Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg	**Practice Guideline:** *Induction and Augmentation of Labour*	
CLINICAL PRACTICE GUIDELINE	**Approval Date:** *April 2024*	**Page:** ***1*** *of* ***20***
		Supersedes: *Induction and Augmentation of Labour and Cervical Ripening (2017)*

The following is a suggested guideline and does not replace ongoing clinical assessment and professional judgment.

1.0 PRACTICE OUTCOME

1.1 To promote the effective and safe use of medications for induction of labour (IOL) OR augmentation of labour.

2.0 DEFINITIONS

2.1 **Active labour**: Regular uterine contractions approximately every 3-5 minutes of sufficient strength to cause cervical dilatation and /or effacement. Traditionally diagnosed when the cervix is 3-4 cm dilated in nulliparous women/persons or 4-5 cm dilated in parous women/persons (S. Moola, 2018).

2.2 **Augmentation of labour**: Implementing a medical intervention to increase the frequency or efficacy of naturally occurring contractions (Webster, J, et al. 2020).

2.3 **Induction of labour (IOL)**: The artificial initiation of labour before its spontaneous onset (Robinson, d. et al, 2023).

2.4 **Most Responsible Provider (MRP)**: A regulated healthcare professional, who has overall responsibility for directing and coordinating the care and management of a patient at a specific point in time. For the purpose of this guideline MRP will refer to obstetricians, family physicians and midwives.

2.5 **Oxytocin Stable Rate**: Unchanged oxytocin dose has been achieved for 60 minutes.

2.6 Synthetic Oxytocin (oxytocin) – A synthetic preparation of Oxytocin with properties similar in action. When administered intravenously, oxytocin stimulates uterine activity. Synthetic Oxytocin has a half-life of 1-6 minutes and a time to steady plasma concentration of 40 minutes (Drug bank online, 2023). Contractions will subside within 1 hour after IV administration is stopped.

2.7 **Tachysystole**: Uterine contraction pattern that is:

- More than 5 contractions in any 10-minute period averaged over 30 minutes, OR
- Contraction lasting greater than 90 seconds, OR
- Resting period between contractions is less than 30 seconds, OR
- The uterus remains firm or greater than 25 mm Hg between contractions (Dore, S. & Ehman, W., 2020)

2.8 **Unfavorable cervix**: Modified Bishop Score less than 7 (Appendix A).

3.0 RISKS

3.1 Informed consent for IOL requires discussion of associated risks including:

- Failure to establish labour

- Tachysystole with or without fetal heart rate changes
- Prolonged rupture of membranes and/or more frequent pelvic exams
- Uterine rupture
- Assisted vaginal birth or cesarean delivery
- Postpartum hemorrhage
- Adverse neonatal outcomes associated with iatrogenic preterm or early term birth

4.0 CONTRAINDICATIONS

4.1 Abnormal fetal lie or presentation (e.g. transverse lie or footling breech)

4.2 Active genital herpes

4.3 Invasive cervical carcinoma

4.4 Lack of patient consent

4.5 Pelvic structural deformities that preclude a successful vaginal delivery

4.6 Placenta previa, vasa previa, invasive placentation, or cord presentation

4.7 Prior classical or inverted-T uterine incision

4.8 Prior uterine rupture

4.9 Significant prior uterine surgery (e.g., full thickness myomectomy), informed by a prior operative report

5.0 GUIDELINES

5.1 IOL should be offered when the modified Bishop score (Appendix A) is greater than or equal to 7 or in term pre-labour rupture of membranes (PROM) - modified Bishop score is not required in these cases. If the modified Bishop score is less than 7 and indication of induction is warranted, cervical ripening is recommended, see Cervical Ripening guideline.

5.2 An Induction Booking Form should be completed prior to the induction.

5.3 Midwives consult a physician prior to induction/augmentation.

5.4 The MRP completes an in-person assessment of the patient prior to ordering induction or augmentation to assess intervention appropriateness as well as review risks and benefits of the proposed treatment plan to ensure there is informed consent with the patient. This assessment may occur prior to admission and should be documented on the prenatal record/induction booking form.

5.5 Physician order for the chosen intervention is obtained.

5.6 Prior to the administration of induction/augmentation medication:

5.6.1 An electronic fetal monitoring (EFM) strip is reviewed and discussed with the MRP.

5.6.2 Patient's vital signs are recorded in the medical record.

5.6.3 Physician, resident, nurse or midwife enters the following information in a progress note (PN):

- Indication for induction/augmentation of labour
- Discussion that took place with the patient for consent to induction of labour (this is documented by the MRP either prior to admission in the prenatal record OR in hospital when consent is obtained)

- Description of the fetal heart rate pattern
- Description of the most recent cervical exam with modified Bishop score, if applicable (with the exception of term PPROM) (Appendix A)
- Description of the fetal lie observed through Leopold's maneuvers and/or point of care ultrasound findings

5.6.4 After the administration of induction agent, document the intervention performed and the time of administration in the medication administration record (MAR) and Birth Summary.

6.0 PROCEDURES

6.1 Oxytocin

6.1.1 The patient hand out "Oxytocin to start or advance labour: 5 questions to ask" (Appendix B) can be used to assist the MRP in discussion regarding oxytocin use.

6.1.2 The Pre-use Oxytocin Safety Checklists (Appendix C) and In-use Oxytocin Safety Checklist (Appendix D) should be used before and during oxytocin induction or augmentation.

6.1.3 Oxytocin is administered intravenously (IV) by a nurse/midwife with specific training to administer oxytocin for induction and/or augmentation of labour. A 1:1 patient to nurse/midwife ratio is required.

6.1.4 Oxytocin is a high alert medication, see Provincial High-Alert Medication List and requires an independent double check at the following times:

- When adding oxytocin to an IV infusion bag.
- When setting the initial infusion rate with the infusion pump medication program calculator.
- When changing the infusion bag.
- At shift change to confirm solution concentration and rate of administration.

6.1.5 Titrate oxytocin using one of the protocols listed below (Appendix E)

- Very low-rate protocol - start at 1 mU/minute, increase oxytocin at 30-minute intervals by 1 mU/minute until the minimum rate to achieve an adequate contraction pattern and progressive cervical dilatation.
- Low-rate protocol - start at 2 mU/minute, increase oxytocin at 30-minute intervals by 2 mU/minute until the minimum rate required to achieve an adequate contraction pattern **and** progressive cervical dilatation.
  Note: As contractions increase in frequency and strength, clinical judgement is used to decide if oxytocin increments should remain at 2 mU/minute or increase by 1 mU/minute.
- Expedited-rate protocol - start at 4 mU/min, increase oxytocin at 30-minute intervals by 4 mU/minute until the minimum rate required to achieve an adequate contraction pattern **and** progressive cervical dilatation.
  Note: As contractions increase in frequency and strength, clinical judgement is used to decide if oxytocin increments should remain at 4 mU/minute or increase more gradually (i.e. 1-2 mU/minute).

Absolute Contraindications for using the expedited-rate protocol includes:

- Trial of labour after cesarean (TOLAC)

- Parity greater than or equal to 5
- Second stage of labour
- Augmentation of labour

Note: If a care provider would like to order rate increases at a different regimen than the protocols above, this can be specified in their order.

6.1.6 When oxytocin infusions reach 40 mU/minute, review with MRP or a consult with Obstetrics is required.

6.1.7 The initiation of oxytocin induction and/or augmentation may be considered **AFTER** the following time intervals:

- Balloon catheter - Immediately after insertion
- Cervidil® (Dinoprostone) Vaginal insert - 30 minutes after removal
- Prostin® (Dinoprostone) Gel - 6 hours after administration
- Vaginal misoprostol - 4 hours after administration of last dose
- Oral misoprostol - 2 hours after administration of last dose

6.1.8 See Adult Parenteral Drug Monograph for Oxytocin for Labour Induction/Augmentation.

6.1.9 Provide continuous electronic fetal monitoring (EFM) during oxytocin titration or augmentation. Assess and document fetal hear rate (FHR) every 15 minutes. See the Fetal Health Surveillance, Intrapartum provincial guideline for more information.

6.1.10 Assess and document uterine activity, including frequency (number of contractions in 10 minutes), duration, intensity, and resting tone, prior to each dosage increase or at a minimum of every 30 minutes

6.1.11 Assess and document patient's Blood pressure (BP), respiratory rate (RR) and pulse every 1 (one) hour if within normal limits or more frequently as the patient's condition dictated.

6.1.12 Assess and document patient's Temperature (T) every 4 (four) hours for intact membranes OR every 2 (two) hours for ruptured membranes if within normal limits or more frequently if the patient's condition dictates.

6.1.13 If an intrauterine pressure catheter (IUPC) is in use:

- Peak intrauterine pressures should be between 40-80 mmHg
- Baseline pressures (resting tone) should be 5-25 mmHg (Validate uterine resting tone by palpation between contractions, should feel soft)
- Adequate Montevideo units (MVU) to achieve progress in labour varies depending on the clinical context but can range from 180 to 300 MVU or more.

6.1.14 During oxytocin **IOL,** when oxytocin is at a stable rate AND the birthing person and fetal status is normal, breaks in continuous EFM for up to 30 minutes may occur. During this time, monitor the fetal heart rate with intermittent auscultation at 15 minutes.

6.1.15 Document the following additional information during the oxytocin infusion:

- Time oxytocin was initiated on the obstetrical labour record, Birth Summary and the EFM Strip.

- Increases, decreases, or discontinuation in the rate of oxytocin infusion on the Obstetrical Labour Record and the EFM strip.
- Time of oxytocin initiation and all bag changes in the Medication Administration Record (MAR) or Electronic Patient Record.
- Fluid intake and output on the Fluid Balance sheet.

6.1.16 Once active labour is established or membranes are ruptured, there is increased myometrial activity. Therefore, the rate of oxytocin may need to be reduced. Discuss with the MRP.

6.1.17 If tachysystole with a **normal** FHR pattern occurs, discuss decreasing the oxytocin with the MRP.

6.1.18 If tachysystole with an **atypical** FHR pattern OR a normal contraction pattern with an **atypical** FHR pattern is detected, discuss decreasing the oxytocin with the MRP. See Fetal Health Surveillance - Intrapartum guideline.

6.1.19 If tachysystole with an **abnormal** FHR pattern OR a normal contraction pattern with an **abnormal** FHR pattern is detected, stop oxytocin and call the MRP. See Fetal Health Surveillance - Intrapartum guideline (Appendix F).

6.1.20 If the oxytocin has been discontinued, as part of the intrauterine resuscitation method, contact MRP for orders indicating when and at what rate to restart the oxytocin infusion.

6.1.21 If oxytocin has been discontinued for less than or equal to 30 minutes, consider starting the oxytocin at ½ the last dose. If oxytocin has been decreased for greater than 30 minutes consider restarting dose at 1, 2 or 4 mu/minute (depending on the oxytocin protocol selected). Confirmed this with the MRP as identified in 6.1.20.

6.1.22 If oxytocin has been discontinued and cervical ripening is needed, a cervical ripening agent may be administered 30 minutes following the discontinuation of oxytocin.

6.2 Titrated Oral Misoprostol for Induction of Labour

6.2.1 Staff may use the Misoprostol Safety Checklist (Appendix G) prior to administration of each misoprostol dose.

6.2.2 Misoprostol is on the Hazardous Medication list as a non-cytotoxic hazardous medication. As per the WRHA policy safe handling of medications (cytotoxic and non-cytotoxic) 110.160.010.

- Exam gloves are to be worn while handling misoprostol
- Dissolved doses must be prepared immediately prior to administration and the leftover is discarded immediately

6.2.3 The preparation of titrated oral misoprostol requires a 2-person check.

6.2.4 Dissolve misoprostol as per the oral misoprostol dissolve and dose instructions (Appendix H) giving the patient the required dose to drink every 2 hours

6.2.5 Ensure that any excess misoprostol solution is discarded in a pharmaceutical waste container immediately prior to administration as per regional safe handling of hazardous medications (cytotoxic and non-cytotoxic) – dissolve and dose preparation.

6.2.6 Using one of the dosing protocols for induction of labour with misoprostol (Appendix I) initiate and titrate the dosage until active labour is achieved. The dose of medication should be titrated to ensure a contraction pattern that is adequate for progressive cervical change. The dose should not exceed 50 mcg. If the MRP would like to order a different protocol this can be specified in their order. **All protocols should start at 20 mcg of misoprostol** and the dose should be repeated at least once prior to titrating up to the next dose.

6.2.7 Healthcare providers may decide to decrease or maintain an existing dose rather than increase it at any time throughout the induction based on the patient's clinical response.

6.2.8 The dose at which labour is achieved should be maintained once regular contractions and effective cervical change is achieved.

6.2.9 If tachysystole with a **normal** FHR pattern occurs, discuss holding or decreasing the misoprostol dose with the MRP.

6.2.10 If tachysystole with an **atypical** FHR pattern OR a normal contraction pattern with an **atypical** FHR pattern is detected, discuss holding or decreasing the misoprostol dose with the MRP.

6.2.11 If tachysystole with an **abnormal** FHR pattern OR a normal contraction pattern with an **abnormal** FHR pattern is detected, hold misoprostol and call MRP.

6.2.12 If labour is not successfully achieved by the third dose of 50 mcg of misoprostol or after 24 hours has passed (whichever comes first), an alternate plan for IOL should be considered.

6.2.13 Assess and record patient's vital signs every 2 hours if within normal limits or more frequently if the patient's condition dictates.

6.2.14 Until active labour is achieved, monitor FHR for 30 minutes post dose. The patient may then ambulate until the next dose or until contractions start. After subsequent doses, monitor FHR for 60 minutes post dose. If the FHR tracing is normal, the patient may ambulate with FHR assessment with intermittent auscultation (IA) every 15 minutes x 4. If IA is abnormal, start continuous EFM. Once the patient is in active labor initiate continuous EFM.

6.3 Vaginal or Sublingual Misoprostol for Induction of Labour for Perinatal Loss (including medical inductions) up to 28 weeks and 6 days

6.3.1 May be used with caution for patients with a previous lower segment cesarean birth.

6.3.2 For inpatient use only.

6.3.3 Vaginal misoprostol can be administered by the MRP. Sublingual or buccal misoprostol can be administered by a nurse. Dosing for all routes available in Appendix J.

6.3.4 If administered vaginally, put into the posterior fornix with minimal lubricant as the medication is absorbed into the lubricant thereby decreasing its bioavailability.

6.3.5 Monitor and document patient's vital signs including uterine activity as follows:

- Before active labour is established: 30 minutes X 1 after each dose, then as needed until active labour

- Once active labour is established: every 2 (two) hours in active labour if within normal limits or more frequently if patient's condition dictates.

7.0 REFERENCES:

(1) Dore, S. & Ehman, W. (2020). No. 296-Fetal Health Surveillance: Intrapartum Consensus Guideline. Journal od Obstetrics and Gynaecologists of Canada. 42(3):316-348. https://doi.org?10.1016/j.jogc.2019.05.007

(2) Drugband online. (2023). Oxytocin. Available at http://go.drugbank.com/drugs/DB0017. Assessed on June 28, 2023.

(3) Burnett, J.E. 1966. "Preinduction scoring: an objective approach to induction of labour". Obstet. Gynecol. 28: 479-83. https://doi.org/10.7860/JCDR/2015/12315.5970.

(4) Leathersich, S.J., Vogel, J.P., Tran, T.S., & Hofmeyr, G.L. 2018. "Acute tocolysis for uterine tachysytole or suspected fetal distress". Cochrane Database systematic Review.7:CD009770. https://doi.org/10.1002/14651858.CD009970.puib2.

(5) Moola, S. 2018. "Family-centered maternity and newborn care; national guidelines". Public Health Agency of Canada. Chapter 4: Care During Labour and Birth. Ottawa; 1-81.

(6) Robinson, d., Campbell, K, & Hobson, S., et al. 2023. "Guideline No. 432a: cervical ripening and induction of labour – general information". Society of Obstetricians and Gynaecologists of Canada (SOGC). 45(1): 35-44. https://doi.org/10.1016/jocg.2022.11.005.

(7) Robinson, d., Campbell, K, & Hobson, S., et al. 2023. "Guideline No. 432b: cervical ripening". Society of Obstetricians and Gynaecologists of Canada (SOGC). 45(1): 56-62. https://doi.org/10.1016/j.jogc.2022.11.007.

(8) Robinson, d., Campbell, K, & Hobson, S., et al. 2023. "Guideline No. 432c: induction of labour". Society of Obstetricians and Gynaecologists of Canada (SOGC). 45(1): 70-7. https://doi.org/10.1016/j.jogc.2022.11.009. Retrieved from Abortion care guideline (who.int)

(9) World Health Organization (WHO). 2022 "Abortion care guideline", License: CC BY-NC-SA 3.0 IGA

(10) Zwerling, B., Edelman, A., Jackson, A., et. al. 2023. "Society of family planning clinical recommendation: medication abortion between 14 0/7 and 27 6/7 weeks of gestation". Conception. 0010-7824. https://doi.org/10.1016/j.contraception.2023.110143.

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APPENDIX A: Modified Bishop Scoring System

Modified Bishop Scoring System			
	Score		
Factor	**0**	**1**	**2**
Dilatation (cm)	0	1-2	3-4
Cervical Length (cm) (previously effacement)	Greater than or equal to 4 (0-30%)	2-3 (31%-50%)	Less than 1-2 (51%-80%)
Consistency	Firm	Medium	Soft
Position	Posterior	Mid	Anterior
Station	-3	-2	-1/0

Burnett JE Jr. Preinduction scoring: an objective approach to induction of labor. Obstet Gynecol 1966;28:479–83.

APPENDIX B: **Oxytocin to Start or Advance Labour: 5 questions to ask**

Oxytocin-Questions-EN (ismp-canada.org)

Oxytocin to Start or Advance Labour:
5 Questions to Ask

1. What is oxytocin?

- Oxytocin is a hormone that is produced naturally in pregnancy to make the uterus contract. When the uterus contracts, it is called labour.
- Oxytocin is also a medicine that is given during labour if the natural supply is not enough.

2. Why is it used and what are the benefits?

- To help start labour (induction), or
- To help advance labour (augmentation) when the time between contractions is too long, the length of contractions is too short, or contractions are too weak.
- Oxytocin helps the uterus contract. The contractions open the cervix and help your baby move down into the birth canal.
- Oxytocin should only be used when the benefits of delivery outweigh the risks of continuing the pregnancy.
- Benefits may include being able to have a vaginal birth and not requiring a Caesarean delivery (C-section).
- In Canada, 8 out of 10 patients who received oxytocin to start or advance labour gave birth vaginally.[1]

3. Proper Use: How is it given?

- Oxytocin to start or advance labour is given intravenously using a pump to control the amount of medicine you receive.
- The medicine will start at a low dose and then will be increased gradually to get the right contraction pattern for you.
- In some cases, if the contractions are affecting the baby's heart rate or if the contractions are too close together, your health care provider may reduce or stop the oxytocin.

4. What are the risks?

- Risks to you and your baby can vary depending on your past or current health factors (e.g., heart condition, blood pressure).

Risks to the baby may include:	Risks to you may include:
• heart rate changes (e.g., slow heartbeat) due to overly strong or frequent contractions • shortage of oxygen due to overly strong or frequent contractions	• increased labour pain • fast/irregular heart rate or changes in blood pressure • heavy bleeding or post-partum bleeding • strong contractions that are too long or too frequent • headache, nausea, vomiting • tear in the uterus requiring an emergency C-section (rare)
Rarely oxytocin may cause serious or life-threatening harm to you or your baby, so it is important to have already discussed the risks and benefits of oxytocin use with your doctor or midwife before treatment is started.	

- Other options may include waiting for labour to start, having a C-section, or using other medicines, each of which has its own benefits and risks—discuss with your doctor or midwife to determine what is best for you and your baby.

5. Monitor: What do I watch for?

- Your baby's heart rate and your contractions will be closely monitored using a fetal monitor.
- Your health care team will check on you often and watch over your labour closely.
- Your contractions, blood pressure, and heart rate will be checked regularly.
- You may need to have pain medicine to help you with the pain of labour. You will be provided with choices to manage your pain.
- Let your health care team know right away if you have:
  - sudden onset of severe abdominal pain
  - heavy bleeding from your vagina

For more information about induction of labour visit:
www.pregnancyinfo.ca/birth/labour/induction/

Questions and Notes

[1] Source: Discharge Abstract Database/Hospital Morbidity Database, 2019–2020, Canadian Institute for Health Information (CIHI).

Development of this resource was funded through the Canadian Medication Safety Coalition.

APPENDIX C: Pre-Use Oxytocin Safety Checklist[1]

If the following checklist cannot be completed, oxytocin should not be initiated.

- ☐ Current history, physical and prenatal record in the chart[2]
- ☐ Indication for induction or augmentation with oxytocin is documented in the patient's health record
- ☐ Patient demonstrated understanding of benefits and risks associated with oxytocin administration and verbal consent is received and documented by MRP in patient's medical record
- ☐ Patient has no contraindications for vaginal delivery
- ☐ Unit acuity has been assessed and MRP and/or other health care team members are aware of the induction/augmentation and are readily available in the event of an emergency
- ☐ Cervical status is assessed and documented, including modified Bishop score; unless rupture of membranes and GBS positive
- ☐ Fetal presentation is assessed and documented
- ☐ Appropriate fetal health surveillance (FHS) assessment has been performed. The fetal heart rate (FHR) pattern is normal and has been documented
- ☐ Order signed and in chart

Notes:

1. Low-risk pregnant patients: This checklist was developed to support the safe management of pregnant patients whose labour is induced or augmented with oxytocin and focuses on low-risk patients with a singleton, cephalic, term pregnancy. It may also be applicable to patients outside of this definition.
2. This may be delayed for non-elective admissions. Hospitals should obtain the patients Manitoba Prenatal Record part 1 and 2; however, in the event it is not available, the MRP should perform a thorough assessment of the patient (including collecting past clinical history and Bishop score) to determine eligibility for oxytocin.

This checklist represents a guideline for care: however, individualized medical care is directed by the MRP.

Source: Adapted from the Provincial Council for Maternal and Child Health Pre-Use Oxytocin Checklist, January 2022. Pre-and-in-Use Oxytocin Safety Checklist

APPENDIX D: In-Use Oxytocin Safety Checklist[1]

This checklist should be successfully completed every 30 minutes (+/- 5 minutes) while oxytocin is in use.

***If this checklist cannot be completed discuss decreasing the oxytocin with the MRP within 30 minutes, if this discussion cannot occur in the allotted time decrease or stop the oxytocin.**

***If the fetal heart rate tracing is abnormal stop oxytocin and call the MRP**

- Continuous Electronic Fetal Monitoring (EFM) assessment shows:
  - ☐ Normal EFM tracing of each of the two 15-minute (+/- 5 minutes) segments of FHS in the last 30 minutes (i.e. baseline within normal range, moderate variability, No decelerations or non-repetitive uncomplicated decelerations).
  - ☐ No more than one 15-minute segment where the EFM is Atypical.
  - ☐ No more than 1 late deceleration occurred within the previous 30 minutes.
  - ☐ No more than 2 complicated variable decelerations within the previous 30 minutes.

- Uterine contractions
  - ☐ No more than 5 contractions in a 10-minute window, averaged over 30 minutes.
  - ☐ No contraction with a duration greater than 90 seconds.
  - ☐ Uterus palpates soft between contractions for a minimum of 30 seconds.
  - ☐ If an intrauterine pressure catheter (IUPC) is in place, measured uterine resting tone is less than 25 mm Hg for at least 30 seconds between each contraction.

Notes:

1. Low-risk pregnant patients: This checklist was developed to support the safe management of pregnant patients whose labour is induced or augmented with oxytocin and focuses on low-risk patients with a singleton, cephalic, term pregnancy. It may also be applicable to patients outside of this definition.

This checklist represents a guideline for care: however, individualized medical care is directed by the MRP. If oxytocin is stopped, the pre-use oxytocin checklist should be reviewed before oxytocin is restarted.

Source: Adapted firm the Provincial Council for Maternal and Child Health Pre-Use Oxytocin Checklist, January 2022. Pre-and-in-Use Oxytocin Safety Checklist

APPENDIX E: Oxytocin Titration Table

10 units in 500mL NS (Baxter Colleague)	
Milliunits/minute	*mL/h*
1	3
2	6
3	9
4	12
5	15
6	18
7	21
8	24
9	27
10	30
11	33
12	36
13	39
14	42
15	45
16	48
17	51
18	54
19	57
20	60
21	63
22	66
23	69
24	72
25	75
26	78
27	81
28	84
29	87
30	90
31	93
32	96
33	99
34	102
35	105
36	108
37	111
38	114
39	117
40	120
41	123
42	126
43	129
44	132
45	135
46	138
47	141
48	144
49	147
50	150

Very low-rate protocol

Start at 1 mU/minute, increase oxytocin at 30-minute intervals by 1 mU/minutes until the minimum rate to achieve an adequate contraction pattern **AND** progressive cervical dilatation.

Low-rate protocol

Start at 2 mU/minute, increase oxytocin at 30-minute intervals by 2 mU/minute until the minimum rate to achieve an adequate contraction pattern **AND** progressive cervical dilatation. As contractions increase in frequency and strength, clinical assessments are used to determine if oxytocin increases should remain at 2 or go up by a smaller increment.

Expedited-rate protocol

Start at 4 mU/minute, increase oxytocin at 30-minute intervals by 4 mU/minute until the minimum rate required to achieve an adequate contraction pattern **AND** progressive cervical dilatation. As contractions increase in frequency and strength, clinical assessments are used to determine if oxytocin increases should remain at 4 or go up by a smaller increment.

30 units in 500mL NS (BBraun Infusomat)	
Milliunits/minute	*mL/h*
1	1.1
2	2.2
3	3.3
4	4.4
5	5.5
6	6.7
7	7.8
8	8.9
9	10
10	11.1
11	12.2
12	13.3
13	14.4
14	15.5
15	16.7
16	17.7
17	18.9
18	20
19	21
20	22.2
21	23.3
22	24.4
23	25.5
24	26.6
25	27.8
26	28.9
27	30
28	31
29	32.1
30	33.3
31	34.4
32	35.5
33	36.6
34	37.7
35	38.9
36	40
37	41
38	42.2
39	43.3
40	44.4
41	45.5
42	46.6
43	47.7
44	48.8
45	50
46	51
47	52.2
48	53.3
49	54.4
50	55.5

APPENDIX F - Management of Tachysystole with an Abnormal Fetal Heart Rate Pattern

1. Immediately notify the obstetrical care provider on call, and document communication in a progress note
2. Call the charge nurse
3. Perform a vaginal exam to assess progress, and diagnose/manage cord prolapse if present
4. Remove Cervidil® vaginal insert if in situ
5. Stop oxytocin
6. Turn the patient to a lateral position
7. Improve hydration with an IV bolus (if needed)
8. Consider nitroglycerin (spray or sublingual tabs) when required and ordered by the physician (Appendix K).
9. Prepare the patient for an emergency cesarean section if required

Note: When an abnormal tracing is apparent, attempts at intrauterine resuscitation continue while the attending obstetrical provider/senior resident is called to review the overall clinical situation. Consider obtaining scalp pH/lactate (if appropriate), and prepare for delivery.

APPENDIX G - Misoprostol Safety Checklist

To be answered with "yes" to all PRIOR to administering the next dose.

If "no" to any, contact physician prior to giving next dose.

1. Is the fetal heart rate normal prior to the dose? **Yes or No**
2. Is the patient experiencing less than or equal to 5 contractions in 10 minutes averaged over 30 minutes? **Yes or No**
3. Is there an ABSENCE of continuous pain? **Yes or No**
4. Are the patient's vital signs within normal range? **Yes or No**

Fetal heart rate normal	**Normal uterine activity** • Continue with dosing regimen	**Tachysystole** • Discuss with care provider
Fetal heart rate atypical/ abnormal	**Normal uterine activity** • Initiate intrauterine resuscitation (Appendix F)	**Tachysystole** • Initiate intrauterine resuscitation (Appendix F) and prepare emergent C/S if not resolving

APPENDIX H - Oral Misoprostol Dissolve and Dose Instructions

Supplies needed:

- misoprostol 50 mcg
- **Oral** syringe 30 mL size with cap (do not use sterile parenteral syringe)
- 10 mL water (tap, distilled or sterile)

OR

- misoprostol 100 mcg
- **Oral** syringe 30 mL size with cap (do not use sterile parenteral syringe)
- 20 ml water (tap, distilled or sterile)

Procedure: Administer appropriate dose of medication immediately after preparation

1) Lay out a blue pad to contain any spillage that may occur during mixing.
2) Remove the plunger from the oral syringe.
3) Ensure the tip of the syringe is capped.
4) Don exam gloves.
5) Drop the tablet directly into the syringe. Do not crush.
6) Reinsert the plunger in the syringe barrel.

   Note: you may need to loosen the cap to allow air to exit the syringe
7) Remove the syringe cap and draw up exactly 10 mL of water into the oral syringe (20 mL if dissolving 100 mcg tablet).
8) Draw up extra air into the syringe.
9) Cap the syringe and allow the medication to disintegrate over 3-5 minutes. Shake the syringe a few times during this period until no large particles of medication remain in the syringe. The medication may not completely dissolve and a fine powder may be present in the syringe but you may still give the medicine.
10) Remove the cap from the syringe.
11) Discard the unneeded misoprostol solution into the pharmaceutical waste container until only the required amount of misoprostol solution remains in the syringe.
12) Recap the syringe.
13) Label the syringe as per site/facility requirements (e.g. drug name, patient name, dose, etc.).
14) Give the misoprostol solution to the patient to drink.
15) Recap the syringe.
16) Exam gloves and syringe may be discarded into the regular garbage.

APPENDIX I - Dosing Procedure for Induction of Labour with Titrated Oral Misoprostol

Protocol A

Time/Progress Marker	Dose	Route
Dissolve 100 mcg of misoprostol in 20 mL of water OR Dissolve 50 mcg of misoprostol in 10 mL of water = final concentration ***5 mcg/ml***		
First dose after admission	20 mcg (4 mL drink)	Oral
After 2 hours	20 mcg (4 mL drink)	Oral
After 4 hours	20 mcg (4 mL drink)	Oral
After 6 hours	30 mcg (6 mL drink)	Oral
After 8 hours	30 mcg (6 mL drink)	Oral
After 10 hours	30 mcg (6 mL drink)	Oral
After 12 hours	40 mcg (8mL drink)	Oral
After 14 hours	40 mcg (8 mL drink)	Oral
After 16 hours	40 mcg (8 mL drink)	Oral
After 18 hours	50 mcg (10 mL drink)	Oral
After 20 hours	50 mcg (10 mL drink)	Oral
After 22 hours	50 mcg (10 mL drink)	Oral
Once labour is established, do not increase the dose further. Maintain the current dose or decrease if tachysystole develops.		

Protocol B

Time/Progress Marker	Dose	Route
Dissolve 100 mcg of misoprostol in 20 mL of water OR Dissolve 50 mcg of misoprostol in 10 mL of water = final concentration ***5 mcg/ml***		
First dose after admission	20 mcg (4 mL drink)	Oral
After 2 hours	20 mcg (4 mL drink)	Oral
After 4 hours	30 mcg (6 mL drink)	Oral
After 6 hours	30 mcg (6 mL drink)	Oral
After 8 hours	40 mcg (8 mL drink)	Oral
After 10 hours	40 mcg (8mL drink)	Oral
After 12 hours	50 mcg (10 mL drink)	Oral
After 14 hours	50 mcg (10 mL drink)	Oral
Once labour is established, do not increase the dose further. Maintain the current dose or decrease if tachysystole develops.		

APPENDIX J – Vaginal/Sublingual/Buccal Misoprostol Dosing Options for Perinatal Loss in the Second Trimester

Gestation (based on size of uterus)	Greater than or equal to 14 weeks to 28 weeks + 6 days
Dose	400 mcg
Route is **vaginal, sublingual, or buccal**	After 5 doses, reassess and new order needed
Interval (until the fetus has delivered)	Q4-6 h

Note: In some situations (i.e. upper gestational age, previous cesarean delivery) the MRP may choose to use a smaller dose.

APPENDIX K - Nitroglycerin Sublingual Spray

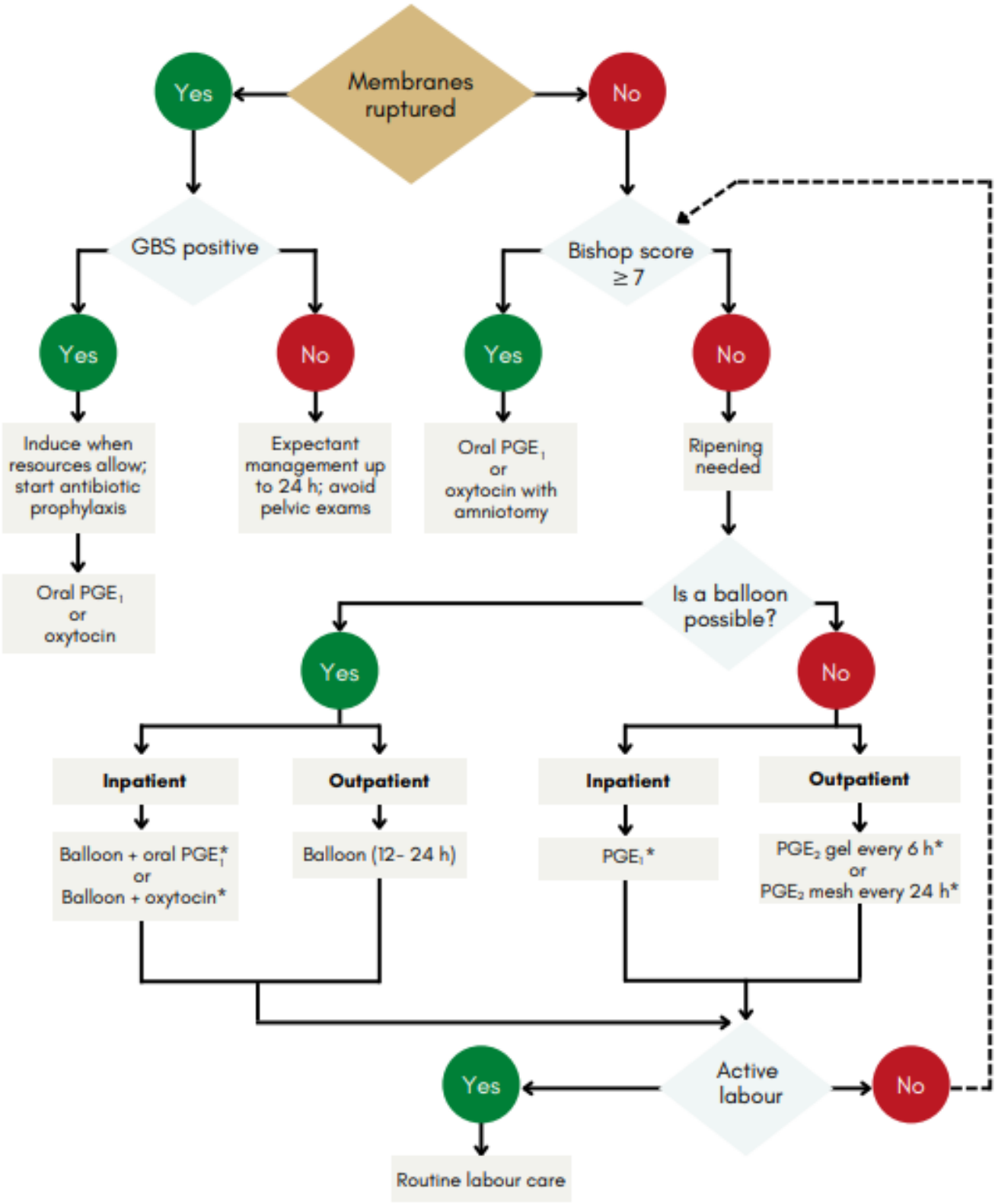
Note: When treating intrapartum tachysystole, Leathersich et. al. (2018) found that there was little evidence to recommend one single treatment. One trial compared nitroglycerin to subcutaneous terbutaline and found both had similar effectiveness.

Rho-Nitro Pump Spray 0.4 mg per metered dose

Dosage: At onset of tachysystole with abnormal fetal heart rate pattern or loss of soft resting tone, spray 1 or 2 metered doses onto or under the tongue **WITHOUT INHALING**.

- The optimal dose may be repeated twice at 5 to 10 minute intervals.
- Administer at rest, ideally in the sitting position.
- As per distributor's directions Sandoz Canada, Inc. Laval, Quebec.

APPENDIX L – Algorithm for Cervical Ripening and Induction of Labour



*A break should be considered when the ripening process is lengthy, as long as the maternal and fetal conditions are stable.
GBS: Group B Streptococcus; PGE: prostaglandin E

Robinson et al. 2023 Guideline 432c