



Improving Safety in Obstetrics with

DECISIONSUPPORT

Ensuring consistency of care and patient safety can be especially challenging in obstetrics—a complex specialty with unpredictable patient loads and nursing shortages. In addition, the expectations of the **O**B patient are arguably higher than those of patients in other areas of a hospital; each mother expects that her pregnancy will result in the delivery of a perfectly healthy baby.

Sainte-Justine, one of the leading institutions for maternal-fetal and pediatric medicine in Montreal, is well aware of this challenge. Their obstetrics department handles nearly 4,000 births each year and provides consultancy services for several thousand more through affiliated centers across the province. As the first step in a program to optimize patient care and safety, Dr. Robert Gauthier, a clinical professor in the Department of Obstetrics and Gynecology, University of Montreal, Sainte-Justine Hospital, instituted a clinical information system with a hard-wired decision support component.

When taking on this initiative, Dr. Gauthier had very specific goals in mind. First and foremost he wanted his department to be able to make better and timelier decisions in the diagnosis of dystocia—abnormally slow or difficult labor leading to potential fetal distress and/or maternal complications. In addition, he wanted to improve staff workflow and patient monitoring as well as simplify reporting and archiving tasks required to meet hospital quality standards.

Dystocia is loosely defined through conventional wisdom as the arrest of dilatation for a period of 2 to 4 hours or more, but wide variations in diagnostic standards can lead to both excessive intervention and, at the other extreme, delayed intervention with poor outcome. In the case of vaginal birth after cesarean (VBAC) this delay can lead to rare but devastating

The Sainte-Justine team is composed of more than 3,400 employees, 500 doctors, 1,100 nurses, 700 professionals, 125 researchers, 400 volunteers and more than 925 residents and students of all disciplines. As a level 4 medical center, it manages approximately 450 beds and 55 bassinets. More than 18,000 people are hospitalized each year at Sainte-Justine, and its 50 external clinics see more than 260,000 patients and perform 80,000 emergency consultations.

ery. The system implemented at Sainte-Justine generates a labor curve with a continuous indication of the limits of normal labor over time for the patient's specific parameters (i.e.: dilatation, cervical effacement, station, contraction frequency, epidural use; see Figure 1, pg. 42).

This system utilizes mathematical models to diagnose dystocia. Results from clinical studies with 11,000 patients in the United States and Canada have demonstrated that these models provide improvement in optimizing the use of cesarean sections (Hamilton et al., 2004). Other retrospective studies of cases with uterine rupture have shown that this catastrophic complication could have been identified several

hours in advance with this computerized analysis of labor progression (Hamilton et al., 2001).

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BY PAMELA J. HASWELL, MS, RAC, CQA, CQE

and costly outcomes such as uterine rupture, which has a high rate of associated birth-related brain damage.

Medical reports estimate that better care might reduce the incidence of birth-related brain injury by 33% to 50% (Ransom et al., 2003; Draper et al., 2002; JCAHO, 2004). The top contributors to these adverse outcomes include delay in recognition and response to abnormal fetal heart rate recordings and/or prolonged labor.

Dr. Gauthier was among the early adopters of a technology that provides decision support tools to assist clinicians with their clinical evaluations of labor and deliv-

According to Dr. Gauthier, "The Curve is a very effective way to follow patients; it provides a standardized approach in evaluating labor. With 40% of all cesareans performed due to failure to progress, this system really helps us to do better obstetrics. It provides me with information that was previously unavailable to support the diagnosis of dystocia. It offers objective and consistent data while always highlighting the normal limits of labor."

The system is especially useful for women who are attempting a VBAC. "We did a retrospective study on our patients who had uterine rupture, and it was clear through

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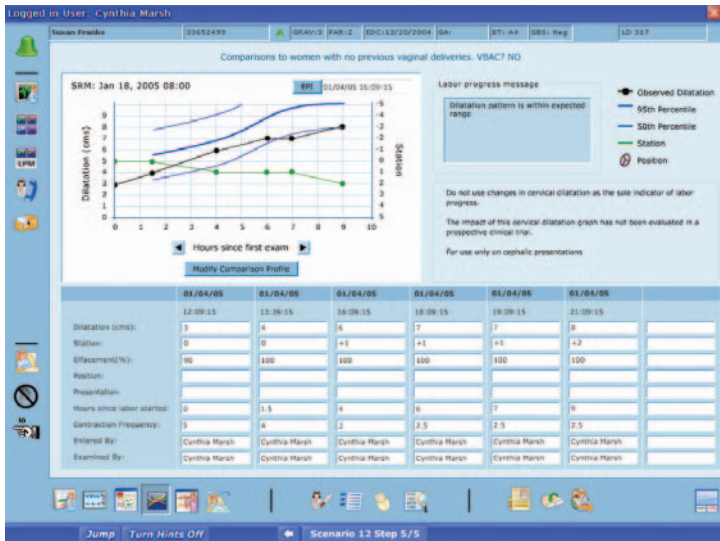


Figure 1: LMS CALM Curve Labor Progress Monitoring.

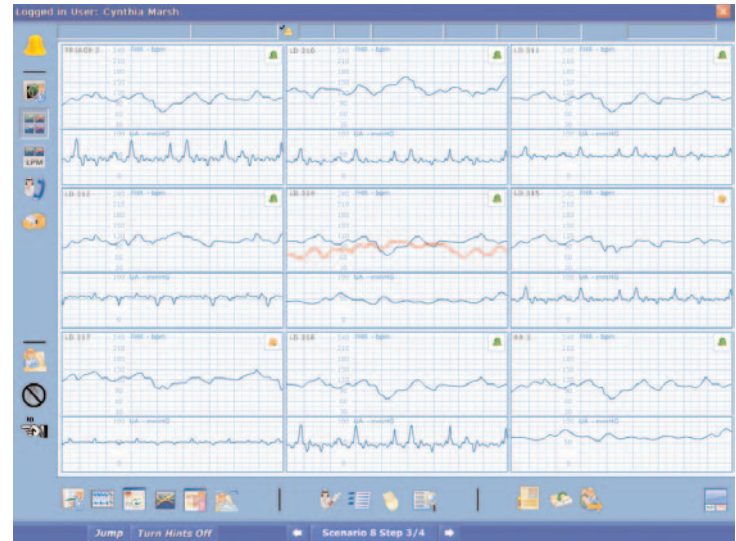


Figure 2: LMS CALM Surveillance Central Fetal Heart Rate Monitoring.

the system that dystocia plays a major role and that without a complex model this is difficult to recognize. Now we are able to be more prudent and intervene earlier with a cesarean in order to prevent uterine rupture” (Hamilton et al., 2001).

As part of daily practice at Sainte-Justine, the system enables the team to work through the challenges of labor management with improved coordination between physicians and nurses and a better evaluation of labor progress. According to Dr. Marie-Anouk Blain, an OB resident: “When the pace picks up in the OB ward, and everything seems to be happening at once, the curve provides us with a common vocabulary and standard measurements that we can all relate to. Clarity in communications leads to sound action plans.”

To meet his other goals of improving efficiency and workflow in the labor and delivery unit, Dr. Gauthier’s implementation of the clinical information side of the system provided “a standardized way of entering information, of obtaining statistics, and improving how we do our jobs on a daily basis. The clinicians use the reporting module of the system for gathering, structuring, and aggregating patient data.” The system has also been helpful for meeting quality standards. “We use it to perform our semi-annual audit. The system documents various statistics such as number of deliveries, gestational age, forceps use, and cesarean rate—all of which help us look back and evaluate our practice,” said Dr. Gauthier.

Further, the OB team relies heavily on the system for patient surveillance. “Because we can’t always be with the patient, it facilitates the way we do surveillance. Through centralized monitoring, we’ve got all the patient tracings on the screen (Figure 2). We can see right away if there is a

problem with a patient and get to her immediately,” said Dr. Gauthier.

Overall, the use of a clinical information system and decision support tool has provided the Sainte-Justine team with a strong position to continue providing high quality patient care in their obstetrical unit—by supporting smart workflow and optimal outcomes.

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Features of Decision Support and Clinical Information Systems in Obstetrics

A dynamic decision support (DDS) tool for obstetrics provides an embedded second opinion in the diagnosis of dystocia and a common vocabulary for sharing patient evaluations with others.

- Provide more accurate and objective diagnosis of dystocia, the lead cause of c-sections in the USA. DDS supplies a continuous assessment of the mother's labor progress, compared to the mean and outer limits of a reference population. This allows staff to clearly define when she has fallen outside the normal limits of labor based on pre-defined hospital and medical guidelines.
- Improve communication with team members. DDS provides a standard means of interpreting and communicating dystocia in labor. Graphical displays and numerical data create a common vocabulary for patient evaluations.
- Improve communication with patients. DDS demonstrates progress or non-progress of labor to patients through simple visual aids.
- See the effectiveness of actions. DDS plots the patient's progress as each new pelvic exam is performed; feedback on the impact of interventions allows adaptation of the course of action as needed.

A clinical information system (CIS) provides administrative and clinical support.

- Eliminate redundant charting. Through a CIS, information only needs to be entered once, and it will be available in all relevant views.
- Improve accuracy and completeness of documentation by entering data through a bedside CIS workstation as events occur and information is gathered.



- Decrease time spent searching for documents by utilizing CIS workstations installed wherever information access is crucial (at the bedside, nurse's station, and any other onsite location).
- Get reports fast. A CIS can quickly transform patient data into reports for quality and performance assessments for the unit and hospital.
- Archive information. CIS also provides archiving capabilities to ensure information will be stored and available based on hospital guidelines.

A CIS that provides surveillance and alerts can help staff effectively manage patients and maintain a high standard of care at all times.

- Monitor several patients at once. A CIS system with surveillance provides central monitoring capabilities with multiple views (beds, fetal tracings and labor progress curves) in a single screen, providing the status of all patients and quickly identifying a patient in need.
- Multitask. Most CIS systems provide split screen views that allow staff to chart in one screen while maintaining a watchful eye on patients through a surveillance screen.
- Keep track of patient status while moving around the unit. Through a CIS with distributed workstations patients can be monitored from any location.

A CIS with integrated DDS can provide an effective education tool that is woven into the daily care process.

- Visual displays and cues serve as learning aids, incite action, and demonstrate the effectiveness of interventions. Users are prompted to enter information and provide a certain path of care based on standard medical practice and hospital policy.