syndrome ..... 20 □
Other chromosomal anomalies (Specify) _____ 21 □
Other _____ 22□ (Specify)

Was this birth funded by Medicaid? Yes □ No □ Unknown □

THIS PREGNANCY MARK AT LEAST ONE CATEGORY IN EACH COLUMN