



Hypertension in Pregnancy (HIP) Initiative

August 2016 Learning Session:
Emergency Departments

Partnering to Improve Health Care Quality
for Mothers and Babies



Welcome!

- **Please join by telephone to enter your Audio PIN on your phone or we will be unable to un-mute you for discussion.**
- If you have a question, please enter it in the Question box or Raise your hand to be un-muted.
- This webinar is being recorded.
- Please provide feedback on our post-webinar survey.

Agenda

August 18, 2016

HIP Initiative Announcements

Hospital Perspectives

 Randy Katz and Jean Miles, Memorial Healthcare

 Vida Miller, Broward Health

 Robin Piaggione, Lee Memorial

Q&A

Announcements: Resources

- Website with archived webinars:
<http://health.usf.edu/publichealth/chiles/fpqc/hip>
- Toolbox:
http://health.usf.edu/publichealth/chiles/fpqc/hip_toolbox
 - **Newly added: Emergency Department Statement**
- Site Visit with or without a Grand Rounds presentation
- Clinical Questions/Technical Assistance – send us your questions any time fpqc@health.usf.edu

Ask Your Doctor or Midwife

Preeclampsia

What Is It?

Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman.

Risks to You

- Seizures
- Stroke
- Organ damage
- Death

Risks to Your Baby

- Premature birth
- Death

Signs of Preeclampsia



Stomach pain



Headaches



Feeling nauseous;
throwing up



Seeing spots



Swelling in your
hands and face



Gaining more than
5 pounds in a week

What Should You Do?

Call your doctor right away. Finding preeclampsia early is important for you and your baby.

For more information go to www.preeclampsia.org

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New! French/Creole Tear Pads!

English/Spanish Tear Pads
and Posters

Limited number per hospital at
no cost!
Contact

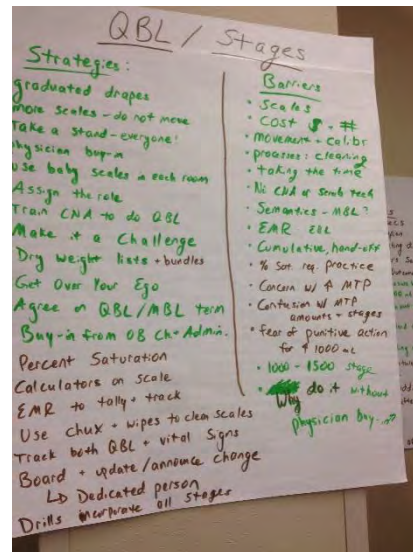
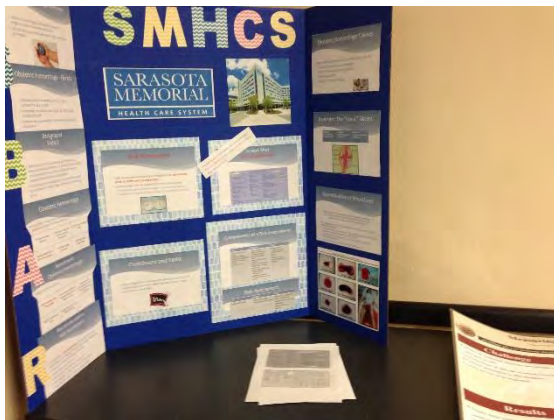
FPQC@health.usf.edu

Save the Date!

HIP Initiative Mid-Project Meeting

November 10, 2016

Our OHI Mid-Project Meeting was a hit!





Jean Miles, MD
Chief of Obstetric
Anesthesia



Randy Katz, DO, FACEP
Chairman, Department of
Emergency Medicine

Hypertension in Pregnancy Maternal Safety Bundle Implementation in the Emergency Department

Randy Katz, DO, FACEP
Chief, Emergency Department
Memorial Healthcare System,
Hollywood, FL
TeamHealth

Jean Miles, MD
Regional Director for
Obstetric Anesthesiology
Memorial Healthcare
System, Hollywood, FL
Sheridan Healthcare



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for Mothers and Babies

Memorial Healthcare System



Key Points

- Maternal safety bundles: 4 R's and the Emergency Department's role
- Facility wide standardized care process and Emergency Department
- MHS experience and challenges



Maternal Mortality: tip of the iceberg



- 87 Maternal deaths 1999-2012 in Florida
- “50-100” women who experience “near-miss” or significant morbidity
- The numbers: 4,350- 8, 8700 women with significant medical complications



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for Mothers and Babies

Preeclampsia/Eclampsia Hypertension in Pregnancy

- Incidence 3%-5% of pregnancies
- (12,000 deliveries/year in the MHS system)
- ED major portal for diagnosis and treatment
- Tremendous prevention opportunities



The 4 R's—"every unit"

- Readiness
- Recognition
- Response
- Reporting



READINESS

Every Unit

- Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (include order sets and algorithms)
- Unit education on protocols, unit-based drills (with post-drill debriefs)
- Process for timely triage and evaluation of pregnant and postpartum women with hypertension including ED and outpatient areas
- Rapid access to medications used for severe hypertension/eclampsia: Medications should be stocked and immediately available on L&D and in other areas where patients may be treated. Include brief guide for administration and dosage.
- System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

READINESS

- Timely Triage
- Rapid access to medications
- Plan for escalation, consultation

Diagnostic Criteria: Severe Hypertension

- Severe hypertension that is accurately measured using standard techniques and is persistent for > 15 minutes is considered a *hypertensive emergency*.

Severe hypertension is defined as:

*systolic blood pressure \geq 160 mm Hg or
diastolic blood pressure \geq 110 mm Hg*

- Severe hypertension can occur during the antepartum, intrapartum, or postpartum period.

FPQC Recommendations

- Administration of antihypertensive medication **within one hour** of a single or sustained blood pressure measuring:
 - 155 – 160 mm Hg, systolic **OR**
 - 105 – 110 mm Hg, diastolic
- Decrease blood pressure by no more than 10 – 15% first hour



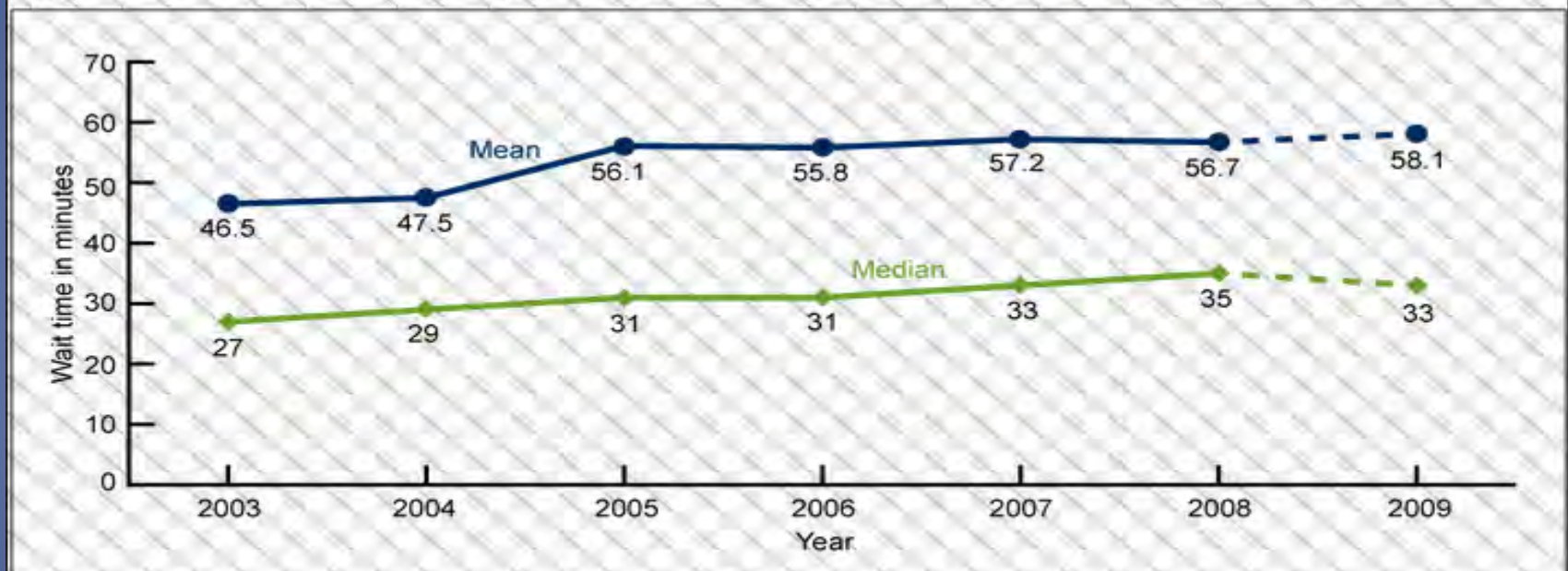
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ED specific challenges to one hour treatment

- Lack of recognition by triage staff (education)
- Standard BP parameters that lead to consistent response
- L&D triage vs ED triage
- Inconsistent threshold for treatment
- Wait times and boarding/ED capacity
- Inconsistent response from consulting OB's
- Alert fatigue (stroke, trauma, sepsis, cardiac)

ED specific challenges to one hour treatment

Figure 1. Mean and median emergency department wait time to see a provider: United States, 2003–2009



NOTE: Dotted lines represent projected wait times for 2008 and 2009.
 SOURCE: CDC/NCHS, N

DOOR-TO-DOCTOR TIMES (in minutes)

Best EmEx ED (10)

Avg. All EDs

(40)

Avg. >70k Census

(49)

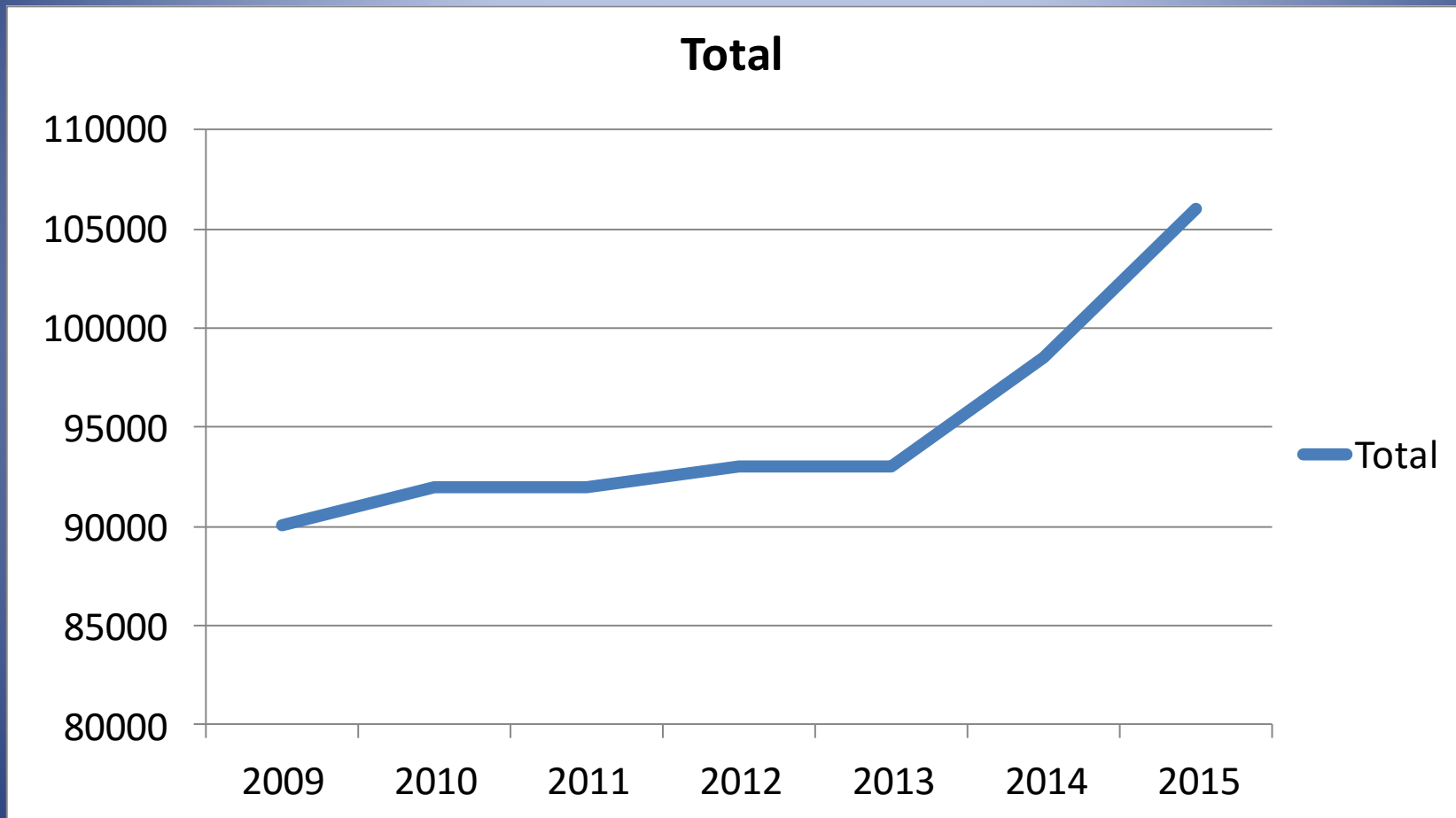
Avg. Urban

(50.3)

Avg. Community

(37.3)

MRH ED VOLUME (2009-2015)



OB-HIP Alert Algorithm
Patient Arrival

Fire Rescue (RED Station)
POV (Triage)

Pregnancy
> 20 weeks Pregnant
< 6 weeks Post-Partum

BP > 140/90

One or more:
Headache/Visual symptoms
Shortness of Breath
Epigastric Pain
Recent Diagnosis (HIP or pre-eclampsia)
Suspicion (HIP or pre-eclampsia)

**Pregnant
Actively Seizing**

Contact L&D Nurse
x4252

Contact Charge RN for bed
placement
(Patient must be transported by RN)

Overhead Page in ER
"OB-HIP Alert Station/Room _____"

ER Room
Confirm 2nd BP and obtain IV access

EDP to Room

EDP to Contact
Attending OB

RN-to-RN
Report to OB

Room 9 STAT
Magnesium administration
Call anesthesia x____
Dial 61-In-House OB Alert

READINESS

First line treatment for hypertensive emergency



Labetalol IV

OR



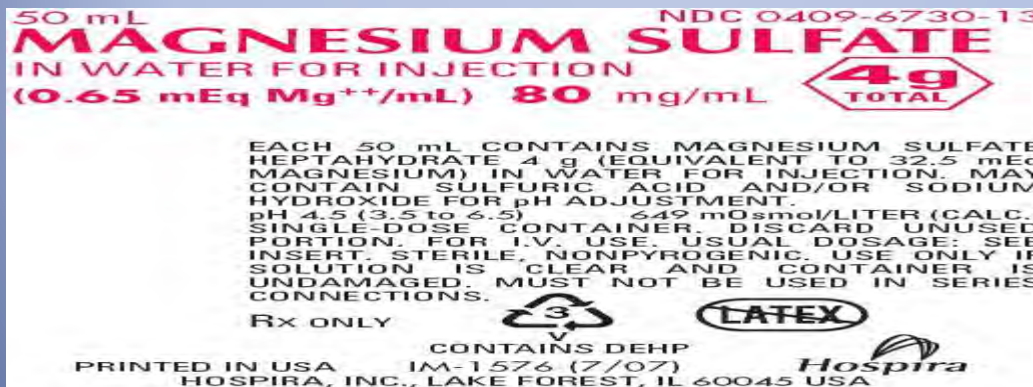
Hydralazine IV

READINESS

First line treatment for hypertensive emergency

MAGNESIUM SULFATE IV

Magnesium 4 gram bolus IV over 20 min followed by Magnesium 1-2 gram/hour continuous infusion



Anti-seizure

Magnesium is NOT an antihypertensive

READINESS

- Know where antihypertensive and magnesium medications are stored
- Know doses, infusion pump libraries/pharmacy involvement
- Obtain appropriate consult



MHS Emergency Department Order Set for HIP

- Improves efficiency
- Consistent choice of medication
- Consistent dosing of medications
- Nursing orders consistent
- Includes nursing orders, diagnostics and medications

EHR order sets

Good afternoon,

We now have a Magnesium 4g bolus order specific for Preeclampsia in EPIC (see highlighted below). The order will populate in the Pyxis and the nurse will give two 2g Boluses to post partum patients (up to 6 weeks). Going forward please use this order for Magnesium bolus in Preeclampsia.

We will be working on creating an ED order set for Preeclampsia that includes all of the diagnostic and treatment orders as well as an improved transfer algorithm with L&D.

Name	Phase of Care	Type	Dose	Route	Frequ	Pref List	Px Code	Code
Magnesium		Lab			STAT	MRH ED I	LAB103	
Magnesium, CSF (RUO)		Lab				MRH ED I	LAB3174	
magnesium 2 Gm IV q 10 min x 2 doses = 4 Gms PRE		Medica	2 Gm	Intrave	EVER	MRH EME		420161
magnesium sulfate 1 Gm IV		Medica	1 Gm	Intrave	ONET	MRH EME		420161

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Chairman, Department of Emergency Medicine

Memorial Regional Hospital

Hollywood, Florida

Medical Director

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RECOGNITION & PREVENTION

Postpartum Preeclampsia/Eclampsia

- Incidence difficult to obtain - 0.3% of all post partum ED admissions due to hypertension and preeclampsia
- Symptomatology for days prior to presentation

Emergency department use during the postpartum period: implications for current management of the puerperium

[Steven L. Clark, MD](#), [Michael A. Belfort, MD, PhD](#), [Gary A. Dildy, MD](#), [Jane Englebright, PhD](#), [Laura Meints, MD](#), [Janet A. Meyers, RN](#), [Donna K. Frye, RN](#), [Jonathan A. Perlin, MD, PhD](#)

Hospital Corporation of America, Nashville, TN

RECOGNITION & PREVENTION

- Have you been pregnant with in the last 6 weeks?
- Contribution of Non-steroidal medications to increase blood pressure
- Most common complaint: Headache

DDX: Postpartum headache

- Tension headache 39%
- Migraine 11-34%
- Musculoskeletal 11-15 %
- Preeclampsia/Eclampsia
8-24 %
- **Post-dural puncture
Headache 5-16%**
- Cortical vein thrombosis
3%
- Subarachnoid
Hemorrhage 1 %
- PRES
- Brain tumor
- Subdural hematoma
- Cerebral infarction
- Pseudotumor cerebri
- Sinusitis
- Meningitis
- Pneumocephalus
- Caffeine withdrawal
- Lactation headache



RESPONSE

ED peripartum checklist:

If BP > 160/110 or 140/90 with:

- Unremitting headaches
- Visual disturbance
- Epigastric pain

Begin stabilization

Call for Obstetric consult immediately

Labs should include:

- CBC
- PT
- PTT
- Fibrinogen
- CMP
- Uric Acid
- Hepatic function panel — Type and Screen

Initiate Intravenous Access



RESPONSE

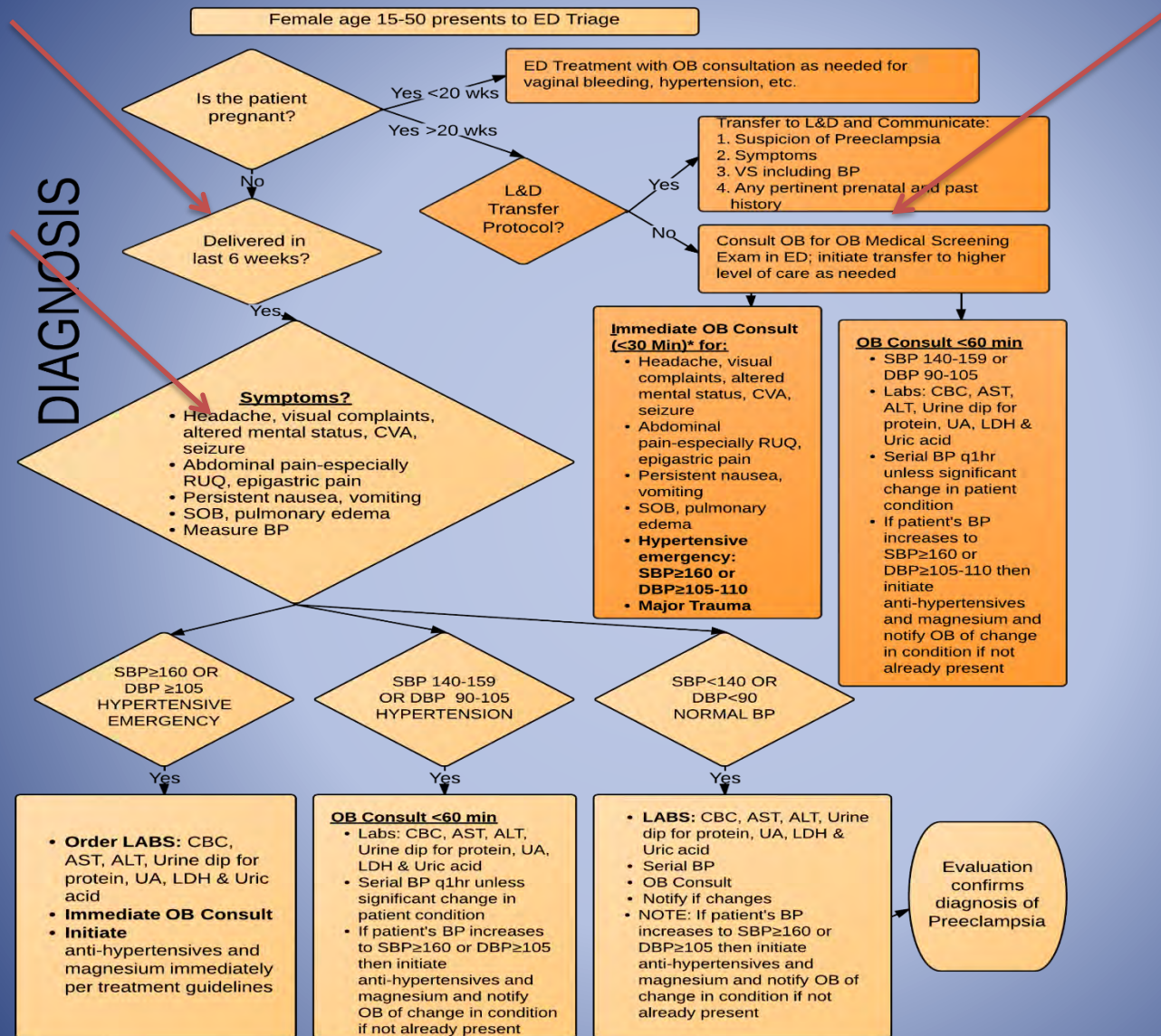
ED peripartum checklist:

- [] Assess neurologic status
 - LOC/arousal/orientation/behavior
 - Deep tendon reflexes
 - Speech
- [] Assess vital signs including oxygen saturation
- [] Assess complaints and report; unremitting headaches, epigastric pain, visual disturbances, speech difficulties, lateralizing neuro signs
- [] Place Foley catheter
- [] Strict I&O report output less than 30 ml/hr for 2 hours
- [] Plan brain imaging studies if:
 - Unremitting headache
 - Focal signs and symptoms
 - Uncontrolled high blood pressure
 - Lethargy
 - Confusion
 - Seizures
 - Abnormal neurologic examination



Evaluation and Treatment of Antepartum and Postpartum Preeclampsia and Eclampsia in the Emergency Department

Errata v 5/13/14



DIAGNOSIS

PATIENT SAFETY BUNDLE

Hypertension

REPORTING/SYSTEMS LEARNING

- QI opportunities: treatment with in one hour of hypertensive crisis
- Data collection drives improvement
- Formal meeting to identify any systems issues or breakdowns in outcome events
- Multidisciplinary review of all severe hypertension/eclampsia cases admitted to the ICU



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Patient Education

Pre Eclampsia hand outs and posters available through www.preeclampsia.org







Ask Your Doctor or Midwife

Preeclampsia

What Is It?
Preeclampsia is a serious disease related to high blood pressure. It can happen to any pregnant woman during the second half of her pregnancy.

Risks to You	Risks to Your Baby
<ul style="list-style-type: none">• Seizures• Stroke• Organ damage• Death	<ul style="list-style-type: none">• Preterm birth• Death

Signs of Preeclampsia

 Stomach pain	 Headaches
 Feeling nauseous, throwing up	 Seeing spots
 Swelling in your hands and face	 Gaining more than 5 pounds (2.3 kg) in a week

What Should You Do?
Call your doctor or midwife right away. Finding preeclampsia early is important for you and your baby.

For more information go to www.preeclampsia.org

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Summary of Safety Bundle

- ED has tremendous import in patient treatment and “near miss” intervention
- Hypertension treatment within one hour
- High Index of suspicion for postpartum hypertension up to 6 weeks post delivery
- Standardization of process and reduction in variation can improve outcomes





Vida Miller, BSN, RNC
Clinical Specialist

Broward Health
Medical Center

“HIP” in the ED

Vida Miller, RN, BSN, RNC
Perinatal Clinical Specialist



Care Warriors

 **BROWARD HEALTH**
MEDICAL CENTER
Maternity Place



HIP in the ED

❖ Meeting to discuss vision

- Understanding the current ED workflow
- Proper screening to recognizing patients at risk in ED triage
- Appropriate area for assessment and treatment
- Collaboration with ED pharmacy for medication availability
- Develop workflow for staff

❖ Development of Algorithm

❖ Development of ED care set for HIP patients

❖ Staff and Physician education

ALGORITHM

Triggers:

Are you pregnant?
or

Have you recently given birth
within the last 6 weeks?

If yes

Do you have any of the
following symptoms present?

- Headache
- Blurred vision, spots
- Altered mental status
- Seizures
- Abdominal pain
 - RUQ
 - Epigastric pain
- Persistent nausea, vomiting
- Pitting edema
- Swollen face, hands, & feet
- Muscle twitching
- Shortness of breath

YES

Measure BP
in ED triage

ALGORITHM

BP in
ED triage

BP \geq 140/90

- Notify ED MD
- Transfer to ED-yellow
- Orders for CBC, AST, ALT, UA, LDH, Uric Acid
- Serial BP q 1 hour
- Consult OB
- If BP increases to $>160/110$, initiate severe preeclampsia treatment within 30 minutes

**BP \geq 160/110
X 2- 15 minutes apart**

- Notify ED MD STAT
- Initiate HIP ED Care Set
Orders: Procardia, Magnesium, CBC, AST, ALT, UA, LDH, Uric Acid
- Ensure IV access
- OB consult
- Prepare for admission
- **Initiate severe preeclampsia treatment within 30 minutes**

OBGYN Pregnancy Induced Hypertension

LABORATORY

- CBC w/Auto Diff
STAT, T,N, Blood
- PT INR
STAT, T,N, Blood
- PTT
STAT, T,N, Blood
- CMP
STAT, T,N, Blood
- Fibrinogen Level
STAT, T,N, Blood
- Uric Acid
STAT, T,N, Blood
- Urinalysis
STAT, T,N, Urine

CONSULTS

- Notify (Notify/Call)
T,N, STAT, private OBGYN or on-call OBGYN, ONCE

MEDICATIONS

For blood pressure equal to or greater than 160 mmHg SBP or 110 mmHg DBP (NOTE)*

Antihypertensives: Check a drug from each steps 1-4 below(NOTE)*

Oral Nifedipine protocol (must check one order from each step 1-4 below)(NOTE)*

STEP 1:(NOTE)*

- NIFEDIPINE 10 mg oral capsule
10 mg, PO, CAP, ONCE, STEP 1. Give if SBP is > 160 mmHg or DBP > 110 mmHg. Reassess BP after 20 minutes and proceed to STEP 2 if needed.

STEP 2:(NOTE)*

- NIFEDIPINE 10 mg oral capsule
20 mg, PO, CAP, ONCE, STEP 2. Give 20 minutes after STEP 1 if SBP is > 160 mmHg or DBP > 110 mmHg. Reassess BP 20 minutes after last dose and proceed to STEP 3 if needed.

STEP 3:(NOTE)*

- NIFEDIPINE 10 mg oral capsule
20 mg, PO, CAP, ONCE, STEP 3. Give 20 minutes after STEP 2 if SBP is > 160 mmHg or DBP > 110 mmHg. Reassess BP 20 minutes after last dose and proceed to STEP 4 if needed.

STEP 4: IV Labetalol will be given if BP threshold is exceeded and patient is unresponsive to oral Nifedipine.(NOTE)*

- Normodyne (labetalol)
40 mg, IVP, INJ, ONCE, PRN Hypertension, STEP 4. Give 20 minutes after STEP 3 if SBP is still > 160 mmHg or DBP is still > 110 mmHg. Reassess BP 10 minutes after giving; if BP still exceeds threshold, contact physician for additional order.
Comments: IV Push over 2 minutes

ED HIP CARE SET

ED HIP CARE SET

Seizure Prophylaxis (BP equal or greater than 160 SBP or 110 mmHg DBP)(NOTE)*

Magnesium Protocol for Gestational Hypertension:(NOTE)*

Magnesium Loading dose

- magnesium sulfate 4 gm/100 mL SWFI Premix IVPB
4 gm = 100 mL, IV, IVPB, ONCE, Infuse: 200 mL/hr, Infuse Over 30 min(s), Loading Dose.
Comments: Call pharmacy for dose

IV Solutions(NOTE)*

- Sodium Chloride 0.9%
1,000 mL, IV, IV SOLN, Rate: 100 mL/hr
- Dextrose 5% with 0.45% NaCl
1,000 mL, IV, IV SOLN, Rate: 100 mL/hr

PATIENT CARE

- Vital Signs
Routine,
Comments: Repeat BP Q 20 minutes. Additional BP monitoring as per prescriber.
- Vital Signs
Routine, For Gestational Hypertension Treatment (BP equal or greater than 160 SBP or 110 mmHg DBP)
Comments: Repeat BP 20 minutes after each Nifedipine dose and 10 minutes after each Labetalol dose. Once BP threshold achieved (SBP < 160 mmHg and DBP < 110 mmHg), repeat BP every 10 minutes x 1 hour, then every 15 minutes x 1 hour, then every 30 minutes x 1 hour, and then hourly x 4 hours. Additional BP monitoring as per prescriber.



BROWARD HEALTH[®]

A Team of Care ~~Workers~~

Warriors



Robin Piaggione
MSN, RNC-OB,C-EFM,
CBC

OB Educator
Lee Memorial Health
System

Lee Memorial Health System

Robin Piaggione, MSN, RNC- OB, C-EFM, CBC

Who we are

6-hospital system in SW FL

- 3 hospitals perform OB services
- Perform ~1400, 1600, 3500 deliveries per year
- I RIPCC center
- Level II And III nursery



Step 1:

Policy Development

HYPERTENSION/PREECLAMPSIA CARE GUIDELINES IN PREGNANCY

PURPOSE:

To provide guidelines for measurement of blood pressure and the management of preeclampsia/eclampsia

Timing is Everything!

I was asked to participate in the ER Skills Fair

Precipitous Delivery

Or



Opportunity!!

Obstetrical Emergencies

- Cord Prolapse
- Shoulder dystocia
- Breech presentation
- Placenta Previa
- Placenta Abruption
- **Preeclampsia/Eclampsia**

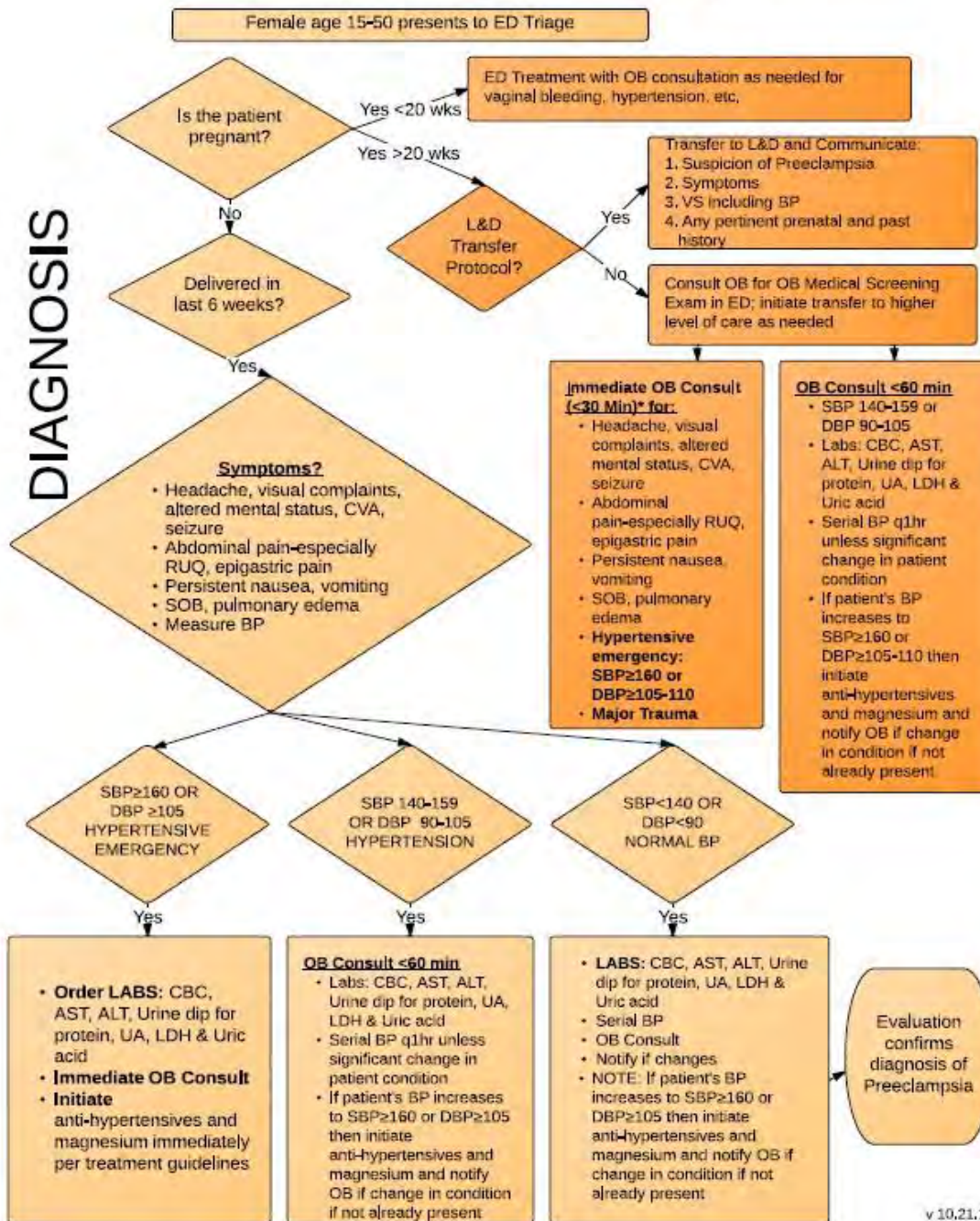


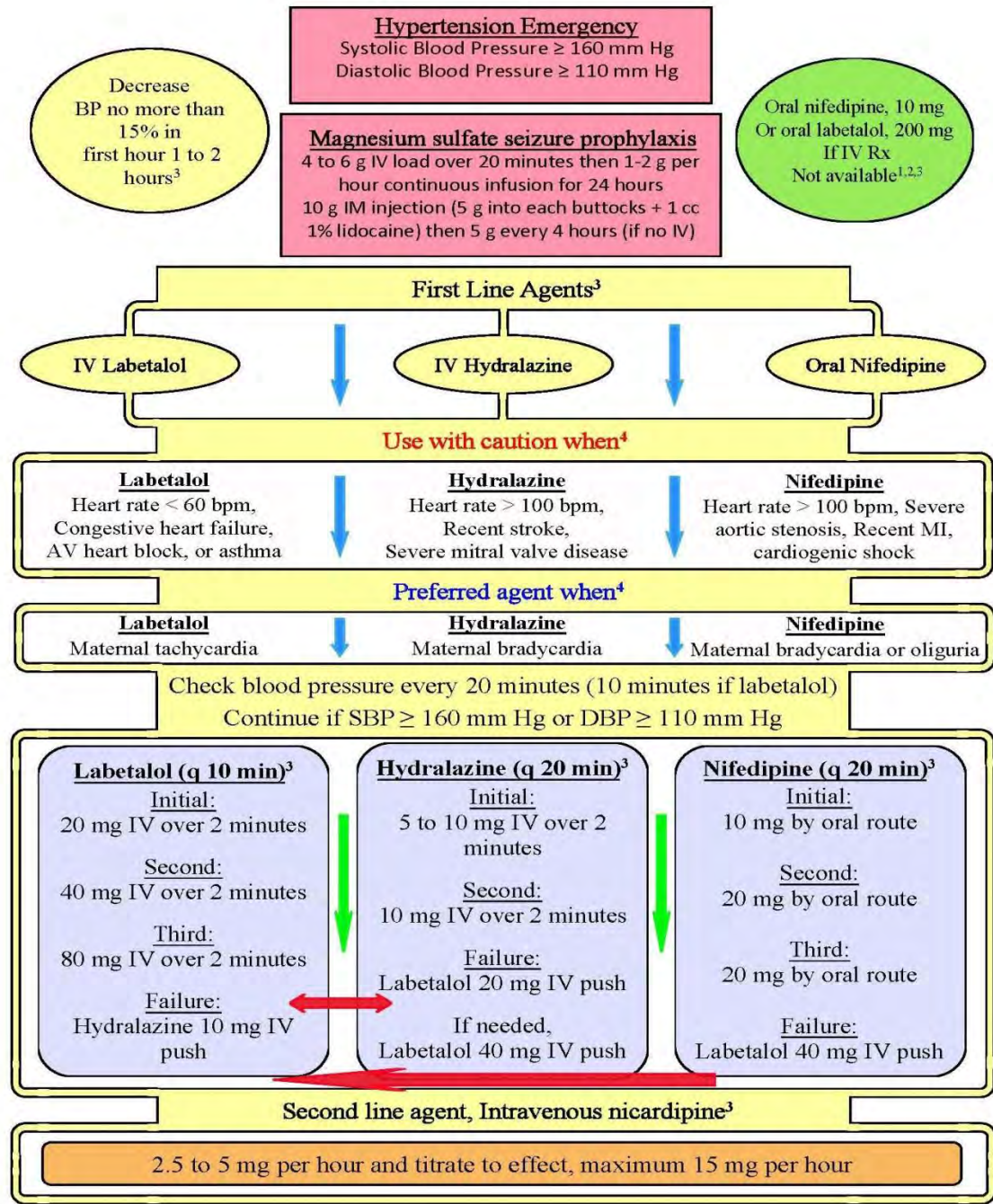
Preeclampsia/Eclampsia

Definition of Preeclampsia with Severe Features

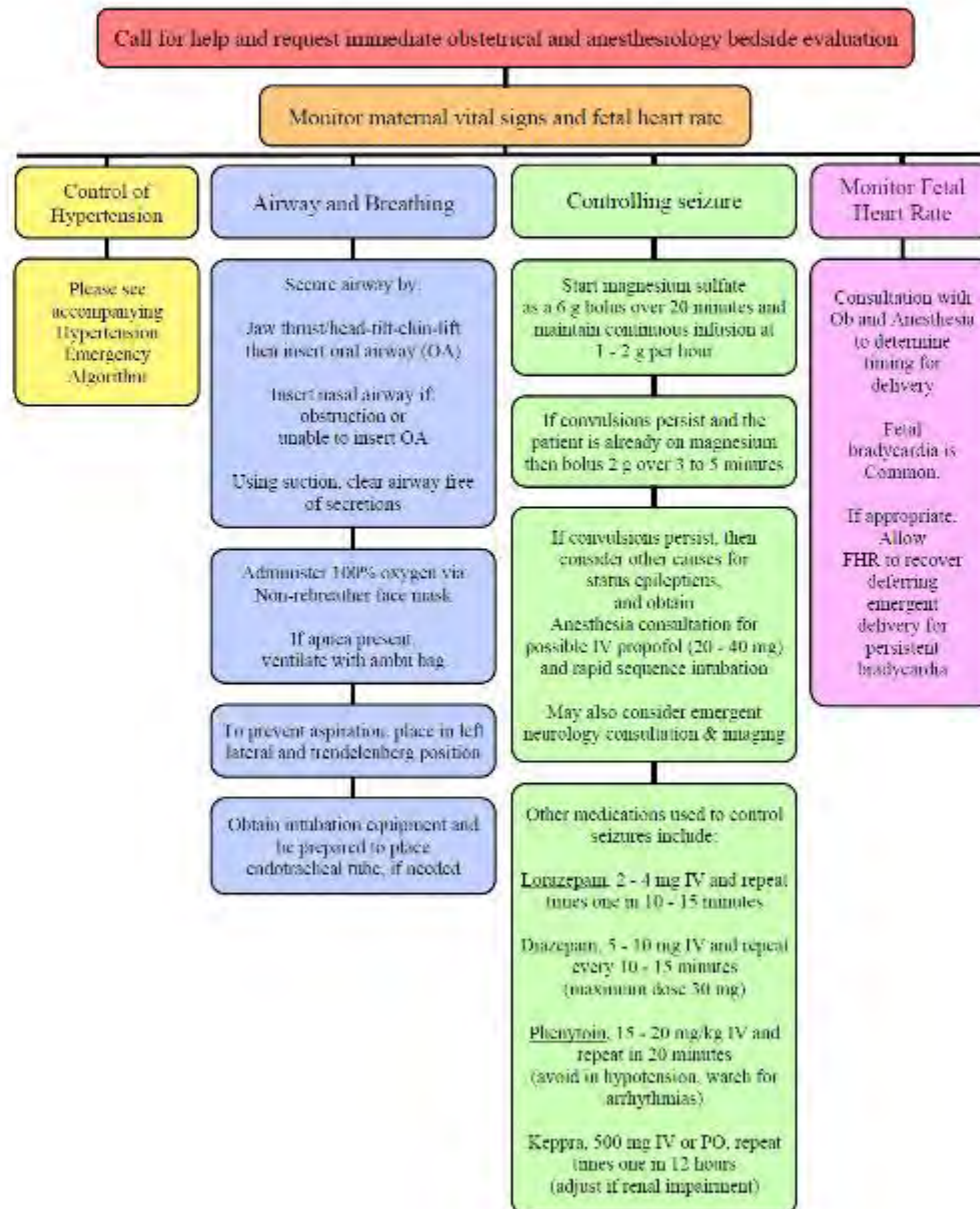
- Systolic blood pressure greater than 160 mm Hg or diastolic blood pressure greater than 105-110 mm Hg (*check blood pressure within 15 minutes to confirm since persistent elevation greater 160 mm Hg or 110 mm Hg is a hypertensive emergency- do not change position*)
- CNS symptoms (headache or visual disturbances)
- Pulmonary edema
- Platelet count less than 100,000/microliter
- Elevation serum transaminases more than 2 times over baseline or ALT greater than 70
- Serum creatinine level greater than 1.1 mg/dL or doubling of serum creatinine
- HELLP syndrome
- Generalized tonic clonic seizure = Eclampsia

Evaluation and Treatment of Antepartum and Postpartum Preeclampsia and Eclampsia in the Emergency Department





Management of Eclampsia Algorithm





New Emergency Department Statement

Florida Perinatal Quality Collaborative

HYPERTENSION IN PREGNANCY (HIP) INITIATIVE EMERGENCY DEPARTMENT GUIDANCE

The Florida Perinatal Quality Collaborative (FPQC) and its partners have implemented an initiative focused on prevention of severe maternal morbidity and mortality related to Hypertension in Pregnancy (HIP). The initiative follows national recommendations developed by the Council on Patient Safety in Women's Health Care. One of the challenges of the initiative is the broad range of touch points for pregnant women: from the prenatal through the postpartum period there are many community partners and hospital departments who may encounter a woman experiencing hypertension in pregnancy. The Emergency Department is a key player in assessing and managing these women.

The following information, excerpted from the FPQC HIP Toolkit, provides a succinct statement of needed interventions and coordination with EDs. Emergency Departments are urged to coordinate with the Obstetrics Departments and providers in their area to assure that policies and protocols are in place to standardize responses. Obstetric providers need to know when postpartum emergencies occur and be a part of management of these patients.

EMERGENCY DEPARTMENT RECOGNITION AND TREATMENT

Focus on Recognition of Hypertensive Disorders in Pregnancy and Delayed Postpartum Preeclampsia

- In Florida, hypertensive disorders accounted for 15.5% of pregnancy-related deaths from 1999-2012, representing one of the leading causes of maternal death.
- Intracerebral hemorrhage is the leading cause of death attributed to hypertensive related emergencies during pregnancy and the postpartum period. Because gravid and recently gravid patients have a lower ability to autoregulate blood pressure within the central nervous system, they are more likely to suffer a hemorrhagic stroke when the systolic blood pressure exceeds 160 mm Hg and/or when the diastolic blood pressures exceed 110 mm Hg. Administration of escalating antihypertensive medication within one hour of these confirmed blood pressure thresholds can decrease the risk for hemorrhagic stroke and death.
- Up to 26% of eclamptic seizures occur beyond 48 hours and as late as 4-6 weeks postpartum, therefore it is not uncommon for these patients to present to the Emergency Department (ED).
- Proper assessment and identification of preeclampsia is essential. Women of childbearing age that present with common symptoms of preeclampsia should be questioned about a current or recent pregnancy.
- It is imperative that Emergency Department personnel be comfortable with diagnosis of and initial management of these cases and prompt obstetric consultation is always necessary.
- Systolic BP >160 or diastolic BP >110 in pregnant or postpartum women is considered a hypertensive emergency. Delays in aggressive management of hypertensive emergency is associated with stroke and other adverse outcomes. All emergency department personnel should be aware of this association and initiate the Diagnosis Algorithm for Emergency Departments.



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DISCUSSION

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We can only unmute you if you have dialed your Audio PIN (shown on the GoToWebinar side bar).