



Maternal Hemorrhage Information Packet
for Medical Staff Approval

Mindy Thomure, R.N.
Director of Birth Place
Citizens Memorial Hospital
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OB Hemorrhage

RESPONSE IMPROVEMENT

Triggers for Response

Quantified Blood Loss

- EBL > 500
- Change in Hemoglobin
- Change in Hematocrit
- Tip: EBL is usually underestimated

Vital Signs

- Heart Rate > 110
- Blood Pressure < 85/45
- Oxygen Saturation < 95%
- Alert Parameters- any change from baseline vitals
- Action Parameters- defined criteria listed above

Triggers for Heightened Surveillance

- EBL > 500
- Vital Sign Instability
- Lab Changes

Be Prepared

- Risk Assessment on all patients on admission
- Update risk assessment throughout labor

RISK ASSESSMENT

Low	Medium	High
<ul style="list-style-type: none"> No risk factors 	<ul style="list-style-type: none"> Previous Uterine Surgery > 4 previous vaginal births Chorioamnionitis History of post-partum hemorrhage Uterine fibroids Estimated fetal weight greater than 4kg Morbid Obesity Prolonged 2nd Stage Prolonged oxytocin use 	<ul style="list-style-type: none"> Placenta Previa or Accreta Hematocrit <30 AND any other risk factor Platelets > 100,000

Risk Assessment- Interventions

LOW	MEDIUM	HIGH
<ul style="list-style-type: none"> TYPE AND SCREEN ONLY 	<ul style="list-style-type: none"> REVIEW HEMORRHAGE PROTOCOL TYPE AND SCREEN 	<ul style="list-style-type: none"> REVIEW HEMORRHAGE PROTOCOL TYPE AND CROSSMATCH NOTIFY ANESTHESIA

Weigh ALL Blood Soaked Materials

- Use infant scale to weight materials
- Subtract dry weight from wet weight
- Document in meditech

Stage 0

- Every woman in labor

Stage 1

- Vaginal Delivery Blood Loss > 500ml
- C-Section Delivery Blood Loss > 1000ml
- Vital Sign Changes- BP \geq 85/45, SaO2 < 95%
HR \geq 110

Stage 2

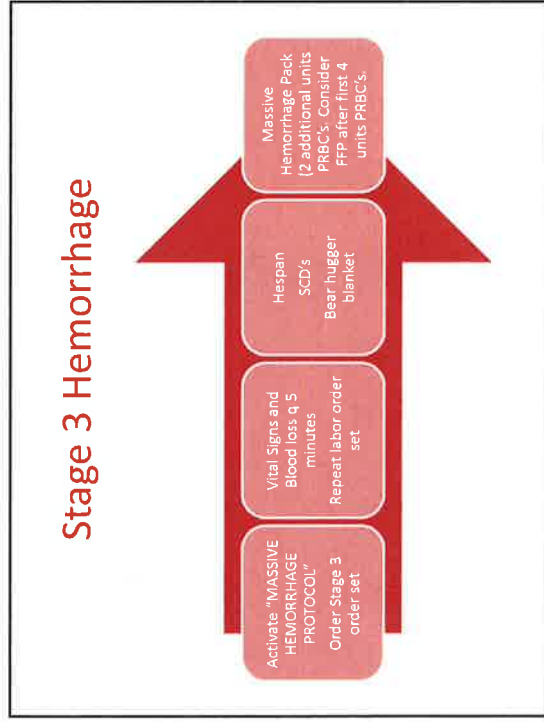
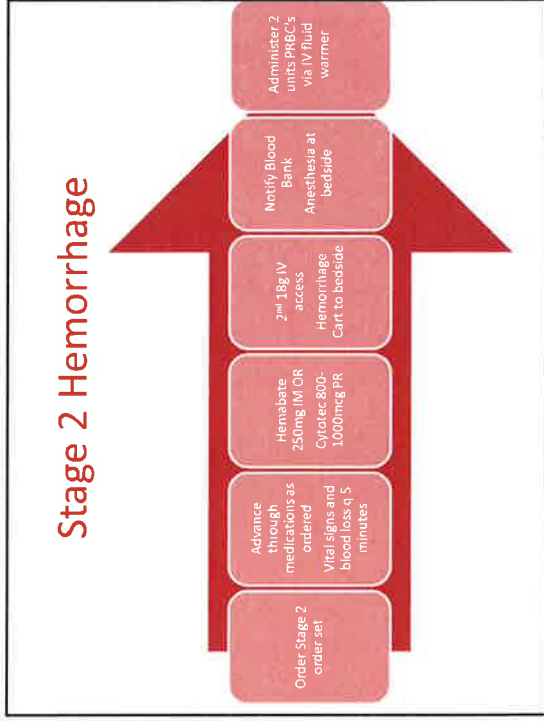
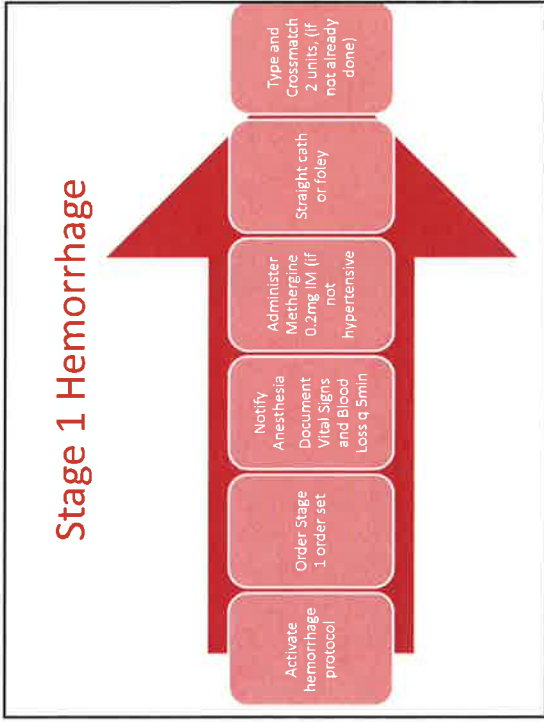
- Continued Bleeding but Total Blood Loss **STILL UNDER 1500ml**

Stage 3

- Total Blood Loss **OVER 1500ml**
- More than 2 units RBC's Given
- Vital Signs Unstable
- Suspicion of DIC

STAGE 0 Hemorrhage

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graph TD; A[Active Management of 3rd stage] --> B[Oxytocin Infusion after delivery]; B --> C[Fundal Massage];
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- ### OB Hemorrhage Cart
- Intrauterine Balloon
 - Vaginal Retractors
 - Sponge Forceps
 - Banjo Curettes
 - Long Needle Holder
 - Long Debaquey Forceps
 - Weighted Speculum
 - Long Haney Needle Drivers
 - IV Supplies

Location of Supplies

- Bear hugger and bear hugger blanket- In OR
- IV warmer- In OR
- OB Hemorrhage cart- In OB storage room

OB HEMORRHAGE FLOW CHART

	ASSESSMENTS	MEDICATIONS/PROCEDURES	BLOOD BANK
STAGE 0	EVERY WOMAN IN LABOR OR DELIVERING		
<i>RISK ASSESSMENT</i> <i>ACTIVE</i> <i>MANAGEMENT OF</i> <i>3RD STAGE</i>	RISK ASSESSMENT ON EVERY PATIENT ADMITTED TO THE BIRTH PLACE	OXYTOCIN INFUSION AFTER DELIVERY OF INFANT FUNDAL MASSAGE	TYPE AND SCREEN ALL PATIENTS TYPE AND CROSSMATCH ON "HIGH RISK" PATIENTS
STAGE 1	VAGINAL DELIVERY- BLOOD LOSS > 500ML C-SECTION DELIVERY- BLOOD LOSS > 1000ML >OR< VITAL SIGN CHANGES- BP ≥ 85/45, SaO2 <95%, HR ≥ 110		
<i>ACTIVATE</i> <i>HEMORRHAGE</i> <i>PROTOCOL</i> <i>ORDER "STAGE 1"</i> <i>ORDER SET</i>	NOTIFY ANESTHESIA VITAL SIGNS q 5 MINUTES WEIGH MATERIALS CALCULATE BLOOD LOSS q 15 MINUTES	METHERGINE 0.2mg IM (IF NOT HYPERTENSIVE) FUNDAL MASSAGE STRAIGHT CATH IF NO FOLEY	TYPE AND CROSSMATCH 2 UNITS PRBC'S (IF NOT ALREADY DONE)
STAGE 2	CONTINUED BLEEDING BUT TOTAL BLOOD LOSS STILL UNDER 1500ML		
<i>ORDER "STAGE 2"</i> <i>ORDER SET</i> <i>ADVANCE</i> <i>THROUGH</i> <i>MEDICATIONS</i>	VS AND BLOOD LOSS q 5-10 MINUTES OB AND ANESTHESIA AT BEDSIDE	HEMABATE 250mg IM >OR< CYTOTEC 800-1000mcg PR 2 ND IV ACCESS (18G) CONSIDER MOVING TO OR HEMORRHAGE CART TO BEDSIDE	NOTIFY BLOOD BANK OF STAGE 2 HEMORRHAGE, ADMINISTER 2 UNITS RBC'S STAT USE IV WARMER
STAGE 3	TOTAL BLOOD LOSS OVER 1500 ML >OR< MORE THAN 2 UNITS RBC'S GIVEN >OR< VITAL SIGNS UNSTABLE >OR< SUSPICION OF DIC		
<i>ORDER "STAGE 3"</i> <i>ORDER SET</i> <i>ACTIVATE</i> <i>MASSIVE</i> <i>HEMORRHAGE</i> <i>PROTOCOL</i>	VS AND BLOOD LOSS q 5 MINUTES REPEAT LABS, (HEMORRHAGE LAB ORDER SET)	HESPAN SCD'S BEAR HUGGER BLANKET IV WARMER MOVE TO OR INTRAUTERINE BALLOON >OR< B-LYNCH SUTURE >OR< HYSTERECTOMY	MASSIVE HEMORRHAGE PACK- TOTAL OF INITIAL 4 UNITS RBC'S, 1:1 RATIO OF FFP AFTER FIRST 4 UNITS

Proposed Order Set OB Hemorrhage

OB Hemorrhage Order set- STAGE 1

- ✓ Vital Signs Q 5 minutes
- ✓ Oxygen at 10 L via mask to maintain pulse ox at 95%
- ✓ Calculate blood loss every 15 minutes
- Methergine 0.2mg IM- STAT (Optional Check box)
- Hemabate 250mcg IM- STAT (Optional Check box)
- Cytotec 800mcg PR- STAT (Optional Check box)
- ✓ Crossmatch 2 units PRBC's- STAT

OB Hemorrhage Order set- STAGE 2

- ✓ Weight blood soaked materials
- ✓ Calculate blood loss every 5 minute
- ✓ Insert 18g IV (secondary access)
- ✓ Insert foley
- ✓ Hemorrhage cart to bedside
- ✓ Crossmatch 2 units PRBC's- STAT
- ✓ Administer blood products (2 units PRBC's)
- ✓ Use warmer to transfuse blood products
- ✓ Fibrinogen- STAT
- ✓ Partial Thromboplastin Time- STAT
- ✓ Prothrombin Time - STAT
- ✓ Fibrin Degradation Product- STAT
- ✓ Platelet Count- STAT
- ✓ Hemoglobin and Hematocrit- STAT
- Calcium
- Magnesium

OB Massive Hemorrhage Order set- STAGE 3

- ✓ Oxygen at 10 L via mask to maintain pulse ox at 95%
- ✓ Insert 18g IV (secondary access)
- ✓ Insert foley
- ✓ Crossmatch 2 units PRBC's- STAT- O Neg if patient is not type and screened

- ✓ Transfer patient to OR
- ✓ Hemorrhage cart to bedside
- ✓ Administer blood products (2 more units PRBC's)
- ✓ Use warmer to transfuse blood products
- ✓ Fibrinogen- STAT
- ✓ Partial Thromboplastin Time- STAT
- ✓ Prothrombin Time - STAT
- ✓ Fibrin Degradation Product- STAT
- ✓ Platelet Count- STAT
- ✓ Hemoglobin and Hematocrit- STAT
- ✓ FFP AFTER 1ST 4 UNITS OF RBCS, 1:1 RATIO OF RBC'S/FFP
- 1 PLT Pheresis pack per 6 units PRBC's (Optional check box)
- ✓ Sequential Compression Device
- ✓ Bear Hugger Blanket
- Calcium
- Magnesium

Lab Order Set **This is a separate lab order set to be used if only the labs need ordered or repeated. These labs are included in the order sets above as well. The Calcium and Magnesium are not specified in the tool kit so I included them as check boxes to be marked if the provider requests.**

- ✓ Fibrinogen- STAT
- ✓ Partial Thromboplastin Time- STAT
- ✓ Prothrombin Time Profile- STAT
- ✓ Fibrin Degradation Product- STAT
- ✓ Platelet Count- Stat
- ✓ Hemoglobin and Hematocrit- STAT
- Calcium
- Magnesium

Risk Assessment to be put in to meditech and added to admission interventions

Low Risk- *Type and Screen only*

- ✓ No risk factors

Medium Risk- *Review Hemorrhage Protocol, Review Type and Screen- (Meditech- Can this come up somewhere if any of the following boxes are clicked?)*

- ✓ Previous Uterine Surgery
- ✓ >4 previous vaginal births
- ✓ Chorioamnionitis
- ✓ History of post-partum hemorrhage
- ✓ Uterine Fibroids
- ✓ Estimated Fetal weight greater than 4 Kg.
- ✓ Morbid Obesity (BMI over 40)
- ✓ Prolonged 2nd stage labor
- ✓ Prolonged oxytocin use-

Use of Mag Sulfate

High Risk- *Order Type and Crossmatch 2 units RBC's, notify anesthesia, and review Hemorrhage Protocol-(Can this come up somewhere if any of the following boxes are clicked? Can this generate an order for Type and Crossmatch automatically?)*

- ✓ Placenta Previa or Accreta
- ✓ Hematocrit <30 AND any other risk factors
- ✓ Platelets <100,000
- ✓ Twin Pregnancy

Hospital: X Long Term Care: <input type="checkbox"/> Home Care Services: <input type="checkbox"/> Clinics: <input type="checkbox"/>				
Policy Number:		Policy Title: Obstetrical Hemorrhage Care Guidelines		
<input type="checkbox"/> Annual Review		<input checked="" type="checkbox"/> Three-Year Review		
Initiated:	Revised:	Revised:	Revised:	Revised:

POLICY:

- Optimal response to obstetric hemorrhage requires the coordination multiple team members from multiple disciplines and departments.
- Birth Place, anesthesia department, lab, and operating room work together to perform an efficient and coordinated response to obstetrical hemorrhage.
- Physicians and RN's are authorized to activate the hemorrhage protocol.
- The medication kits will be stocked, not expired, and available in the medication refrigerator to take to every cesarean and vaginal delivery.
- The hemorrhage cart is always kept stocked, not expired, and available in the Birth Place.
- The Obstetrical Hemorrhage policy will be updated at least every 3 years.

PURPOSE: To provide guidelines for the optimal response of the multidisciplinary team in the event of Obstetrical Hemorrhage. This protocol will also aid in recognizing patients at risk for hemorrhage and to identify stages of hemorrhage and primary treatment goals. Perform annual assessment of readiness to respond to an obstetric hemorrhage.

Definitions: The following definitions describe the stages of obstetrical hemorrhage:

Stage 0	Prevention and recognition of OB hemorrhage in all births
Stage 1	Cumulative blood loss > 500 mL vaginal birth or 1000 mL cesarean birth - OR- Vital signs > 15% change or HR ≥ 110, BP ≤ 85/45, O2 sat < 95% - OR - Increased bleeding during recovery or postpartum
Stage 2	Continued bleeding or vital sign instability and 1000 – 1500 mL cumulative blood loss
Stage 3	Cumulative blood loss > 1500 mL, > 2 units PRBCs given, vital signs unstable or suspicion of Disseminated Intravascular Coagulopathy (DIC)

PROCEDURE:

A. **Screening and Treatment:**

1. Risk assessment performed on all patients admitted for labor, c-section, or post-partum care
2. Risk appropriate blood work on admission

B. **STAGE 0** Management

1. Active management of third stage of labor:
 - a. Bring delivery kit containing Methergine, Cytotec, and Hemabate to all deliveries.
 - b. Administer Oxytocin 20 units in 1000 mL of IV solution.
 - i. Titrate infusion rate to uterine tone
 - ii. Use 10 units IM for women without IV access
 - iii. **Do not give oxytocin as IV push**
 - c. Provide vigorous fundal massage for at least 15 seconds
2. Ongoing qualitative measurement of blood loss at all births
 - a. Assess blood loss at birth, prior to delivery of the placenta whenever possible
 - b. Reassess cumulative blood loss after delivery of the placenta
 - c. Documentation of bleeding
 - i. Scant: < 1 inch on pad per hour (< 10 mL)
 - ii. Small (light): < 4 inches on pad per 1 hour (10-25 mL)
 - iii. Moderate: < 6 inches within 1 hour (25-50 mL)
 - iv. Large (heavy): > 6 inches within 1 hour (50-80 mL)
 - v. Excessive: pad saturated in 15 min (sat pad = 80 mL)
 - d. If bleeding continues use formal methods to assess blood loss:
 - i. Weigh blood soaked materials on gram scale (1 gram = 1 mL)
3. Ongoing evaluation of vital signs
4. Communication and documentation
 - a. Verbally acknowledge actions you will take and orders received
 - b. Provide ongoing updates about patient's status with other departments
 - c. Record intake and output records

C. **STAGE 1** Management

1. Activate OB General Hemorrhage Protocol
 - a. Notify Obstetrician (if not at bedside), charge nurse/supervisor, anesthesia provider, and lab department.
2. Interventions
 - a. Vital signs including O2 sat every 5 minutes
 - b. Oxygen at 10L via mask, maintain pulse ox @ 95%
 - c. Calculate cumulative blood loss every 5 – 15 minutes
 - d. Weigh bloody materials
 - e. Increase IV fluid and oxytocin rate, and repeat fundal massage

- f. Consider Methergine 0.2 mg IM q 2 hrs (if not hypertensive). May repeat if good response to first dose, not to exceed 4 doses in 24 hours **BUT** otherwise **move on** to Stage 2 uterotonic drug
- g. If Methergine contraindicated consider Hemabate 250mcg IM q15-90 minutes, not to exceed 8 doses in 24 hours; or Cytotec 800-1000mcg per rectal 1 time.
- h. Empty bladder: straight cath or place foley
- i. Type & Cross 2 Units PRBCs

3. Evaluate patient response to interventions

- a. If patient stable following Stage 1 interventions then perform increased postpartum surveillance
- b. Proceed to Stage 2 if continued bleeding and vital sign instability

4. Communication and documentation

- a. Verbally acknowledge actions you will take and orders received
- b. Provide ongoing updates about patient's status with other departments
- c. Record intake and output records

D. **STAGE 2** Management

- a. Notify Blood Bank of hemorrhage- **Bring 2 Units PRBCs to bedside, transfuse per clinical signs – do not wait for lab values**
 - b. Notify OR staff and anesthesia if not already at bedside
 - c. Use blood warmer for transfusion
 - d. Consider thawing 2 FFP (takes 35+ minutes), use if transfusing > 2 units PRBCs
 - e. Determine availability of additional RPCs and other Coag products
- 2.
- a. Vital sign and cumulative blood loss every 5 - 10 minutes
 - b. Weigh bloody materials (1GM=1ML)
 - c. Complete evaluation of vaginal walls, cervix, uterine cavity, placenta
 - d. Order Hemorrhage Lab order set
 - e. Consider Second level uterotonic drugs:
 - i. **Hemabate** 250 mcg IM q 15 to 90 minutes not to exceed 8 doses in 24 hours **or**
 - ii. **Misoprostol** 800 – 1000 mcg PR **once**
 - f. Second IV access with at least 18 gauge
 - g. Place foley if not already done
 - h. Bimanual massage by provider
 - i. Provide warmth to patient
 - j. **Vaginal Birth:**
 - i. **Consider** moving to OR
 - ii. Bring Hemorrhage cart and procedure light to bedside

k. **Cesarean Birth:**

- i. Bring Hemorrhage cart and procedure light to bedside

3. Evaluate patient response to interventions

- a. If stabilized during Stage 2 (< 1500 cumulative blood loss) then perform increased postpartum surveillance
- b. Proceed to Stage 3 if
 - i. cumulative blood loss > 1500 mL
 - ii. > 2 units PRBCs administered
 - iii. Unstable vital signs after Stage 2 interventions
 - iv. Suspicion of DIC

4. Communication and documentation

- a. Verbally acknowledge actions you will take and orders received
- b. Provide ongoing updates about patient's status with other departments
- c. Record intake and output records

B. **Stage 3** Management

1. Interventions- activate OB Massive Hemorrhage protocol

- a. Repeat labs including coags and ABGs every 30 to 60 minutes
- b. **Consider return to OR**
- c. Patient Support
 - i. Fluid warmer
 - ii. Upper body warmer device
 - iii. Sequential compression stocking
- d. Transfuse aggressively
 - i. Near 1:1 PRBC:FFP
 - ii. **Consider** 1 PLT pheresis pack per 6 units PRBCs
- e. Unresponsive Coagulopathy: after 10 units PRBCs and full coagulation factor replacement, may consider rFactor VIIa

2. Evaluate patient response to interventions

- a. If stabilized during Stage 3, then perform increase postpartum surveillance and **consider** transfer to ICU
- d. Communication and documentation
 - a. Verbally acknowledge actions you will take and orders received
 - b. Provide ongoing updates about patient's status with other departments
 - c. Record intake and output records

REFERENCES:

California Maternal Quality Care Collaborative (CMQCC): Hemorrhage Taskforce (2009)

CMH conversion chart to put in to meditech

Conversion- 1gm=1ml to quantify the blood volume

Tracking Estimated Blood Loss- Begin weighing all blood soaked items after 500ml blood loss reached

Item- Underpad

Underpad Dry Weight (grams)
Dry Weight 493g

Underpad Wet Weight (grams)

Item- Kendall Maternity Pad

Maternity Pad Dry Weight (grams)
Dry Weight 9g

Maternity Pad Wet Weight (grams)

Item- Under buttocks Drape

Under buttocks Drape Dry Weight (grams)
Dry Weight 147

Under buttocks Drape Wet Weight (grams)

Item- Patient Gown

Patient Gown Dry Weight (grams)
Dry Weight 342

Patient Gown Wet Weight (grams)

Item- Fitted Sheet

Fitted Sheet Dry Weight (grams)
Dry Weight 669

Fitted Sheet Wet Weight (grams)

Item- Bottom Labor Sheet

Bottom Labor Sheet Dry Weight (grams)
Dry Weight 185

Bottom Labor Sheet Wet Weight (grams)

Item- Top Labor Sheet

Top Labor Sheet Dry Weight (grams)
Dry Weight 333

Top Labor Sheet Wet Weight (grams)

Item- Mattress Cover

Mattress Cover Dry Weight (grams)
Dry Weight 766

Mattress Cover Wet Weight (grams)

Item- 4X4 Sponge

4X4 Sponge Dry Weight (grams)
Dry Weight 3

4X4 Sponge Wet Weight (grams)

Item- Draw Sheet

Draw Sheet Dry Weight (grams)
Dry Weight 497

Draw Sheet Wet Weight (grams)

Conversion Information	
Conversion	Conversion 1gm=1ml to quantify the blood volume
Tracking Estimated Blood Loss	Begin weighing all blood soaked items after 500ml of loss reached
Item - Blue Chux	
Blue Chux - Dry Weight	<input type="text"/> (grams) DRY WEIGHT - 65gm
Blue Chux - Wet Weight	<input type="text"/> (grams)
Item - Pads with Wings	
Pad with Wings - Dry Weight	<input type="text"/> (grams) PAD WITH WINGS - 0gm
Pad with Wings - Wet Weight	<input type="text"/> (grams)
Item - Regular Pads	
Regular Pad - Dry Weight	<input type="text"/> (grams) REGULAR PAD - 0gm
Regular Pad - Wet Weight	<input type="text"/> (grams)
Item - Under Buttocks Drape	
Under Buttocks Drape - Dry Weight	<input type="text"/> (grams) UNDER BUTTOCKS DRAPE - 95gm
Under Buttocks Drape - Wet Weight	<input type="text"/> (grams)
Item - Dry Lap	
Dry Lap - Dry Weight	<input type="text"/> (grams) DRY LAP - 20gm
Dry Lap - Wet Weight	<input type="text"/> (grams)
Item - Dry 4x4	
4x4 - Dry Weight	<input type="text"/> (grams) DRY 4x4 - 0gm
4x4 - Wet Weight	<input type="text"/> (grams)
Item - Fitted Sheet	
Fitted Sheet - Dry Weight	<input type="text"/> (grams) FITTED SHEET - 565gm
Fitted Sheet - Wet Weight	<input type="text"/> (grams)
Item - Draw Sheet	
Draw Sheet - Dry Weight	<input type="text"/> (grams) DRAW SHEET - 245gm
Draw Sheet - Wet Weight	<input type="text"/> (grams)
Item - Blue OR Towels	
Blue OR Towel - Dry Weight	<input type="text"/> (grams) BLUE OR TOWEL - 55gm
Blue OR Towel - Wet Weight	<input type="text"/> (grams)
Item - Patient Gown	
Patient Gown - Dry Weight	<input type="text"/> (grams) PATIENT GOWN - 340gm
Patient Gown - Wet Weight	<input type="text"/> (grams)
Other Item	
Other Item - Dry Weight	<input type="text"/> (grams)
Other Item - Wet Weight	<input type="text"/> (grams)
Item Weighed	
Total Estimated Blood Loss	
Total Estimated Blood Loss	<input type="text"/> (mls)

Capture Image

Print Screen

OMC Sample Meditech weight form