Appendix 1. Outcomes Administrative Claims Codes

Outcome	Inclusions	Exclusions
Low Risk Primary Cesarean Delivery	DRG Codes: 370, 371 MS-DRG Codes: 765, 766 ICD-9-CM Procedure Codes: 740.xx, 741.xx, 742.xx, 744.xxm 749.1x, 749.9x	ICD-9-CM Diagnosis Codes: 630-641, 644, 651.xx (except 651.7x), 652.2x, 652.3x, 652.4x, 652.6x, 656.4x, 660.5x, 662.3x, 669.6x, 678.1x, 761.5, V271-V277 ICD-9-CM Procedure Codes: 72.5x
Severe Maternal Morbidity Composite	iCD-9-CM Diagnosis Codes: 038.xx, 282.62, 282.64, 282.69, 286.6, 286.9, 410.xx, 415.1x, 428.1, 427.41, 427.42, 427.5, 430, 431, 432.x, 433.xx, 434.xx, 436, 437.x, 441.xx, 518.4, 518.5, 518.81, 518.82, 518.84, 584.x, 642.6x, 666.3x, 668.0x, 668.1x, 668.2x, 669.1x, 669.3x, 669.4x, 671.5x, 673.0x, 673.1x, 673.2x,	

	673.3x, 673.8x, 674.0x, 785.5x, 799.1, 800.xx, 801.xx, 803.xx, 804.xx, 851.xx-854.xx, 860.xx—869.xx, 995.0, 995.4, 995.91, 995.92, 997.1, 997.2, 998.0, 999.2 ICD-9-CM Procedure Codes: 31.1, 35.xx, 36.xx, 37.xx, 39.xx, 68.3x-68.9, 89.6x, 93.90, 96.01-96.05, 96.7x, 99.6x, 99.0x	
Infection	ICD-9-CM Diagnosis Codes: 038.xx, 486, 590.1x, 590.2, 590.3, 590.80, 590.9, 646.62, 646.64, 658.40, 658.41, 659.2x, 659.30, 659.31, 670.xx, 672.xx, 682.2, 682.5, 785.52, 790.7, 995.90, 995.91, 995.92, 996.62, 999.31, 999.39	
Postpartum Hemorrhage	ICD-9-CM Diagnosis Codes: 666.xx	
Blood Transfusion	ICD-9-CM Procedure Codes: 99.0x	

Appendix 2. Comparison of Cases With Missing Versus Complete Data

Patient & Hospital Characteristics	Missing (N = 63,969)	Complete (N = 226,463)	*P*
Unit Culture Management	-0.02±0.77	-0.03±1.06	0.835
Patient Flow Management	0.16±0.95	0.35±0.99	0.456
Nursing Management	-0.59±1.14	0.09±0.88	0.102
Maternal Age	29.16±5.77	28.56±5.77	0.127
Diabetes	7.27%	6.83%	0.351
Hypertension	1.59%	1.77%	0.232
Teaching Service	61.85%	71.17%	0.541
Midwifery Service	81.40%	65.94%	0.111
Total Delivery Volume (2013-2014)	10,176.24± 6,512.63	7,746.58± 4,125.12	0.439
NICU Level			
Level I	0.36%	1.21%	
Level II	7.20%	4.64%	0.713
Level III	79.82%	81.87%	
Level IV	12.62%	12.28%	
Region			0.087
Northeast	19.38%	28.79%	

South	67.02%	40.50%	
Midwest	10.37%	14.66%	
West	3.23%	16.05%	
Low Risk Primary Cesarean Delivery	18.66%	18.93%	0.820
CDC Severe Morbidity Composite	1.39%	1.52%	0.607
Infection	4.62%	5.27%	0.127
Postpartum Hemorrhage	2.97%	3.33%	0.238
Blood Transfusion	0.71%	0.81%	0.341
Prolonged Length of Stay	4.94%	4.70%	0.694

Maternal race, private insurance, and percent privately insured patients had missing data and therefore are not included in the comparisons; differences between cases with missing data and complete cases calculated with chi-square tests for categorical or binary variables and ordered logistic regressions for continuous variables.

Appendix 3. Labor and Delivery Unit Management Survey & Scoring Scales

1) Planned Case Scheduling
 	
Methods for scheduling planned cases and for maintaining a safe overall caseload
	- What is the process for ensuring that cases, such inductions or planned cesarean deliveries, are appropriately scheduled?
	  - What clinical details of the cases are reviewed during the scheduling process?
	- What kinds of strategies do you have to help prevent the labor floor from becoming over-scheduled?
	  - What is your process for limiting the number of cases per day?
	  - What is your process for spacing cases throughout the day?
	  - How do you know when you have exceeded scheduling parameters?
	- What is the process for reviewing the overall case schedule to ensure that adequate time and resources are allocated for each case?
	- Are there any cases where the clinical condition of the patient would impact case scheduling?

2) Dynamic Resource Management
 	
Process for dynamically monitoring labor floor census and acuity to anticipate changing resource needs
	- Who is responsible for monitoring the real time census and acuity of the labor floor to ensure that there are adequate resources for patient care?
	  - What other simultaneous responsibilities does this person have?
	  - (If this person has other responsibilities) How is the labor floor monitored while he or she is otherwise occupied?
	- *What methods does this person use to monitor real time census and acuity on the labor floor?*
	- *How does this person monitor census and acuity in other units (e.g. antepartum and postpartum)?*

3) Flexible Physical Capacity
 	
Strategies for adjusting physical space to manage capacity constraints
	- Assuming the labor floor is at maximum physical capacity, how would you accommodate an unscheduled induction or cesarean that needs to be performed more urgently than the scheduled cases planned for that day?
	  - Do you have any adjustment strategies you use before diverting or delaying scheduled procedures (e.g. processes for creating flexible spaces)?
	  - Under what circumstances do you begin using these adjustment strategies?
	- *How often are you challenged by limitations with physical capacity: very rarely, rarely, sometimes, often, or very often?*
	- *How effective do you find your processes for managing these physical capacity constraints: not effective, minimally effective, somewhat effective, moderately effective, highly effective?*

4) Flexible Nurse Staffing	- When the labor floor is at maximum capacity, how do you increase the number of nurses on the labor floor?

Strategies for adjusting nurse staffing to manage capacity constraints	- Do you have any adjustment strategies you use before bringing in additional staff (e.g. shifting nurses among roles, floating pool)? - (If shifting nurses among roles) how do nurses maintain competencies for different roles? - *How often are you challenge by limitations with nurse staffing levels: very rarely, rarely, sometimes, often, or very often?* - *How effective do you find your processes for managing unanticipated or last-minute staffing shortages: not effective, minimally effective, somewhat effective, moderately effective, highly effective?*
5) Patient Assignment *Methods for assigning nurses to patients and for reassessing assignments for appropriate workload*	- How are nurses assigned to patients on your labor floor? - What factors are taken into account to match nurses with patients (e.g. experience level, fatigue, patient acuity, current workload, comprehensive perinatal skills, continuity of care, patient's needs)? - Who is responsible for making these assignments? - What is the process for reassessing patient assignments to ensure nurses have appropriate workloads? - Under what circumstances would the manager responsible for reassessing patient assignments check-in with a patient-assigned nurse? - *What metrics do you use to assess nurse workload?*
6) Bottlenecks *Process for tracking and anticipating bottlenecks in patient flow*	- *Where do the most significant bottlenecks tend to occur in your unit, with bottleneck defined as an area that limits the performance or capacity of the labor floor as a whole (e.g. triage, labor and delivery, ORs, postpartum, NICU, nursery)?* - *What types of limited resources cause these bottlenecks (e.g. beds, staff)?* - *How often do these types of bottlenecks tend to occur: very rarely, rarely, sometimes, often, very often?* - Do you have any system for tracking when and how often these bottlenecks occur? - Do you have any system for anticipating when you will have issues with these bottlenecks?
7) Obstetrician Availability *Immediacy of access to obstetrician care as needed on the labor floor*	- What clinical responsibilities do obstetricians have while they are on call, other than caring for patients in labor? - *What is the process for assessing an individual physician's real time workload and ensuring they do not have an excessive or unsafe workload?* - If the obstetrician responsible for a given patient's care on the labor floor is not available, how do you ensure that patient has immediate access to an obstetrician in case of an emergency? - (If coverage varies by obstetrician) What is the most common practice? - How often do obstetricians need back-up for conflicting responsibilities?

8) Standardization of Processes
 	
Level of standardization of clinical care and adherence to standardized guidelines
	- Would you classify the number of processes or procedures you have standardized clinical guidelines on your labor floor as very low, low, moderate, high, or very high?
	  - What are some examples of processes or procedures you have standardized guidelines for?
	- How do staff learn about the guidelines or changes to guidelines?
	- How can staff access or refer to the guidelines?
	- How clear are staff members about how specific guidelines should be carried out?
	- How do you ensure that clinical guidelines on your labor floor are followed as the standard of care?
	  - How do managers identify when clinical staff are deviating from the established guidelines?
	  - What is the process for staff to justify their choice to deviate from established guidelines when appropriate?
	- How often do clinicians follow the clinical guidelines: very rarely, rarely, sometimes, often, or very often?

9) Labor Floor Efficiency
 	
Process for optimizing the timing of admission to the labor floor
	- How do you anticipate patients' arrival before they present to your labor floor (e.g. phone or office triage, medical records from offices)?
	  - How often are these options used versus patients arriving at the labor floor unannounced?
	- When a new patient arrives with painful contractions, what is the process for deciding when to admit her to the labor floor?
	  - Based on the patients seen on your labor floor, what types of clinical and non-clinical factors go into the decision to admit patients to your labor floor (e.g. Bishops score, distance traveled, patient expectations)?
	  - If the labor floor was at full capacity, would these admissions decisions be approached in the same way?
	- *What percentage of the women that present to triage do you admit to the labor floor?*

10) Commitment to Vaginal Delivery *Commitment to using labor floor resources to preserve labor (i.e. during a prolonged induction)*	- What options do providers on your labor floor consider for patients with breech presentations in early labor at term with intact membranes and no immediate maternal or fetal concerns? - (If physician dependent) What percentage of physicians offer external cephalic version? - What are the policies on your labor floor around which patients are eligible to be offered inductions of labor (e.g. gestational age, indications, Bishops score)? - Imagine there is a healthy nulliparous patient on your labor floor who is undergoing an induction of labor at 40 weeks gestational age. Assume there are no immediate maternal or fetal concerns. After 48 hours she is still not in active labor and beds on the labor floor are tight. In general on your labor floor, what would be the process for determining next steps in her management?

	- What is the longest an induction would be allowed to proceed before sending the patient home or performing a cesarean delivery? - If the patient is not amenable to these options, how would a provider on your labor floor try to accommodate her continued induction given the capacity constraints? - Would limited labor floor resources cause a provider on your labor floor to expedite a cesarean in a patient you are concerned about? Under what circumstances would this be possible? - *Once a cesarean decided on, how long does it normally take until the procedure actually occurs?*
11) Team Collaboration *Involvement of nurses, anesthesia, neonatology in making care plans*	- What are the processes for nurses to update doctors on patient condition or labor progress? - What is the process for updating plans of care for a patient on your labor floor? - What opportunities are there for nurses to provide input into decision-making about patient care? - What opportunities are there for other relevant disciplines (e.g. anesthesia, midwives, doulas, etc.) to provide input into decision-making about patient care? - (If decision-making varies by provider) What is the most common practice? - Where are the primary workspaces for nurses on the labor floor? Where are the primary workspaces for doctors? - Are there any shared workspaces? - *How do you learn about a patient's preferences and incorporate them into the care plan?*
12) Conflict Management *Culture of expressing and resolving disagreements about appropriate care*	- How many of your nurses would feel comfortable speaking up if he or she disagreed with a decision about care: very few, few, some, most, or all? - How would a physician and a nurse approach a disagreement about appropriate care? - How do you handle disagreements about appropriate care that cannot be resolved between individuals?
13) Communication & Coordination *Process for sharing information on care plans or status within and across disciplines*	- What is the process for patient hand-off between shifts, with patient hand-off defined as the transfer of accountability for patient care? - Who is involved in the patient hand-off process? - What information about patient care is shared during the hand-off process? - (If hand-off varies by nurse or physician) What is the most common practice? - What opportunities are there for interdisciplinary communication to share plans of care? - What opportunities are there to review information about all patients currently on the labor floor?

14) Obstetrician Shared Patient Responsibility
 	
Patient coverage system that creates shared accountability for labor and delivery unit outcomes
	- Who directly employs obstetricians in your unit (e.g. hospital, private practice)?
	  - How many different employers of physicians do you have in your unit?
	  - (If there are multiple employers) How often do different practice groups cross-cover?
	- How often do obstetricians step in to cover patients from a different call or practice group outside of formal cross-coverage systems?
	- *Is there any relationship between the number of procedures or deliveries an obstetrician performs while on call and their compensation?*
	  - *(If there are multiple employers) How does this vary among the different employers on your labor floor?*

15) Quality Improvement Engagement
 	
Process for engaging clinicians in and monitoring quality improvement efforts
	- *Who has primary oversight of clinical performance and quality improvement of labor and delivery?*
	  - *Who does this person report to?*
	  - *What other quality improvement roles are there?*
	- *What types of quality improvement meetings and committees do you have at the department level?*
	  - *How often do these meetings occur or committees convene?*
	  - *Who attends or participates?*
	- What is an example of a quality improvement initiative that was recently implemented on your labor floor?
	- How did you implement this initiative?
	  - How did you develop a strategy for approaching this quality improvement?
	  - How did you disseminate this change to frontline staff?
	- What opportunities are there for frontline staff to be involved in quality improvement?
	  - (If few disciplines mentioned) How do [other discipline staff] participate in quality improvement?
	- How do you monitor the impact of quality improvement initiatives on labor floor performance?
	  - (If there is monitoring) How does this monitoring impact the focus or implementation of initiatives?
	- *In your opinion, how effective is the quality improvement work of your labor and delivery unit in improving care processes and patient outcomes on your labor floor: not effective, minimally effective, somewhat effective, moderately effective, highly effective?*

16) Performance Reporting
 	
Clinician awareness of and accountability for providing high quality care
	- How do you let staff know about general labor floor performance?
	  - What types of metrics do you report? How are these metrics reported and how often do you report?
	- How do you let staff know about their individual obstetrics performance?
	  - What types of metrics do you report? How are these metrics reported (e.g. publicly, privately, email, meeting) and how often do you report?

	- What opportunities are there for individuals to benchmark their performance against their peers? - What are the consequences of anomalous performance? - *How much variation do you think there is in cesarean delivery rates between individual providers on your labor floor: no variation, minimal variation, some variation, moderate variation, or high variation?* - *(If there is variation) Do you think decreasing variation between individual providers could safely decrease the overall cesarean rate on your labor floor?*
Manager Perceptions	- *In the last 3 years, what initiatives has your hospital undertaken to improve C-section rates?* - *What got it started?* - *What did you do?* - *Who was involved?* - *How was it implemented?* - *How do you think these efforts affected the C-section rate at your hospital?* - *Do you think there is the potential to decrease the C-section rate at your hospital?* - *What initiatives, strategies, or approaches would help your hospital to improve its C-section rates (hospital-specific not broader like malpractice reform)?*
Manager Background	- *What is your official administrative title at [Hospital Name]?* - *How long have you held this position?* - *How long have you worked at your hospital overall?* - *What are your primary responsibilities as [Administrative Title]?* - *What other responsibilities do you have at [Hospital Name]?*

1. Planned Case Scheduling

Methods for scheduling planned cases and for maintaining a safe overall caseload

	1	2	3	4	5
Limits on quantity of scheduled procedures	No enforced limit on the number of scheduled procedures per day	Enforced limit on the number of scheduled procedures per day	Enforced limit on the number of scheduled procedures per day	Enforced limit on the number of scheduled procedures per day	Enforced limit on the number of scheduled procedures per day
Restriction of deliveries before 39 weeks without medical indications		Do not use clinical details to screen deliveries prior to 39 weeks gestational age for medical appropriateness prior to scheduling	Uses clinical details to screen for deliveries prior to 39 weeks gestational age and block cases without appropriate medical indications during the scheduling process	Uses clinical details to screen for deliveries prior to 39 weeks gestational age and block cases without appropriate medical indications during the scheduling process	Uses clinical details to screen for deliveries prior to 39 weeks gestational age and block cases without appropriate medical indications during the scheduling process.
Consideration of expected case length and interval			Do not limit by type of procedure accounting for case length and spacing	Limit by type of procedure accounting for case length and spacing	Limit by type of procedure accounting for case length and spacing
Accommodations for complex cases				Do not identify complex cases during the scheduling process and adjust available staff or case scheduling accordingly	Identify complex cases during the scheduling process and adjust available staff or case scheduling accordingly

2. Dynamic Resource Management

Process for dynamically monitoring labor floor census and acuity to anticipate changing resource needs

	1	2	3	4	5
Responsibilities of managing staff member	Manager responsible for labor floor monitoring may take a primary patient assignment	Manager responsible for labor floor monitoring does not take a primary patient assignment but provides back-up clinical support for routine care	Manager responsible for labor floor monitoring does not take a primary patient assignment but provides back-up clinical support for routine care	Manager responsible for labor floor monitoring has no clinical responsibilities except in emergencies	Manager responsible for labor floor monitoring has no clinical responsibilities except in emergencies
Back-up monitoring system		Back-up monitoring process does	Strong back-up monitoring process	Back-up monitoring process does	Strong back-up monitoring process

		not involve a specifically designated individual or involves someone who is not well-positioned to monitor consistently due to other simultaneous administrative or clinical responsibilities	involving a specifically designated individual who is well-positioned to monitor consistently with no other simultaneous responsibilities	not involve a specifically designated individual or involves someone who is not well-positioned to monitor consistently due to other simultaneous administrative or clinical responsibilities	involving a specifically designated individual who is well-positioned to monitor consistently with no other simultaneous responsibilities

3. Flexible Physical Capacity

Strategies for adjusting physical space to manage capacity constraints

	1	2	3	4	5
Primary strategy for accommodating additional cases when at capacity	Primarily divert or delay scheduled cases because no flexible-use spaces are available	Primarily divert or delay scheduled cases even though some flexible-use spaces are available	Primarily recruit flexible-use spaces within the hospital to accommodate additional cases	Primarily recruit flexible-use spaces within the hospital to accommodate additional cases	Primarily recruit flexible-use spaces within the hospital to accommodate additional cases
Ability to recruit flexible space			There are significant barriers or challenges to use of flexible space (e.g. primarily used by a different clinical service) and no proactive process for initiating use (e.g. initiated when all beds already filled)	There are significant barriers or challenges to use, but proactive process exist for initiating use (e.g. when set number of beds remain available)	There are minimal barriers or challenges to in recruiting flexible spaces appropriate for labor and delivery care.

4. Flexible Nurse Staffing

Strategies for adjusting nurse staffing to manage capacity constraints

	1	2	3	4	5
Process for adjusting in-house staff and staff competencies	Limited or no process for adjusting nursing assignments among in-house staff	Some process for adjusting nursing assignments among in-house staff but limited by rules or competency levels (e.g. few nurses have competencies to	Some process for adjusting nursing assignments among in-house staff, but limited by rules or competency levels (e.g. few nurses have competencies to	Strong process for adjusting nursing assignments among in-house staff with minimal limitations (e.g. float pool including nurses with labor and delivery skills)	Strong process for adjusting nursing assignments among in-house staff with minimal limitations (e.g. float pool including nurses with labor and delivery skills)

		allow them to adjust)	allow them to adjust)		
Process for recruiting out-of-house staff		Some process for recruiting out-of house staff but does not include any planned on-call scheduling or prioritization of staff members contacted	Strong process for recruiting out-of-house staff including designated on call staff or some prioritization the staff contacted first	Some process for recruiting out-of house staff but does not include planned on call scheduling or prioritization of staff members contacted	Strong process for recruiting out-of house staff including designated on call staff or some prioritization of the staff contacted first

5. Patient Assignment

Methods for assigning nurses to patients and for reassessing assignments for appropriate workload

	1	2	3	4	5
Process for assigning patients to nurses	Patient assignment inconsistently accounts for individual patient or nurse factors	Patient assignment consistently accounts for individual patient and nurse factors (e.g. acuity and skills)	Patient assignment consistently accounts for individual patient and nurse factors (e.g. acuity and skills)	Patient assignment consistently accounts for individual patient and nurse factors (e.g. acuity and skills)	Patient assignment consistently accounts for individual patient and nurse factors (e.g. acuity and skills)
Process for assessing nurse workload		The manager responsible for labor floor monitoring does not reassess patient assignments unless requested by the nurse	The manager responsible for labor floor monitoring inconsistently reassesses patient assignments at his/her discretion.	The manager responsible for labor floor monitoring consistently reassesses patient assignments (e.g. hourly check in with each patient-assigned)	The manager responsible for labor floor monitoring consistently reassesses patient assignments (e.g. hourly check in with each patient-assigned)
Nurse involvement				Individual nurses do not participate in a self-selection process to determine patient assignments	Individual nurses participate in a self-selection process to determine patient assignments

6. Bottlenecks

Process for tracking and anticipating bottlenecks in patient flow

	1	2	3	4	5
Process for anticipating bottleneck challenges	No process for anticipating bottlenecks in patient flow	No process for anticipating bottlenecks in patient flow	Some process for anticipating bottlenecks in patient flow (e.g. predicting postpartum bottlenecks if more cesareans than normal)	Some process for anticipating bottlenecks in patient flow (e.g. predicting postpartum bottlenecks if more cesareans than normal)	Some process for anticipating bottlenecks in patient flow (e.g. predicting postpartum bottlenecks if more cesareans than normal)
Process for tracking the timing and frequency of bottlenecks	No processes for tracking the timing and frequency of bottlenecks in patient flow	Some processes for tracking the timing and frequency of bottlenecks in patient flow (e.g. manual spreadsheet)	No processes for tracking the timing and frequency of bottlenecks in patient flow	Some processes for tracking the timing and frequency of bottlenecks in patient flow (e.g. manual spreadsheet)	Strong processes for tracking the timing and frequency of bottlenecks in patient flow (e.g. teletracking)

7. Obstetrician Availability

Immediacy of access to obstetrician care as needed on the labor floor

	1	2	3	4	5
Obstetrician responsibilities while on call	Some or all obstetricians on call have simultaneous responsibilities that regularly remove them from the labor floor to provide scheduled care (e.g. office patients or GYN surgeries)	Some or all obstetricians on call have simultaneous responsibilities that regularly remove them from the labor floor to provide scheduled care (e.g. office patients or GYN surgeries)	Obstetricians on call do not have simultaneous responsibilities that regularly remove them from the labor floor, but some or all may have responsibilities remove them from the labor floor to deal with urgent or emergent situations (e.g. OB/GYN ER)	Obstetricians on call do not have simultaneous responsibilities that regularly remove them from the labor floor, but some or all may have responsibilities remove them from the labor floor to deal with urgent or emergent situations (e.g. OB/GYN ER)	All obstetricians on call have no other responsibilities that would remove them from the labor floor
Back-up system when obstetricians are removed from the labor floor or in the OR	Primarily call in another provider from outside the hospital for obstetrics back-up; when back-up is needed in-house coverage, if available, is rarely used	Designated in-house obstetrics coverage available for back-up	Primarily call in another provider from outside the hospital for obstetrics back-up; when back-up is needed in-house coverage, if available, is rarely used	Designated in-house obstetrics coverage available for back-up	Designated in-house obstetrics coverage available for back-up

8. Standardization of Process

Level of standardization of clinical care and adherence to standardized guidelines

	1	2	3	4	5
Level of standardization	Manager reports very low or low number of processes and/or procedures with standardized guidelines	Manager reports moderate number of processes and/or procedures with standardized guidelines	Manager reports high or very high number of processes and/or procedures with standardized guidelines	Manager reports high or very high number of processes and/or procedures with standardized guidelines	Manager reports high or very high number of processes and/or procedures with standardized guidelines
Access to and knowledge of guidelines			Guidelines are not easily accessible or not generally known by staff members	Guidelines are easily accessible and staff are well trained in their use	Guidelines are easily accessible and staff are well trained in their use
Monitoring of adherence				Limited monitoring to assess adherence (e.g. deviations only identified through adverse incidents)	Strong monitoring to assess adherence (e.g. consistent auditing process)

9. Labor Floor Efficiency

Process for optimizing the timing of admission to the labor floor

	1	2	3	4	5
Clinical assessment for admission	Inconsistent process for using clinical factors to decide timing of an unscheduled admission	Consistent process for using clinical factors to decide timing of an unscheduled admission	Consistent process for using clinical factors to decide timing of an unscheduled admission	Consistent process for using clinical factors to decide timing of an unscheduled admission	Consistent process for using clinical factors to decide timing of an unscheduled admission
Impact of non-clinical factors on admission		Non-clinical factors (e.g. distance traveled or labor floor capacity) frequently impact admission decisions	Non-clinical factors (e.g. distance traveled or labor floor capacity) rarely impact admission decisions	Non-clinical factors (e.g. distance traveled or labor floor capacity) rarely impact admission decisions	Non-clinical factors (e.g. distance traveled or labor floor capacity) rarely impact admission decisions
Assessment processes before a patient arrives on the labor floor			No process for assessing and anticipating the arrival of unscheduled patients before presentation to the labor floor	Inconsistently used process for assessing and anticipating the arrival of unscheduled patients before presentation to the labor floor (e.g. office or phone triage)	Consistently used process for assessing and anticipating the arrival of unscheduled patients before presentation to the labor floor (e.g. office or phone triage)

10. Commitment to Vaginal Delivery

Commitment to using labor floor resources to preserve labor (i.e. during a prolonged induction)

	1	2	3	4	5
Impact of capacity on care decisions	Most providers often consider expediting cesarean deliveries due to capacity constraints	Most providers never or rarely consider expediting cesarean deliveries due to capacity constraints	Most providers never or rarely consider expediting cesarean deliveries due to capacity constraints	Most providers never or rarely consider expediting cesarean deliveries due to capacity constraints	Most providers never or rarely consider expediting cesarean deliveries due to capacity constraints
Emphasis on preserving labor		Most providers regularly perform cesareans for patients with prolonged inductions or breech presentation	Most providers sometimes use alternative options before cesareans for patients with prolonged inductions or breech presentation (e.g. send patient home or external cephalic version)	Most providers regularly use alternative options for patients with prolonged inductions or breech presentation (e.g. send patient home or external cephalic version)	Most providers primarily use alternative options for patients with prolonged inductions or breech presentation (e.g. send patient home or external cephalic version)

Limits on allowable procedures				Allowable elective inductions are not restricted beyond 39 weeks gestational age	Allowable elective inductions are restricted beyond 39 weeks gestational age (e.g. not before 41 weeks, Bishops score cutoff)

11. Team Collaboration

Involvement of nurses, anesthesia, neonatology in making care plans

	1	2	3	4	5
Decision-making about updating plans of care	Most decisions about updating plans of care are made in isolation by physicians or nurses with no or limited input from other relevant care providers	Most decisions about updating plans of care are made in isolation by physicians or nurses with no or limited input from other relevant care providers	Decisions about updating plans of care are often made with input from physicians and nurses and are sometimes made with input from all relevant care providers	Decisions about updating plans of care are often made with input from all relevant care providers	Decisions about updating plans of care are often made with input from all relevant care providers and
Communication of updates about plans of care	Updates to care plans are inconsistently communicated to all relevant care providers	Updates to care plans are consistently communicated between physicians and nurses, but inconsistently communicated to other relevant care providers	Updates to care plans are consistently communicated between physicians and nurses, but inconsistently communicated to other relevant care providers	Updates to care plans are consistently communicated to all relevant care providers	Updates to care plans are consistently communicated to all relevant care providers
Formal opportunities for collaboration				There are limited scheduled opportunities for collaborative care planning	There are scheduled opportunities for collaboration (e.g. huddles at set times of day or stages of labor)

12. Conflict Management

Culture of expressing and resolving disagreements about appropriate care

	1	2	3	4	5
Willingness to disagree with care decisions	Manager reports very few or few nurses would be willing to disagree with a provider about care decisions	Manager reports some nurses would be willing to disagree with a provider about care decisions	Manager reports some nurses would be willing to disagree with a provider about care decisions	Manager reports most or all nurses would be willing to disagree with a provider about care decisions	Manager reports most or all nurses would be willing to disagree with a provider about care decisions

Process for handling disagreements		No formal mediation tools or processes for individuals to independently handle disagreements	Formal mediation tools or processes for individuals to independently handle disagreements (e.g. SBAR, key words)	No formal mediation tools or processes for individuals to independently handle disagreements	Formal mediation tools or processes for individuals to independently handle disagreements (e.g. SBAR, key words)

13. Communication & Coordination

Process for sharing information on care plans or status within and across disciplines

	1	2	3	4	5
Process for patient handoff	Some or all patient handoffs do not occur in person	Some or all patient handoffs do not occur in person	All patient handoffs consistently occur in person	All patient handoffs consistently occur in person	All patient handoffs consistently occur in person
Opportunities for interdisciplinary communication on the labor floor	Interdisciplinary communication occurs inconsistently between relevant care providers (e.g. only calling in other specialties when directly needed)	Interdisciplinary communication occurs consistently, but may not always involve all relevant care providers (e.g. limited private physician attendance to huddles)	Interdisciplinary communication occurs consistently, but may not always involve all relevant care providers (e.g. limited private physician attendance to huddles)	Interdisciplinary communication occurs consistently and includes all relevant care providers (e.g. daily huddle that includes all specialties relevant for current patient needs)	Interdisciplinary communication occurs consistently and includes all relevant care providers (e.g. daily huddle that includes all specialties relevant for current patient needs)
Situational awareness				There is no emphasis on situational awareness of all patients on the labor floor for frontline nurses and physicians	There is an emphasis on situational awareness of all patients on the labor floor for frontline nurses and physicians

14. Obstetrician Shared Patient Responsibility

Patient coverage system that creates shared accountability for labor and delivery unit outcomes

	1	2	3	4	5
Scheduled opportunities to care for other physicians' patients	Limited scheduled opportunities to care for patients outside practice group with the majority of physicians employed by many different practice groups and limited scheduled cross-coverage	Frequent scheduled opportunities to care for patients outside practice group with either the majority of physicians employed by a few different practice groups or prevalent scheduled cross-coverage	Limited scheduled opportunities to care for patients outside practice group with the majority of physicians employed by many different practice groups and limited scheduled cross-coverage	Frequent scheduled opportunities to care for patients outside practice group with either the majority of physicians employed by a few different practice groups or prevalent scheduled cross-coverage	All physicians are employed by a single practice group with a shared call pool
Unscheduled opportunities to care for or collaborate in care for other physicians' patients	Obstetricians do not step in to cover patients from a different call or practice group outside unless scheduled to do so (e.g. scheduled call	Obstetricians do not step in to cover patients from a different call or practice group outside unless scheduled to do so (e.g. scheduled call	Obstetricians often step in to cover patients from a different call or practice group, even when they are not scheduled to do so	Obstetricians often step in to cover patients from a different call or practice group, even when they are not scheduled to do so	

	or hospitalist role)	or hospitalist role)			

15. Quality Improvement Engagement

Process for engaging clinicians in and monitoring quality improvement efforts

	1	2	3	4	5
Engagement in quality improvement efforts	No or a limited number of clinicians or types of disciplines engaged in quality improvement efforts	Some clinicians and disciplines engaged in quality improvement efforts	All relevant care providers engaged in multidisciplinary improvement efforts	All relevant care providers engaged in multidisciplinary quality improvement efforts	All relevant care providers engaged in multidisciplinary quality improvement efforts
Strategies for communicating new initiatives			Limited strategies for communicating new quality improvement initiatives (e.g. only meetings with no follow-up)	Strong strategies for communicating new quality improvement initiatives (i.e. combinations of meetings, trainings, etc.)	Strong strategies for communicating new quality improvement initiatives (e.g. combinations of meetings, trainings, etc.)
Adjustment based on monitoring				Quality improvement efforts not regularly adjusted based on monitoring and/or feedback	Quality improvement efforts are regularly adjusted based on monitoring and/or feedback

16. Performance Reporting

Clinician awareness of and accountability for providing high quality care

	1	2	3	4	5
Group performance reporting	Limited or no reporting of group performance metrics (e.g. overall labor floor cesarean rate)	Some reporting of group performance metrics (e.g. reporting during meetings)	Some reporting of group performance metrics (e.g. reporting during meetings)	Some reporting of group performance metrics (e.g. reporting during meetings)	Some reporting of group performance metrics (e.g. reporting during meetings)
Individual performance reporting	Limited or no reporting of individual performance metrics (e.g. only length of stay and complications)	Limited or no reporting of individual performance metrics (e.g. only LOS and complications)	Some reporting of individual performance metrics (e.g. quarterly reports benchmarked to peers)	Some reporting of individual performance metrics (e.g. quarterly reports benchmarked to peers)	Some reporting of individual performance metrics (e.g. quarterly reports benchmarked to peers)
Consequences for performance			Individuals are not held accountable for their performance	Individuals are somewhat held accountable for their performance (e.g. discuss with manager)	Individuals are held accountable for their performance (e.g. create plan for normalizing rates)

Plough AC, Galvin G, Li Z, Lipsitz SR, Alidina S, Henrich NJ, et al. Relationship between labor and delivery unit management practices and maternal outcomes. Obstet Gynecol 2017; 130.
The authors provided this information as a supplement to their article.