INSTRUCTIONS FOR MATERNITY WARD (3A) DRUGS

(DOSAGE, ADMINISTRATION, PRECAUTIONS AND MONITORING)

PREPEARED BY CLINICAL PHARMACIST: ESHRAQ ALABWEENY

THE SUPERVISOR OF DRUG INFORMATION CENTER / JUST

1 . Chlorpheniramine maleate 10mg/1ml

☒ Dosage:

- ✓ **Allergic symptoms, allergic rhinitis, urticaria, pruritus** :IM, IV, or SubQ
  :Usual range: 5 to 20 mg once or twice daily (maximum: 40 mg/24 hours)

☒ Administration :

IV Inject slowly over at least 1 minute.

☒ Preparation for Administration:

May be diluted with NS to a final concentration of 1 mg/mL to facilitate accurate measurement.

☒ Precautions:

-May cause CNS depression, which may impair physical or mental abilities; patients must be cautioned about performing tasks which require mental alertness (eg, operating machinery or driving).

-Use with caution in patients with cardiovascular disease (including hypertension and ischemic heart disease).

- Use with caution in patients with increased intraocular pressure.

- Use with caution in patients with prostatic hyperplasia and/or GU obstruction.

- Use with caution in patients with asthma or other chronic breathing disorders.

-Use with caution in patients with thyroid dysfunction.

- Effects may be potentiated when used with other sedative drugs or ethanol.

- Antihistamines may cause excitation in young children. Not for OTC use in children <2 years of age.

2. Diazepam(10 mg) Ampoule

☒ Dosage:

- ✓ **Acute ethanol withdrawal:** *IV, IM:* 10 mg initially; may administer 5 to 10 mg 3 to 4 hours later, if needed.
- ✓ **Anxiety (symptoms/disorders):** *IM, IV:* 2 to 10 mg; may repeat in 3 to 4 hours, if needed. **Preoperative: Anxiety:** *IM:* 10 mg prior to surgery
- ✓ **Sedation in the ICU patient:** *IV:* Loading dose: 5 to 10 mg; Maintenance dose: 0.03 to 0.1 mg/kg every 30 minutes to 6 hours.

☒ Administration:

- Administer undiluted by slow IV push; do not mix with other solutions or medications.
- Rapid injection may cause respiratory depression or hypotension, in adults, maximum infusion rate is 5 mg/minute.
- Do not administer through small veins (eg, dorsum of hand/wrist). Avoid intra-arterial administration.
- Continuous infusion is not recommended because of precipitation in IV fluids and absorption of drug into infusion bags and tubing.
- Vesicant; ensure proper needle or catheter placement prior to and during infusion; avoid extravasation.

Extravasation management: If extravasation occurs, stop IV administration immediately and disconnect (leave cannula/needle in place); gently aspirate extravasated solution (do **NOT** flush the line); remove needle/cannula; elevate extremity. Apply dry cold compresses.

☒ Precautions:

- It has been associated with anterograde amnesia.

- Patients must be cautioned about performing tasks that require mental alertness (eg, operating machinery, driving).

- Use with caution in patients with respiratory disease; a lower dose is recommended for chronic respiratory insufficiency.

- Concomitant use with opioids may result in profound sedation, respiratory depression, coma, and death; limit dosages and durations to the minimum required. Follow patients for signs and symptoms of respiratory depression and sedation.

- Chronic use of this agent may increase the perioperative benzodiazepine dose needed to achieve desired effect.

- Use caution when reducing dose or withdrawing therapy; decrease slowly and monitor for withdrawal symptoms.

☒ Monitoring Parameters:

HR, RR, BP, and mental status; liver enzymes and CBC with long-term therapy, depth of sedation in critically-ill patients.

3. Flumazenil 0.5 mg amp

☒ Dosage:

- ✓ **Benzodiazepine reversal when used in conscious sedation or general anesthesia:** IV: Initial dose: 0.2 mg **over 15 seconds**. Repeat doses (maximum: 4 doses): If the desired level of consciousness is not obtained, 0.2 mg may be repeated at 1-minute intervals. Maximum total cumulative dose: 1 mg (usual total dose: 0.6 to 1 mg). In the event of resedation: Repeat doses may be given at 20-minute intervals as needed at 0.2 mg per minute to a maximum of 1 mg total dose and 3 mg in 1 hour.
- ✓ **Management of benzodiazepine overdose:** IV: Initial dose: 0.2 mg **over 30** seconds; if the desired level of consciousness is not obtained 30 seconds after the dose, 0.3 mg can be given over 30 seconds. Repeat doses: 0.5 mg over 30 seconds repeated at 1-minute intervals. Maximum total cumulative dose: 3 mg (usual total dose: 1 to 3 mg).

☒ Administration: Administer in freely-running IV into large vein.

☒ Precautions:

- Does not consistently reverse amnesia; patient may not recall verbal instructions after procedure.

-Patients must be cautioned about performing tasks which require mental alertness (eg, operating machinery or driving) for 24 hours after discharge.

- Flumazenil is not a substitute for evaluation of oxygenation. Establishing an airway and assisting ventilation, as necessary, is always the initial step in overdose management.

- Benzodiazepine reversal may result in seizures; seizures may occur more frequently in patients on benzodiazepines for long-term sedation or following tricyclic antidepressant overdose. Dose should be individualized and practitioners should be prepared to manage seizures.

☒ Monitoring Parameters

Monitor for return of sedation, respiratory depression, benzodiazepine withdrawal, and other residual effects of benzodiazepines for at least 2 hours and until the patient is stable and resedation is unlikely.

4 . Furosemide (20 mg/ 2ml) ampoule(2 ml)

☒ Dosage:

- ✓ **Acute pulmonary edema:** IV: Initial: 40 mg/dose. If response not adequate within 1 hour, may increase to 80 mg/dose. **Note:** Minimal additional response is gained by single doses over 160 to 200 mg; maximum: 200 mg/dose
- ✓ **Edema:**IM, IV: Initial: 20 to 40 mg/dose; if response is not adequate, may repeat the same dose or increase dose in increments of 20 mg/dose and administer 1 to 2 hours after previous dose (maximum: 200 mg/dose). **Note:** A higher initial dose may be considered for those receiving chronic oral diuretic therapy. Individually determined dose should then be given once or twice daily although some patients may initially require dosing as frequent as every 6 hours.

  - Continuous IV infusion: Initial: IV bolus dose 40 to 100 mg over 1 to 2 minutes, followed by continuous IV infusion rate of 10 to 40 mg/hour; repeat loading dose before increasing infusion rate.

  Note: In clinical trials evaluating dosing strategies in acute decompensated heart failure, median and maximum doses were ≤ 20 mg/hour. With lower baseline CrCl (eg, CrCl <25 mL/minute), the upper end of the initial infusion dosage range should be considered. If urine output is <1 mL/kg/hour, double as necessary to a maximum of 80 to 160 mg/hour. The risk associated with higher infusion rates (80 to 160 mg/hour) must be weighed against alternative strategies.

Note: in acute renal failure, doses up to **1 to 3 g** daily may be necessary to initiate desired response; avoid use in oliguric states.

☒ Preparation for Administration

IV infusion solution may be mixed in NS or D5W solution. May also be diluted for infusion to 1 to 2 mg/mL (maximum: 10 mg/mL).

☒ Administration:

- Undiluted direct IV injections may be administered at a rate of 20 to 40 mg per minute; maximum rate of administration for short-term intermittent infusion is 4 mg/minute; exceeding this rate increases the risk of ototoxicity.

- Protect from light. Exposure to light may cause discoloration; do not use furosemide solutions if they have a yellow color.

- Refrigeration may result in precipitation or crystallization; however, resolubilization at room temperature or warming may be performed without affecting the drug's stability.

- Infusion solution in D5W, NS, or LR is stable for 24 hours at room temperature.

☒ Precautions:

- Close medical supervision and dose evaluation are required. Watch for and correct electrolyte disturbances; adjust dose to avoid dehydration. When electrolyte depletion is present, therapy should not be initiated unless serum electrolytes, especially potassium, are normalized.

- Asymptomatic hyperuricemia has been reported with use.

- Monitor fluid status and renal function in an attempt to prevent oliguria, azotemia, and reversible increases in BUN and creatinine; close medical supervision of aggressive diuresis required.

- Rapid IV administration, severe renal impairment, excessive doses, hypoproteinemia, and concurrent use of other ototoxins are associated with ototoxicity.

- Photosensitization may occur.

- Avoid in patients with Sulfonamide ("sulfa") allergy.

- If given the morning of surgery, furosemide may render the patient volume depleted and blood pressure may be labile during general anesthesia.

- For some patients, despite higher doses of loop diuretic treatment, an adequate diuretic response cannot be attained. Diuretic resistance can usually be overcome by iv administration, the use of two diuretics together (eg, furosemide and chlorothiazide), or the use of a diuretic with a positive inotropic agent. When such combinations are used, serum electrolytes need to be monitored even more closely.

☒ Monitoring Parameters:

Monitor I & O and weight daily; BP, orthostasis; serum electrolytes, renal function; monitor hearing with high doses or rapid IV administration.

5. Hydralazine 20mg amp

☒ Dosage:

- ✓ **Hypertensive emergency:** IM, IV: 10 to 20 mg every 4 to 6 hours as needed; may increase dose to a maximum of 40 mg/**dose** if necessary.
- ✓ **Hypertensive emergency in pregnancy or postpartum (including acute-onset hypertension in preeclampsia/eclampsia) :** IM, IV: Initial: 5 or 10 mg; repeat with 5 to 10 mg doses every 20 minutes if blood pressure continues to exceed thresholds .If SBP or DBP remains above threshold after a total cumulative dose of 20 to 30 mg, another agent should be used.

- ✓ **Perioperative hypertension** :IV: 5 to 20 mg every 4 to 6 hours as needed .

☒ **Administration**: undiluted as IM injection. **Also** undiluted as slow IV push.

☒ Precautions:

- May cause a drug-induced lupus-like syndrome including: glomerulonephritis, especially in patients receiving higher doses.

  - Postural hypotension may occur.

- Use is contraindicated in patients with coronary artery disease (CAD)
- Use with caution in patients with mitral valvular disease; may increase pulmonary artery pressure in these patients. Use is contraindicated in patients with mitral valve rheumatic heart disease.
- Use with caution in patients with advanced renal impairment; dosage adjustment recommended

☒ Monitoring Parameters:

- BP , HR,CBC

6. Hydrocortisone 100 mg vial

☒ Dosage:

- ✓ **Anti-inflammatory or immunosuppressive:** IM, IV: Initial: 100 to 500 mg/dose at intervals of 2, 4, or 6 hours.
- ✓ **Multiple sclerosis, acute exacerbations:** IM, IV: 800 mg/day for 1 week, followed by 320 mg every other day for 1 month
- ✓ **Adrenal insufficiency:**
  Acute adrenal insufficiency (adrenal crisis) : 100 mg IV bolus, immediately followed by 200 mg over 24 hours as a continuous IV infusion or in divided doses (IM or IV) every 6 hours, then 100 mg over 24 hours the following day. Alternatively, may administer 100 mg IV bolus, then 50 to 75 mg IV every 6 hours for 24 hours, followed by a slow taper over the next 72 hours (administering doses every 4 to 6 hours during taper).
- ✓ **Stress dosing in patients known to be adrenally-suppressed (ie, prevention of adrenal crisis in glucocorticoid-treated patients) :**

Gastroenteritis with vomiting and/or diarrhea: IM, SubQ: 100 mg dose given early in course of illness; repeat after 6 to 12 hours.

Severe infection (eg, pneumonia/with altered cognition): IM, SubQ: 100 mg dose given early in course of illness; repeat after 6 to 12 hours until recovery.

Surgery:Minor stress (ie, inguinal herniorrhaphy): IV :25 mg/day for 1 day *Moderate stress (ie, joint replacement, cholecystectomy):* IV: 50 to 75 mg/day (25 mg every 8 to 12 hours) for 1 to 2 days .*Major stress (pancreatoduodenectomy, esophagogastrectomy, cardiac surgery):* IV: 100 to 150 mg/day (50 mg every 8 to 12 hours) for 2 to 3 days

- ✓ **Septic shock:** IV: 50 mg bolus every 6 hours, either as monotherapy or in combination with fludrocortisone **or** 200 mg/day as a continuous infusion . Guidelines suggest therapy duration of ≥3 days; most studies treated for up to 7 days; not all studies tapered therapy. May consider a slow taper over several days when vasopressors are no longer required to avoid possible hemodynamic deterioration which may occur with abrupt .
- ✓ **Thyroid storm:** IV: 300 mg loading dose, followed by 100 mg every 8 hours .

☒ Preparation for Administration:

- IV bolus or IM administration: Reconstitute 100 mg vials with bacteriostatic water or bacteriostatic sodium chloride (not >2 mL).

- IV infusion administration: Add reconstituted solutions to an appropriate volume of D5W, NS, or D5NS (100 to 1,000 mL for a 100 mg solution.In cases where administration of a small volume of fluid is desirable, 100 to 3,000 mg of hydrocortisone may be added to 50 mL of D5W or NS.

☒ Administration:

IM: Avoid injection into deltoid muscle (high incidence of subcutaneous atrophy). Dermal and/or subdermal skin depression may occur at injection site.

IV: Dermal and/or subdermal skin depression may occur at injection site.

IV bolus: Administer undiluted over at least 30 seconds; for large doses (≥500 mg), administer over 10 minutes.

IV intermittent infusion: Further dilute in a compatible fluid and administer over 20 to 30 minutes.

☒ Precautions :

- Prolonged use of corticosteroids may increase the incidence of secondary infection, mask acute infection (including fungal infections), prolong or exacerbate viral infections.
- May cause hypercortisolism or suppression of hypothalamic-pituitary-adrenal (HPA) axis, particularly in younger children or in patients receiving high doses for prolonged periods.
- Acute myopathy has been reported with high dose corticosteroids, usually in patients with neuromuscular transmission disorders; may involve ocular and/or respiratory muscles; monitor creatine kinase; recovery may be delayed.
- Corticosteroid use may cause psychiatric disturbance.
-Use with caution in patients with HF and/or hypertension; use has been associated with fluid retention, electrolyte disturbances, and hypertension.
- May alter glucose production/regulation leading to hyperglycemia.
- Use with caution in patients with GI diseases (diverticulitis, fresh intestinal anastomoses, active or latent peptic ulcer, ulcerative colitis, abscess or other pyogenic infection) due to perforation risk.
- High-dose corticosteroids should not be used for the management of head injury.
- Use with caution in patients with cataracts and/or glaucoma; increased intraocular pressure, open-angle glaucoma, and cataracts have occurred with prolonged use.
- May affect growth velocity; growth should be routinely monitored in pediatric patients.
- Withdraw therapy with gradual tapering of dose.

☒ Monitoring Parameters:

Serum glucose, electrolytes; BP, weight, presence of infection; monitor IOP with therapy >6 weeks; bone mineral density; assess HPA axis suppression (eg, ACTH stimulation test, morning plasma cortisol test, urinary free cortisol test); growth in pediatric patients.

7. Isosorbid Dinitrate 5 mg SL tab

☒ Dosage:

- ✓ Acute angina attack: **sublingual**: 5 mg , in the case of no response within 5 minutes, an additional tab must be administered. In the case of no response within the next 5 minutes, an additional tab must be administered with going to the emergency.

☒ Administration:

Place one tablet under the tongue and allow it to dissolve. Do not chew or swallow the tablet.

☒ Precautions :

- Take the dose while you are sit-down to prevent orthostatic hypotension.

8 . Magnesium Sulphate 10% (10ml) ampoule

☒ Dosage:

Note: 1 g of magnesium sulfate = 98.6 mg elemental magnesium = 8.12 mEq elemental magnesium = magnesium 4.06 mmol

✓ **Eclampsia/preeclampsia (severe):** IV, IM: An initial total dose of 10 to 14 g administered as follows: 4 g IV infusion with simultaneous IM injections of 4 to 5 g in each buttock. After the initial IV/IM doses, may administer a 1 to 2 g/hour continuous infusion or may follow with IM doses of 4 to 5 g into alternate buttocks every 4 hours as necessary. Maximum: 40 g/24 hours. Alternatively, may administer an IV only regimen using an initial 4 to 6 g loading dose followed by 1 to 2 g/hour continuous infusion for at least 24 hours.

✓ **Hypomagnesemia, treatment:**

- Mild deficiency: IM: 1 g every 6 hours for 4 doses, or as indicated by serum magnesium concentrations

- Mild to moderate (serum concentration 1 to 1.5 mg/dL): IV: 1 to 4 g (up to 0.125 g/kg), administer at ≤1 g/hour if asymptomatic; do not exceed 12 g over 12 hours. **Note:** Additional supplementation may be required after the initial dose with replenishment occurring over several days.

- Severe deficiency:*IM*: Up to 250 mg/kg within a 4-hour period. *IV*: Severe (<1 mg/dL): 4 to 8 g (up to 0.1875 g/kg), administer at ≤1 g/hour if asymptomatic; in symptomatic patients, may administer ≤4 g over 4-5 minutes .

☒ **Torsades de pointes: Polymorphic VT (with pulse) associated with QT prolongation (torsades de pointes):** IV: 1 to 2 g (diluted in 50 to 100 mL D5W) over 15 minutes (range: 5 to 60 minutes); may follow with a continuous IV infusion of 0.5 to 1 g/hour. **VF/pulseless VT associated with torsades de pointes:** IV/IO: 1 to 2 g (diluted in 10 mL D5W) administered as a bolus .

☒ Preparation for Administration:

IV: Dilute to ≤20% in a compatible solution (eg, D5W, NS) for IV infusion.

☒ Administration:

- Must be diluted to a ≤20% solution for IV infusion and may be administered IV push, IVPB, or as a continuous IV infusion, or intraosseous (IO).

- When giving IV push, must dilute first and should generally not be given any faster than 150 mg/minute.

- Maximal rate of infusion (routine administration for hypomagnesemia prevention/treatment): Up to 50% of an IV dose may be eliminated in the urine, therefore, slower administration may improve retention (maximum rate: 1 g/hour in asymptomatic hypomagnesemia). For doses <6 g, infuse over 8 to 12 hours and for larger doses infuse over 24 hours if patient is asymptomatic. If patient is severely symptomatic (or has conditions such as preeclampsia or eclampsia) more aggressive therapy (≤4 g over 4 to 5 minutes) may be required; patients should be closely monitored (Kraft 2005).

☒ Precautions:

- Use with extreme caution in patients with myasthenia gravis or other neuromuscular disease.

- Use with caution in patients with renal impairment; accumulation of magnesium may lead to magnesium intoxication.

- Concurrent hypokalemia or hypocalcemia can accompany a magnesium deficit. Hypomagnesemia is frequently associated with hypokalemia and requires correction in order to normalize potassium.

- Magnesium toxicity can lead to fatal cardiovascular arrest and/or respiratory paralysis.

☒ Monitoring Parameters:

ECG, vital signs, deep tendon reflexes; magnesium concentrations if frequent or prolonged dosing required particularly in patients with renal dysfunction, calcium, and potassium concentrations; renal function.

9. Naloxone (0.4 mg/ml) amp

☒ Dosage:

- ✓ **Opioid overdose:** IV, IM, SubQ: Initial: 0.4 to 2 mg; may need to repeat doses every 2 to 3 minutes. A lower initial dose (0.1 to 0.2 mg) should be considered for patients with opioid dependence to avoid acute withdrawal or if there are concerns regarding concurrent stimulant overdose. After reversal, may need to readminister dose(s) at a later interval (ie, 20 to 60 minutes) depending on type/duration of opioid. If no response is observed after 10 mg total, consider other causes of respiratory depression. *Continuous infusion:* IV: **Note:** For use with exposures to long-acting opioids (eg, methadone), sustained release product, and symptomatic body packers after initial naloxone response. Calculate dosage/hour based on effective intermittent dose used and duration of adequate response seen **or** use two-thirds ($^2/_3$) of the initial effective naloxone bolus on an hourly basis (typically 0.25 to 6.25 mg/hour); one-half ($^1/_2$) of the initial bolus dose should be readministered 15 minutes after initiation of the continuous infusion to prevent a drop in naloxone levels; adjust infusion rate as needed to assure adequate ventilation and prevent withdrawal symptoms.

- ✓ **Reversal of respiratory depression with therapeutic opioid doses:** IV: Initial: 0.02 to 0.2 mg; titrate to avoid profound withdrawal, seizures, arrhythmias, or severe pain. *Continuous infusion:* IV: **Note:** same regimen as in opioid overdose but the rate is (typically 0.2 to 0.6 mg/hour).

  - *Opioid-dependent patients being treated for cancer pain:* IV: **Note:** May dilute 0.4 mg/mL (1 mL) ampule into 9 mL of normal saline for a total volume of 10 mL to achieve a 0.04 mg/mL (40 **mcg**/mL) concentration. 0.02 mg (20 **mcg**) IV push; administer every 2 minutes until improvement in symptoms **or** 0.04 to 0.08 mg (40 to 80 **mcg**) slow IV push; administer every 30 to 60 seconds until improvement in symptoms; if no response is observed after total naloxone dose 1 mg, consider other causes of respiratory depression. If respiratory depression is due to long-acting opioids, may consider administering naloxone as a continuous infusion starting at 66% of the total bolus dose (or 0.2 mg per hour) to reverse the opioid toxicity .

  - *Postoperative reversal:* IV: 0.1 to 0.2 mg every 2 to 3 minutes until desired response (adequate ventilation and alertness without significant pain). **Note:** Repeat doses may be needed within 1 to 2 hour intervals depending on type, dose, and timing of the last dose of opioid administered.

- ✓ **Opioid-induced pruritus:** IV infusion: 0.25 **mcg/kg/hour** . Doses up to ~3 **mcg/kg/hour** have been employed. However, doses >2 **mcg/kg/hour** are more likely to lead to reversal of analgesia and are not recommended.

☒ **Preparation for administration:** IV push: Dilute naloxone 0.4 mg (1 mL ampul) with 9 mL of NS for a total volume of 10 mL to achieve a concentration of 0.04 mg/mL.

- IV infusion: Dilute naloxone 2 mg in 500 mL of NS or D5W to make a final concentration of 4 **mcg**/mL.

☒ Administration:

- IV push: Administer over 30 seconds as undiluted preparation **or** administer as diluted preparation slow IV push by diluting 0.4 mg (1 mL) ampoule with 9 mL of normal saline for a total volume of 10 mL to achieve a concentration of 0.04 mg/mL.

- May administer IM or SubQ if unable to obtain IV access.

☒ Precaution:

- Administration of naloxone causes the release of catecholamines, which may precipitate acute withdrawal or unmask pain in those who regularly take opioids. Symptoms of acute withdrawal in opioid-dependent patients may include pain, tachycardia, hypertension, fever, sweating, abdominal cramps, diarrhea, nausea, vomiting, agitation, and irritability**.**

- Continuously observe patients until there is no further risk of recurrent respiratory or CNS depression.

- Use with caution in patients with history of seizures; avoid use in the treatment of meperidine-induced seizures.

- Excessive dosages should be avoided after use of opioids in surgery.

☒ Monitoring Parameters

Respiratory rate, HR, BP, temperature, level of consciousness, ABGs or pulse oximetry.