**Hypertensive disorders in pregnancy –** The variation in practice between the four hospitals in Paramaribo - Suriname

| | | Hospital A (2016) | Hospital B (2016) | Hospital C (2016) | Hospital D (2016) | The final national guideline |
|---|---|---|---|---|---|---|
| Definitions | **Pre-eclampsia** | *BPs ≥ 140 mm Hg **AND/OR** BPd ≥ 90 mm Hg (measured twice at least 4 hours apart) **OR** BPd ≥ 110 mm Hg; all after GA 20 weeks; **with** proteinuria* | BPd ≥ 90 (measured twice at least 4 hours apart) **OR** BPd≥ 110 **OR** increase of BP 15-20 compared to pre-pregnancy BP; all after GA 20 weeks; **with** proteinuria **OR** clinical symptoms | *BPs ≥ 140 **AND/OR** BPd ≥ 90 (twice; interval 4h) **OR** BPd ≥ 110; all after GA 20 weeks; **with** proteinuria* | BPs ≥ 140 **AND/OR** BPd ≥ 90 mm Hg (twice; interval 4h) **OR** BPd ≥ 110 mm Hg; all after GA 20 weeks; **with** proteinuria | BPs ≥ 140 mm Hg **AND/OR** BPd ≥ 90 (2x, interval 4 –6h) OR increase BPs >30 **OR** BPd >15 mmHg **with** proteinuria OR clinical symptoms |
| | **Severe pre-eclampsia** | *Pre-eclampsia with BP diastolic ≥ 110 mm Hg with clinical symptoms* | Not specified | *Pre-eclampsia with BP diastolic ≥ 110 mm Hg **OR** clinical symptoms* | Not specified | BPd ≥ 110 mmHg (once) **with** proteinuria **OR** organ dysfunction (renal, liver, hematological, neurological, pulmonal) |
| | **Eclampsia** | *Generalized tonic-clonic seizures, with no other cause than pre-existent pre-eclampsia* | Convulsion in a pre-eclamptic patient with no other cause | Convulsion in a pre-eclamptic patient with no other cause | Convulsion in a pre-eclamptic patient with no other cause | Tonic-clonic seizures with no other attributable cause than pre-eclampsia |
| | **Calcium** | *No* | History of IUGR or pre-eclampsia | No | No | Low intake → 2 grams in 2-3 trimester |
| | **Aspirine** | *Chronic hypertension or medical history of IUFD or IUGR due to pre-eclampsia* | History of IUGR or pre-eclampsia | No | No | High risk → 100mg in GA 16-37 |
| | **Admission criteria** | BPs ≥ 160 **AND/OR** BPd ≥ 110 **AND/OR** clinical symptoms | Not specified | Not specified | Not specified | Severe PIH (persistent BPs ≥ 150/100), pre-eclampsie / HELLP / eclampsia, foetal indication |
| Hypertensive | **Oral initiation** | *BPd ≥ 100* | Not specified | BPd ≥ 100 mm Hg (twice) | BPd ≥ 100 **OR** BP increase >20 | BPs ≥ 150 **OR** BPd ≥ 100 |
| | **Parenteral initiation** | *BPd ≥ 110* | Not specified | BPd ≥ 110 mm Hg | BP diastolic ≥ 110 mmHg > once | BPd ≥ 110 |
| | **Oral drug choice**<br>*Antepartum*<br><br>*Postpartum* | *1. methyldopa 250-750mg 2-3*<br>*2. hydralazine 25-50 2-3dd*<br><br>*nifedipine 20mg 2dd* | 1. methyldopa 250-500mg 2-3<br>2. hydralazine 25-50 2-3dd<br><br>nifedipine 20mg 2dd | 1. methyldopa 250-500mg 2-3<br>2. hydralazine 25-50 2-3dd<br>3. labetalol 100-200mg 2dd<br>nifedipine 20mg 2dd | 1. methyldopa 250-500mg 2-3<br>2. hydralazine 25-50 2-3dd<br><br>nifedipine 20mg 2dd | 1. methyldopa 250-1000mg 3-4dd<br>2. hydralazine 25-75mg 3dd<br>3. labetalol 50-200mg 3dd<br>nifedipine 5-40mg 3dd |
| | Parenteral drug choice | *1. hydralazine via perfusor*<br>*2. hydralazine 5mg i.v.*<br>*3. ketanserine or labetalol*<br>*Perfusor available* | 1. hydralazine via perfusor<br>2. hydralazine 5mg i.v.<br>3. labetalol<br>Perfusor available only in ICU | 1. hydralazine via perfusor<br>2. hydralazine 5mg i.v.<br><br>Perfusor available | hydralazine 5mg i.v.<br><br>Perfusor not available | 1. hydralazine 5-10mg à 20-40 min. **OR** by infusion system<br>2. labetalol 1-2 mg/kg in 20 min. Continue 20-70mg/hr. |
| $MgSO_4$ | **Indication** | *Eclampsia; severe pre-eclampsia; neuroprotection* | Eclampsia; pre-eclampsia | Eclampsia; severe pre-eclampsia | Eclampsia; severe pre-eclampsia; pre-eclampsia with symptoms | Eclampsia; severe pre-eclampsia (BPd ≥ 110 OR clinical symptoms); neuroprotection |
| | **Loading dose** | *4 grams / 30 minutes* | 2 grams / 30 minutes | 4-6 grams / 30 minutes | 1 gram / 30 minutes | 4-6 grams / 30 minutes |
| | **Maintanance dose** | *1 gram / hour* | 1 gram / hour | 1 gram / hour | 1 gram / hour | 1 gram / hour |
| | **Dose repeated seizure** | *2 grams / 5 minutes* | None (diazepam) | None (diazepam) | None (diazepam) | 2 grams / 5 minutes |
| | **Stop treatment** | After 48 hours | After 24 hours and stable | After 48 hours | After 48 hours and stable | 24 – 48 hours (max 7 days; measure plasma-$MgSO_4$) |
| | **Diazepam indication** | If no iv-access | If no iv-access or in repeated seizure | If no iv-access or in repeated seizure | In seizures (whether or not on $MgSO_4$) | If no iv-access; when $MgSO_4$ shot given twice |
| | **Oxygen** | *Eclampsia: 10 L NRM* | No | Eclampsia: 5-10 L NRM | No | Eclampsia: 15 L NRM |
| | **Intravenous access** | *1 in pre-eclampsia; 2 in eclampsia* | 1 in pre-eclampsia and eclampsia | 1 in pre-eclampsia; 2 in eclampsia | 1 in pre-eclampsia and eclampsia | 2 |
| Fluids | **Before i.v. drugs** | 500mL NaCl 0.9% quick | 1000mL gelofusine quick | 500mL Ringers **OR** gelofusine | No fluids | No fluids |
| | **Maintanance** | 500mL Ringers à 8 hours (no gelofusine, glucose/NaCl 0.9%, glucose 5%) | 500mL glucose/NaCl 0.9% à 6 hours | First 1000mL Ringers in 6 hours, then 500mL gluc/NaCl 0.9% à 8 hours | 500mL Ringers **OR** NaCl 0.9% à 8 hours | Max. 1500mL in 24 hours.<br>Preference for Ringer's Lactate or NaCl 0.9% |
| Monitoring | **Vital signs**<br>*RR <110*<br>*RR ≥ 110 OR* $MgSO_4$ | Every 6 hours<br>4x once per hour, then every 4 hours | Every 4 hours<br>Every 2-3 hours | Every 2-3 hours<br>4x every ½ hour, 4x every hour | Every 6 hours<br>Every 4 hours | Every 4 hours (intrapartum every ½ hour)<br>Every ½ hr (4x), 1hr (4x), 2 hrs (4x), 4 hrs (4x) |
| | **Fluid balance** | *Pre-eclampsia* | Pre-eclampsia / HELLP | Severe pre-eclampsia | Pre-eclampsia | Every admission of hypertensive disorders |
| | **Blood tap** | *2x per week* | 2x per week | 2x per week | 3-4x per week | 2x per week |
| | **Doppler** | *GA <27* | GA <34 | GA <30 | GA <30 | GA <27 |
| | **CTG** | *GA ≥27* | GA ≥34 | GA ≥30 | GA ≥30 | GA ≥27 |
| | **Corticosteroids** | *GA $26^{+5}$ – 34*<br>*Dexamethasone 12mg twice; 12hrs* | Severe pre-eclampsia and GA 28-34<br>Dexamethasone 12mg twice; 12hrs | Delivery expected and GA 27-34<br>Dexamethasone 12mg twice; 12hrs | Severe pre-eclampsia and GA 28-34<br>Dexamethasone 12mg twice; 12hrs | GA 26 – 34<br>Dexamethasone 4 x 6mg; 12 hours apart (total 36 hours) |
| | **Eclampsia box** | *In two delivery rooms* | Not present | In one delivery room | Not present | In every delivery room |
| Delivery | **Timing mild PE** | GA 37<br>Induction (balloon, misoprostol) | Dependent on gynaecologist<br>Induction (misoprostol) or C-section | GA 37, induction<br>Induction (balloon, misoprostol) | GA 37<br>Induction (misoprostol) or C-section | GA 37; preference for vaginal birth with induction (depending on BISHOP → balloon/misoprostol/oxytocine) |
| | **Timing severe PE** | GA ≥27<br>C-section atleast >48 hours of stabilisation | GA ≥34<br>C-section after stabilisation | GA ≥30<br>C-section / induction after stabilisation | GA ≥32<br>C-section after stabilisation | GA <27 induction. GA ≥ 27: preference for induction. Caesarian in case of failed induction or fetal indication |
| Postpartum | **Duration of admission** | At least 24 hours post partum | At least 24 hours post partum | At least 24 hours post partum | At least 24 hours post partum | At least 24 hours post partum and stable (BP normalized, urine output normal, lab results improved) |
| | **Antihypertensives** | No target BP; switch to nifidepine | No target BP; switch to nifidepine | No target BP; switch to nifidepine | No target BP; switch to nifidepine | BPs 130-150 and BPd 80-100; switch to nifidepine |
| | **Blood tap** | If necessary | One day post partum | If necessary | Two days post partum | One day post partum |
| | **Postnatal clinic visit** | 7 days | 7-10 days | 7 days | 7 days | 7-10 days and 6 weeks |

**Postpartum hemorrhage –** The variation in practice between the four hospitals in Paramaribo - Suriname

| | | Hospital A (2016) | Hospital B (2016) | Hospital C (2016) | Hospital D (2016) | The final national guideline |
|---|---|---|---|---|---|---|
| | **Definition PPH** | 500mL blood loss or more after vaginal delivery | 500mL blood loss or more after vaginal delivery | 500mL blood loss or more after vaginal delivery | 500mL blood loss or more after vaginal delivery | 500mL blood loss or more during and after childbirth |
| | **Definition severe PPH** | 1000mL blood loss or more | Not specified | Not specified | Not specified | 1000mL blood loss or more ór blood loss with clinical hypovolemia during and after child birth |
| | **Call for help (supervisor)** | 500mL blood loss or more (general doctor)<br>1000mL blood loss or more (gynaecologist) | Not specified | 500mL blood loss or more | 500mL blood loss or more | 500mL blood loss or more (call general doctor)<br>1000mL blood loss or more (call gynaecologist) |
| | **Risk factors** | Not specified | Prolonged labor, twin pregnancy, macrosomia, high parity, uterus myomatosis | Not specified | Not specified | Risk factors grouped (see guideline for elaboration):<br>- General (e.g. age >40, BMI >35, uterus myomatosis)<br>- Obstetric history (e.g. grande mult, caesarean, etc)<br>- Current pregnancy (macrosomia, pre-eclampsia, etc)<br>- During delivery (prolonged labor, etc)<br>- Post partum (full bladder, retained placenta, etc). |
| Prevention | **Partograph** | On indication (prolonged labor, caesarean in history, on request of physician) | Sometimes | Never | Never | Always recommended |
| Prevention | **Oxytocin in the 3rd stage of labor** | Caesarean – always<br>Vaginal birth – always (before delivery of placenta)<br>5-10 IU i.m. or slowly i.v. (2 minutes) | Caesarean – always<br>Vaginal birth – in patients with high-risk for PPH (done after delivery of placenta)<br>5-10 IU i.m. or slowly i.v. (2 minutes) | Caesarean – always<br>Vaginal birth – in patients with high-risk for PPH (done after delivery of placenta)<br>5-10 IU i.m. or slowly i.v. (2 minutes) | Caesarean – always<br>Vaginal birth – in patients with high-risk for PPH (done after delivery of placenta)<br>5-10 IU i.m. or slowly i.v. (2 minutes) | Caesarean – always<br>Vaginal birth – always (before delivery of placenta)<br>5-10 IU i.m. or slowly i.v. (2 minutes) |
| | **Measurement of blood** | - Measurement cup (mL)<br>- Liquid (blood) removed from blood clots with a sve. Measurement done of only the blood clots. | - Measurement cup (mL)<br>- Liquid (blood) removed from blood clots with a sieve. Measurement done of only the blood clots. | - Measurement cup (mL) and / or scale (kg)<br>- Liquid (blood) and blood clots measured | - Measurement cup (mL)<br>- Liquid (blood) removed from blood clots with a sieve. Measurement done of only the blood clots. | - Measurement cup (mL) and / ore scale (kg)<br>- Measure liquid (blood) and bloodclots all together. Subtract the estimated amniotic fluid. |
| Management | **Oxytocin i.m. / i.v.** | Repeat 5-10 IU shot i.m. or i.v. | 5 IU shot i.m. or i.v. | 5 IU shot i.m. or i.v. | 10 IU shot i.m. or 5 IU shot i.v. | 10 IU shot i.m. or i.v. |
| Management | **Oxytocin infusion** | 10 IU in 500mL / 4-6 hours<br>During at least 24 hours | 5 IU in 500mL / 6 hours<br>Until bleeding stops | 10-20 IU in 500mL / 4 hours<br>During at least 4 hours | 10 IU in 500mL / 4-6 hours<br>Until bleeding stops | 10 IU in 500mL / 4 hours |
| Management | **Misoprostol** | 400 – 800 micrograms rectal | 400 – 800 micrograms rectal | 400 micrograms rectal | 400 – 800 micrograms rectal | Not first choice, as misoprostol is not beneficiary when adequate oxyotin dosis is given. |
| Management | **Methergin** | Not prescribed | 0.2 mg i.m. if bleeding persists | Not prescribed | Not prescribed | 0.2 mg i.m. |
| Management | **Tranexamic acid (Cyclokapron)** | 1 gr i.v. slowely in persistent bleeding | 2 gr i.v. slowely in severe and persistent bleeding | 2 gr i.v. slowely in severe and persistent bleeding | Not prescribed | 1 gram i.v. slowely when 1000mL blood loss or more |
| Management | **Calcium gluconate** | 1 gram i.v.<br>After transfusion of 4 blood products | 1 gram i.v.<br>After transfusion of 6 blood products | 1 gram i.v.<br>After transfusion of 4 blood products | Not prescribed | 1 gram i.v.<br>After transfusion of 4 blood products |
| Rescuscitation | **I.V. access** | 2 i.v. access lines (> 1000 mL blood loss) | Not specified | Not specified | Not specified | 2 x intravenous access (preferably green or grey) |
| Rescuscitation | **Infusion** | Ringer's Lactate or Sodium Cloride 0.9% | Ringer's Lactate or Glucose 5% | Sodium Cloride 0.9%, Glucose 5% or Gelofusine | Ringer's Lactate or Sodium Cloride 0.9% | Ringer's Lactate or Sodium Cloride 0.9%<br>Infuse 1 : 1 (blood loss : infusion), max 3 liters |
| Rescuscitation | **Oxygen** | 10 L / min in 1000 mL blood loss or more | Sometimes in severe blood loss | 10 L / min in 2000 mL blood loss or more | Sometimes in severe blood loss | 10 – 15 L / min in 1000 mL blood loss or more |
| Rescuscitation | **Transfusion indication** | Hb < 4 mmol/L | Hb < 5 mmol/L | Hb < 3.5 mmol/L or Ht < 0.20 | Hb < 4.5 mmol/L and complaints | Hb < 4.0 mmol/L or Ht < 0.20, 1000 mL blood loss or more and persistent or with symptoms of hypovolemic shock |
| Rescuscitation | **Blood products ratio** | 2 PC : 1 FF | 2 PC : 1 FFP | 1 PC : 2 FFP | 2 PC : 1 FFP | 1 PC : 2 FFP (in massa transfusion 4 PC : 4 FFP : 1 TC) |
| Rescuscitation | **Surgical and other** | Vaginal tampon; Hysterectomy | Vaginal tampon; Hysterectomy | Vaginal tampon; Hysterectomy | Vaginal tampon; Hysterectomy | Vaginal and uterine packing (gauzes); balloon tamponade (Bakri, Foley, condom); B-lynch; bilateral ligation of uterine (or internal iliac) arteries; hysterectomy (rather sooner than later) |
| Vital signs | **Measurements of** | Blood pressure, pulse, temperature , blood loss, tone of uterus | Blood pressure, pulse, temperature, blood loss, tone of uterus | Blood pressure, pulse, temperature, blood loss, tone of uterus | Blood pressure, pulse, temperature, blood loss, tone of uterus | Blood pressure, pulse, **respiratory rate, saturation,** temperature, blood loss, tone of uterus, **urinary output** |
| Vital signs | **Timing of monitoring**<br>- after a normal delivery<br>- during hemorrhage<br>- after hemorrhage | Directly; after 1 hour; after 8 hours<br>Not specified<br>Directly; after 1 hour; after 4 hours | Directly; after 1 hour; after 8 hours<br>Not specified<br>Directly; after 1 hour; after 8 hours | Directly; after 1 hour; after 8 hours<br>Not specified<br>Directly; after 1 hour; after 2 hours | Directly; after 1 hour; after 8 hours<br>Not specified<br>Directly; after 1 hour; after 8 hours | Directly; after 1 hour; after 8 hours<br>Every 10 minutes<br>Directly; after 30 minutes; 1 hour; 2 hours; 8 hours |
| Vital signs | MEOWS score performed | Yes | No | No | No | Not specified |
| Vital signs | **Follow up in severe PPH** | - Blood exam (Hb, Ht, Tr, INR, fibrinogen)<br>- Performed a day later<br>- Discharge not specified | - Blood exam (not specified)<br>- Performed same day<br>- Discharge not specified | - Blood exam (not specified)<br>- Performed a day later<br>- Discharge not specified | - Blood exam (not specified)<br>- Performed same day<br>- Discharge not specified | - Blood exam (Hb, Ht, Tr, INR, APTT, PT fibrinogen, electrolytes, creatinine and liver enzymes)<br>- Performed 4 hours later and 24 hours later<br>- Discharge (by doctor) after at least 24 hours |
| | **PPH-box in delivery room** | Yes | No | Yes | No | Yes, should always be |
| | **PPH-checklists or flow charts in delivery rooms** | Yes | No | Yes | No | Yes, should always be |