Canadian Stroke Best Practices

CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

Acute Stroke Management during Pregnancy

Consensus Statement

Intrapartum Obstetric Considerations

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STROKE IN PREGNANCY Writing Group and the
Canadian Stroke Best Practices and Quality Advisory Committees,
in collaboration with the Canadian Stroke Consortium

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Published Guidelines

Guideline	Recommendations
Timing of Delivery	
The American College of Obstetricians and Gynecologists ACOG Practice Bulletin No. 560. 2013 **Medically Indicated Late-Preterm and Early-Term Deliveries** **https://www.acog.org/-/media/Committee-Opinions/Committee-on-Obstetric-Practice/co560.pdf?dmc=1&ts=20160530T1140152843**	Includes recommendations for the timing of delivery when conditions complicate pregnancy at, or after 34 weeks of gestation. Maternal conditions include hypertension, pre-eclampsia and diabetes.
Fetal Monitoring	
Intrapartum Fetal Surveillance Clinical Guideline – Third Edition 2014 **The Royal Australian and New Zealand College of Obstetricians and Gynaecologists** **Assessed:** **https://www.ranzcog.edu.au/intrapartum-fetal-surveillance-clinical-guidelines.html**	20 recommendations IFS Clinical Guideline provides recommendations for monitoring women in labour in the absence or presence of recognised risk factors. Monitoring modalities under consideration include: intermittent auscultation, cardiotocograph (CTG), fetal blood sampling and intrauterine pressure catheters. Other areas covered in the Guideline include: maintaining standards, suggestions for the management of fetal heart rate patterns suggestive of fetal compromise, routine paired umbilical cord blood gas analysis and several trialled techniques for fetal monitoring including fetal pulse oximetry and fetal electrocardiogram (ECG)- ST segment analysis. There is also a section on the definition, diagnosis and emergency management of uterine hyperstimulation and new recommendations on amniotomy.
Liston R, Sawchuck D, Young D. **Fetal health surveillance: antepartum and intrapartum consensus guideline.** **Journal of obstetrics and gynaecology Canada: JOGC= Journal d'obstétrique et gynécologie du Canada: JOGC. 2007 Sep;29(9 Suppl 4):S9-21. (selected)** **http://sogc.org/wp-content/uploads/2013/01/gui197CPG0709r.pdf**	**Recommendation 7: Labour Support During Active Labour** 1. Women in active labour should receive continuous close support from an appropriately trained person. (I-A) **Recommendation 8: Professional One-to-One Care and Intrapartum Fetal Surveillance** Intensive fetal surveillance by intermittent auscultation or electronic fetal monitoring requires the continuous presence of nursing or midwifery staff. One-to-one care of the woman is recommended, recognizing that the nurse/midwife is really caring for two patients, the woman and her unborn baby. (III-C). **Recommendation 9: Intermittent Auscultation in Labour** 1. Intrapartum fetal surveillance for healthy term women in spontaneous labour in the absence of risk factors for adverse perinatal outcome.

Guideline	Recommendations
	Intermittent auscultation following an established protocol of surveillance and response is the recommended method of fetal surveillance; compared with EFM, it has lower intervention rates without evidence of compromising neonatal outcome. (I-B). 2. Epidural analgesia and intermittent auscultation. Intermittent auscultation may be used to monitor the fetus when epidural analgesia is used during labour, provided that a protocol is in place for frequent IA assessment (e.g., every 5 minutes for 30 minutes after epidural initiation and after bolus top-ups as long as maternal vital signs are normal). (III-B). **Recommendation 10: Admission Fetal Heart Test** 1. Admission fetal heart tracings are not recommended for healthy women at term in labour in the absence of risk factors for adverse perinatal outcome, as there is no evident benefit. (I-A) 2. Admission fetal heart tracings are recommended for women with risk factors for adverse perinatal outcome. (III-B). **Recommendation 11: Intrapartum Fetal Surveillance for Women with Risk Factors for Adverse Perinatal Outcome** 1. Electronic fetal monitoring is recommended for pregnancies at risk of adverse perinatal outcome. (II-A)
The American College of Obstetricians and Gynecologists ACOG Practice Bulletin No. 106: **Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation, and General Management Principles** **Obstetrics and Gynecology. 2009 Jul;114(1):192.**	The purpose of the document is to review nomenclature for fetal heart rate assessment, review the data on the efficacy of EFM, delineate the strengths and shortcomings of EFM, and describe a system for EFM classification.

Evidence Tables

Type of Delivery

Study/Type	Sample Description	Method	Outcomes	Key Findings and Recommendations
Lin et al. 2008 **China** **Retrospective study**	987,010 singleton deliveries from 1998-2002 recorded in a nationwide population database	The outcomes of women who delivered vaginally were compared to those who delivered by Cesarean section (CS).	The use of emergency services or hospitalization for any stroke following delivery (3, 6 and 12 months)	Overall, 33.9% of the study population had CS. Women undergoing CS had significantly higher postpartum stroke rates than those having vaginal delivery at all 3 time periods. 3 months: HR=1.67, 95% CI 1.29-2.16, p<0.001 6 months: HR=1.61, 95% CI 1.31-1.98, p<0.001 12 months: HR=1.49, 95% CI 1.27-1.76, p<0.001
Lanska & Kryscio 2000 **USA** **Retrospective study**	Records of 1,408,015 deliveries from 900 hospitals were reviewed.	Nationally representative estimates of peripartum and postpartum stroke were calculated using data from the Healthcare Cost and Utilization Project, which representing 20% of hospitals nationwide. Models were developed to identify independent risk factors for stroke.	Stroke incidence and risk factors	There were 183 cases of peripartum stroke and 170 cases of peripartum intracranial venous thrombosis (IVT) Estimated risks were: 13.1 cases of peripartum stroke per 100,000 deliveries; 11.6 cases of peripartum IVT per 100,000 deliveries Cesarean delivery, compared to vaginal delivery, was a significant independent predictor of Stroke: 34.3% vs. 7.1%, p<<0.001; OR=3.56; 95% CI 2.62-4.83 IVT: 26.6% vs. 7.4%, p<<0.001; OR= 3.10; 95% CI 0.81-3.37 Stroke + IVT 60.9% vs. 14.5%, p<<0.001; OR= 1.38; 95% CI 0.86- 2.23 Cesarean delivery was a strong and highly significant predictor of both stroke and IVT in both the peripartum and postpartum period.

Fetal Monitoring

Study/Type	Sample Description	Method	Outcomes	Key Findings and Recommendations
Chen et al. 2011 **USA**	1,732,211 singleton births, included in the US 2004 birth cohort linked birth/infant death database. Newborns with	The risk of fetal death/morbidity associated with electronic	**Primary outcomes:** Neonatal and infant mortality, within 1 year of	89% of all women had EFM. There were 1,568 deaths in the early neonatal period

Study/Type	Sample Description	Method	Outcomes	Key Findings and Recommendations
Retrospective study	congenital malformations were excluded as were births by repeat cesarean sections.	fetal heart rate monitoring (EFM) during labour was estimated. Exposure to EFM was classified as yes/no.	birth Analysis was adjusted for maternal age, race/ethnicity, marital status, education, tobacco use, ETOH use and infant's sex.	(within the first 6 days), 919 deaths during the late neonatal period (7-27 days) and 2,927 deaths in the post neonatal period (28-364 days). The risk of early neonatal death was reduced significantly among women with exposure to EFM (RR=0.75, 95% CI 0.69-0.81). The use of EFM was not associated with a significant reduction in the risk of late neonatal or post neonatal death. The use of EFM was associated with a significant reduction in the risk an Apgar score < 4 at 5 min (RR=0.54, 95% CI 0.49-0.59). Among high-risk pregnancies, the risk of an Apgar score of < 4 or neonatal seizures was reduced significantly among women with exposure to EFM (RR=0.45, 95% CI 0.40-0.50). The NNT to monitor to prevent a single neonatal death was lowest at gestational age 24-27 weeks (NNT=12, 95% CI 9-17) and highest at ≥37 weeks (NNT=10,949, 95% CI 6,275-42,921)
Thacker et al. 1998 **USA** **Systematic review & Meta-analysis**	12 RCTs published from 1966-1994 examining the intrapartum use of electronic fetal monitoring	The treatment contrast of interest was the efficacy of continuous EFM vs. auscultations	Measures of morbidity, and mortality and complications	The risks of the outcomes associated with EFM relative to auscultations were: 1-minute Apgar score <7: RR=1.02, 95% CI 0.90-1.14 1-minute Apgar score <4: RR=0.82, 95% CI 0.65-0.98 Neonatal seizures: RR=0.50, 95% CI 0.30-0.82 Neonatal ICU admissions: RR=0.91, 95% CI 0.69-1.14 Perinatal death: RR=0.76, 95% CI 1.04-1.39 Cesarean delivery: RR=1.21, 95% CI 1.04-1.39. Risk of cesarean delivery was increased significantly in low-risk pregnancy (RR= 2.05, 95% CI, 1.00-3.12) vs. high-risk (RR= 1.47, 95% CI, 1.06-1.90).

Study/Type	Sample Description	Method	Outcomes	Key Findings and Recommendations
				Operative delivery: RR=1.23, 95% CI 1.15-1.31

Reference List

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