

CODE HIP:
Utilizing an
Obstetrical Rapid
Response Team
for Hypertension
in Pregnancy in
the ED



Significance of the Problem

In Florida, 77% pregnancy-related deaths occurred in the postpartum period (47% nationwide).

Sometimes Obstetric patients present through Emergency Department (after hours postpartum period, small facilities).

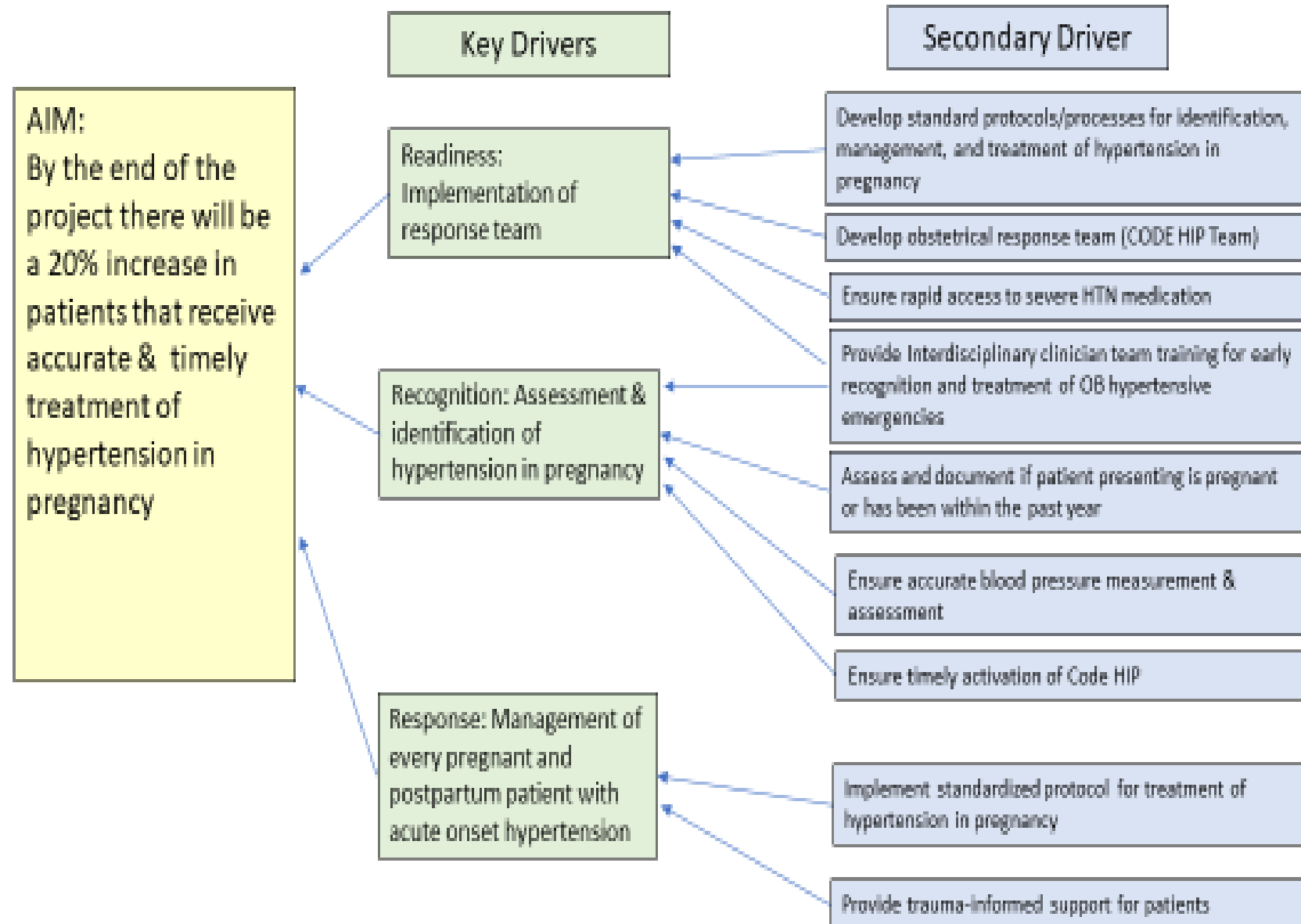
BP parameters different in OB V's general population.

Situational Awareness is critical to recognize and respond.

Obstetric patients seen in the Emergency Department require specialized knowledge.

Noted Issues at the site of the project.

CODE HIP: Utilizing an Obstetrical Response Team for Hypertension in Pregnancy in the Emergency Department



Methods

SETTING:

- This study took place in University Affiliated Emergency Department

DESIGN:

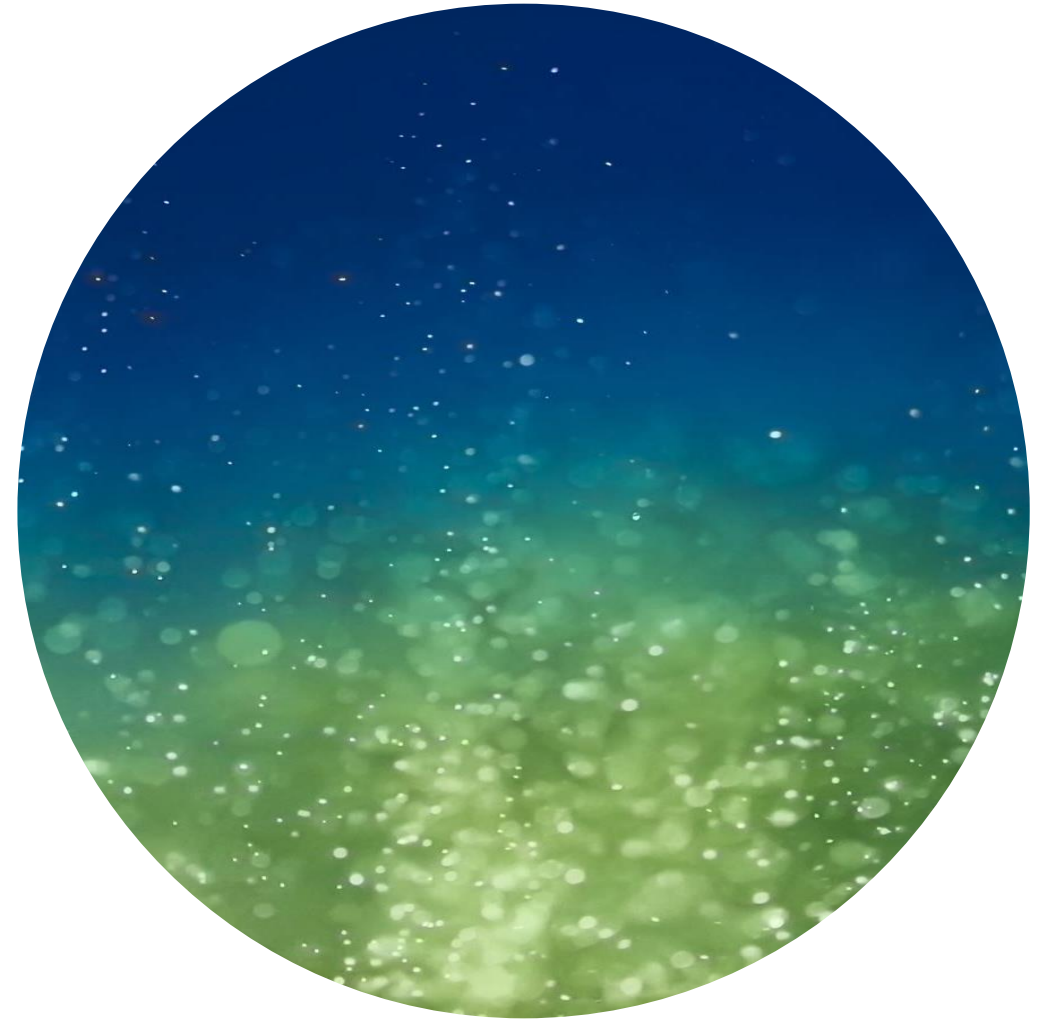
- Observational retrospective chart review

PARTICIPANTS:

- 139 Obstetrical patients who are 20 or more weeks pregnant through to 6 weeks postpartum, with systolic blood pressure/diastolic blood pressure equal to or greater than 140/90 mmHg

STAKEHOLDERS:

- Ob & ED teams



Initial BP

- Patients 20 or more weeks pregnant through to 6 weeks postpartum, that present to the Emergency Department, BP taken within 10 mins of arrival.

Code activated

- Patients who are 20 or more weeks pregnant through to 6 weeks postpartum, with systolic blood pressure/diastolic blood pressure equal to or greater than 140/90 mmHg.

Second BP

- Taken within 15 minutes of initial BP.

Severe Pre-eclampsia treatment

- Magnesium Sulfate (bolus and maintenance) and antihypertensive treatment within 60 minutes of arrival to the Emergency Department.
- Accurate dosing of medications

Disposition of the patient

- Transferred to the Labor and Delivery unit within 1-hour of arrival to the Emergency Department.

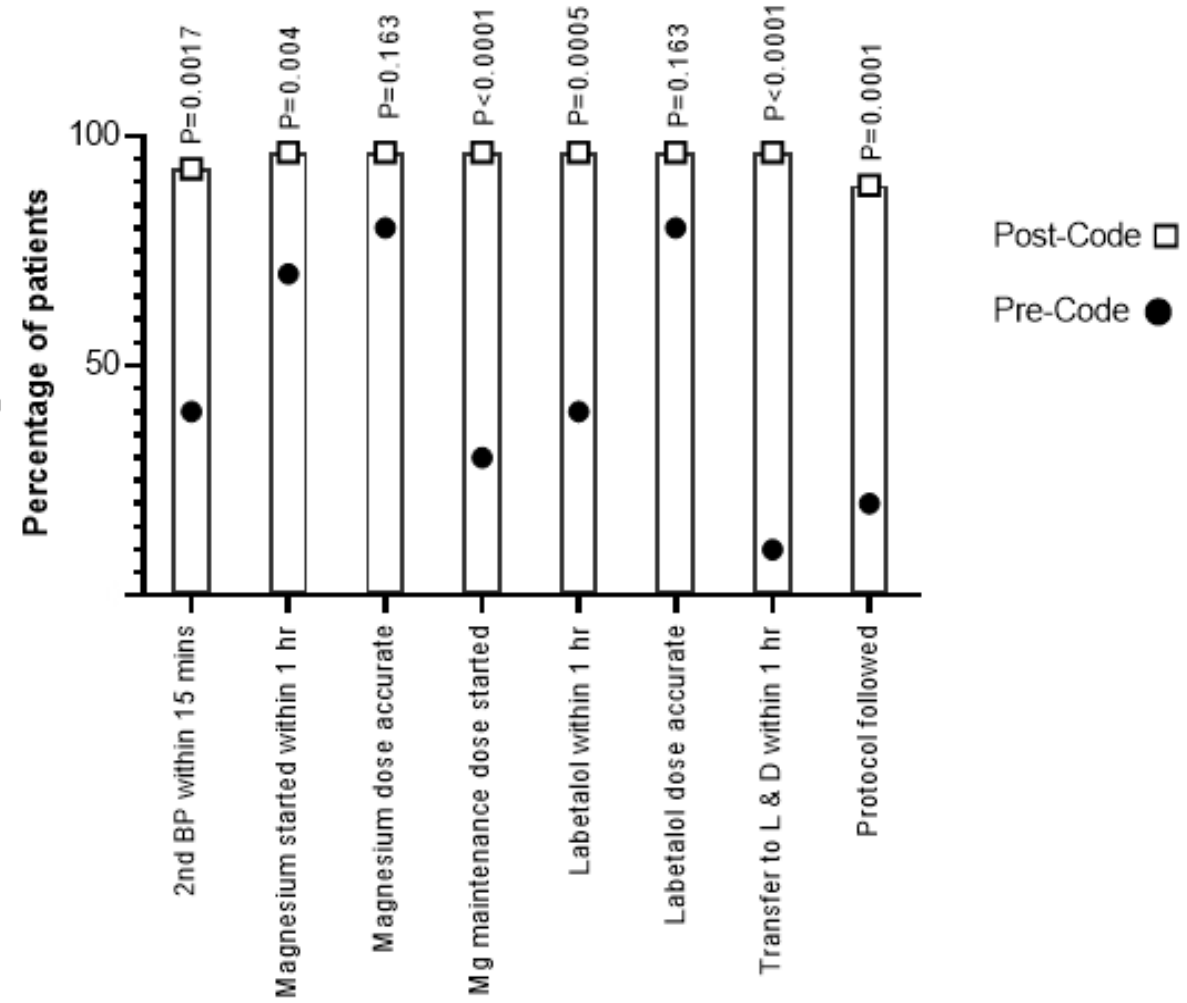
| | All Patients n=139 | Pre-Code n=36 | Post-Code n=103 | Pre vs. Post Int P values |
|--|-----------------------|-----------------------|--------------------|------------------------------|
| Age (x±SD) | 32.3 ± 6.4 | 32.6±6.9 | 32.2±6.2 | P>0.99 |
| Pregnant n, (%) | 86/139 (61.9%) | 21/36 (58%) | 65/103 (63%) | P=0.69 |
| Ethnicity (Whites/ Blacks) n, (%) | 101, (74%) / 35 (25)% | 25 (69%) / 11 (30.5%) | 76 (73%)/ 24 (23%) | >0.99 for W/ 0.38 for B |
| Insured n, (%) | 120/139, 86.3% | 35/36, (97.2%) | 85/103 (88.5%) | 0.025 vs. non-Ins. |
| 1st BP (mins) x±SD | 2.11 ± 1.51 | 2.47±1.7 | 1.98±1.4 | P=0.09 |
| 1sr BP Within 10 mins of arrival, yes, n (%) | 139/139 100% | 36/36 (100%) | 103 (100%) | NS |
| Code HIP activated yes, n (%) | 103/139 (74.1%) | | 103 (100%) | N/A |
| 2nd BP (mins) x±SD | 17.9 ± 12.5 | 31.5±16 | 13.1±5.7 | P<0.0001 |
| 2nd BP within 15 mins, yes, n (%) | 91 (65.4%) | 7/36 (19.4%) | 102 (99%) | P<0.0001 |
| Severe Preeclampsia, yes, n (%) | 38/139; (27.3%) | 10/36 (27.7%) | 28 (27.2%) | NS |
| Magnesium started (mins) n, x±SD | 36/38 37.9±15 | 9 /10 40.6±14 | 27/28 37±16 | P=0.1 |
| Mag bolus within 1 hr, yes, n (%) | 35/38; 92.1% | 7/10 (70%) | 27/28 (96%) | P=0.04 |
| Mg Accurate Dose, yes, n (%) | 35/38 | 8/10 (80%) | 27/28 (96%) | P=0.163 |
| Mag Maintenance given, yes, n (%) | yes 30/38; no:8 | 3/10 (30%) | 27/28 (96%) | P<0.0001 |
| Labetalol Commenced (mins) x±SD | 43.9±27 n=38 | 9/1/26 70±38 | 27/1/75 35.5±16 | P=0.0005 |
| Labetalol within 1 hr, yes, n (%) | 31/38 (81.5%) | 4/10 (40%) | 27/28 (96%) | P=0.0005 |
| Labetalol Accurate Dose, yes, n (%) | 35/38 (92.1%) | 8/10 (80%) | 27/28 (96%) | P=0.163 |
| Disposition to L&D < 1 hr, yes, n (%) | 102/10/26/1 | 1/8/26/1 | 101/2/0 | P<0.0001 |
| Protocol followed, yes, n (%) | 98/139 70.5% | 2/36 5.5% | 96/103 (93.2%) | P<0.0001 |

Results

| | SEVERE Pre-eclampsia | | | NON SEVERE Pre-eclampsia | | |
|---|----------------------|---------------------|----------|--------------------------|---------------------|----------|
| | Pre-Code (n=10) | Post-Code (n=28) | P values | Pre-Code) (n=26) | Post-code (n=75) | P values |
| 1st BP mins (x±SD) | 2.8±1.5 | 2.0±1.1 | 0.08 | 2.3±1.8 | 1.97±1.5 | 0.94 |
| 1st BP within 10 min of arrival, yes,n (%) | 10/10 100% | 28/28 100% | | 26/26 100% | 71/71 100% | NS |
| 2nd BP mins (x±SD) | 17.5±22 | 13.2±5.1 | 0.0006 | 32.2±13 | 13.2±2 | <0.0001 |
| Second BP within 15 min, yes,n (%) | 4 (40%) | 26 (92.8%) | 0.0017 | 4/22 15.3% | 71/75 94.6% | <0.0001 |
| Magnesium started within 1 hr, yes,n (%) | 7 (70%) | 27 (96.4%) | 0.004 | 0 | 0 | |
| Time to Magnesium mins (x±SD) | 46.3±22 | 39.2±19 | 0.34 | 0 | 0 | |
| Magnesium accurate dose, yes,n (%) | 8 (80%) | 27 (96.4%) | 0.163 | 0 | 0 | |
| Magnesium Maintenance given, yes,n (%) | 1 (10%) | 27 (96.4%) | <0.0001 | 0 | 0 | |
| Antihypertensive commenced mins (x±SD) | 73.2±37 | 37.7±19 | <0.0001 | 0 | 0 | |
| Antihypertensive within 1 hr, yes,n (%) | 4 (40%) | 27 (96.4%) | 0.0005 | 0 | 0 | |
| Antihypertensive dosage accurate, yes,n (%) | 8 (80%) | 27(96.4%) | 0.163 | 0 | 0 | |
| Disposition to L & D within 1 hr, yes,n (%) | 1 (10%) | 27(96.4%) | <0.0001 | 0/0/24/1/ 0% | 73 97.3% | <0.0001 |
| Protocol followed, yes,n (%) | 2 (20%) | 25 (89.2%) | 0.0001 | 0% | 71/4 94.6% | <0.0001 |

Results

Effects of the Code
HIP implementation in
patients with severe
pre-eclampsia



Discussion

The results demonstrated that the process change significantly improved recognition and response to patients with pre-eclampsia



The overall protocol adherence improved from 0% to 94.6% ($P < 0.0001$).



Developing an Obstetrical Response Team (Code-HIP) to support prompt interventions in the Emergency Department for Patients with Hypertension in Pregnancy was a significant step in improving patient care.

Limitations

Observational and retrospective trial.

Generalizability of the results is limited, as only one facility was used in this project.

The number of patients pre-code, was smaller than the code population.





Conclusion

THE FINDINGS DEMONSTRATED THAT THE OBSTETRICAL RESPONSE TEAM SIGNIFICANTLY IMPROVED THE EMERGENCY DEPARTMENT'S ABILITY TO RECOGNIZE AND RESPOND TO PATIENTS WITH HYPERTENSIVE DISORDERS OF PREGNANCY.

THIS LED TO NOTABLE ENHANCEMENTS IN COMPLIANCE WITH THE HYPERTENSIVE CRISIS TREATMENT PROTOCOL.

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