IN THE NAME OF GOD

Gestational hypertension

D.MOSHFEGHI

PERINATOLOGIST

ROYAN

Gestational hypertension

- new onset of hypertension at ≥20 weeks
- systolic blood pressure ≥140 mmHg
- and/or
- diastolic blood pressure ≥90 mmHg
- in the absence of proteinuria or new signs of end-organ dysfunction
- at least **two occasions** at **least four hours** apart

Gestational hypertension is severe

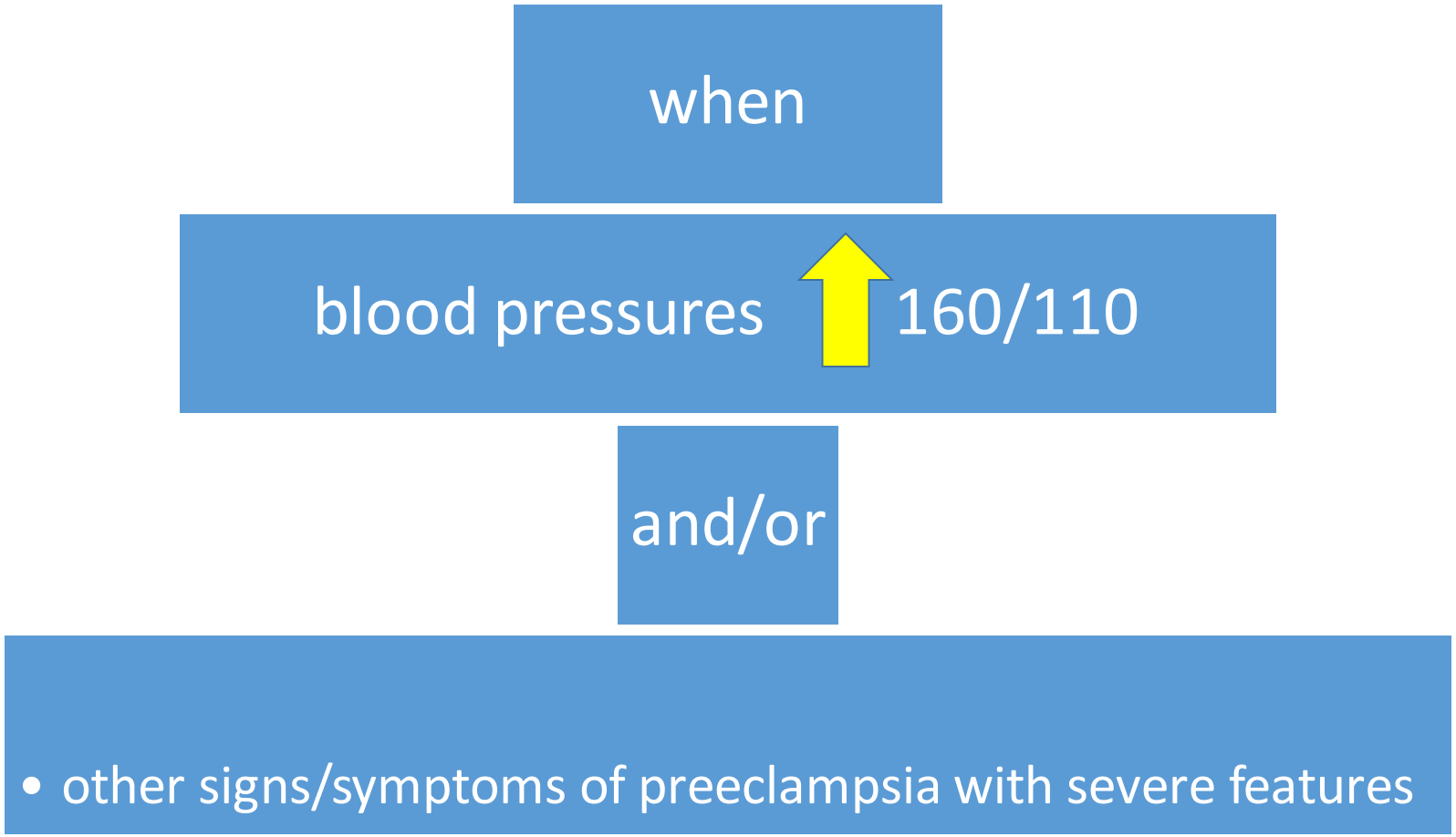
when

systolic blood pressure ≥160 mmHg

and/or

diastolic blood pressure ≥110 mmHg

gestational hypertension is considered "preeclampsia with severe features"



Gestational hypertension

temporary diagnosis for hypertensive pregnant women

who do not meet criteria for

preeclampsia or chronic hypertension

diagnosis is changed to

Preeclampsia,

if proteinuria or new signs of end-organ dysfunction develop

•Chronic hypertension,

if blood pressure elevation persists ≥12 weeks postpartum.

All require postpartum follow-up at 12 weeks

pregnancy-related hypertension ???

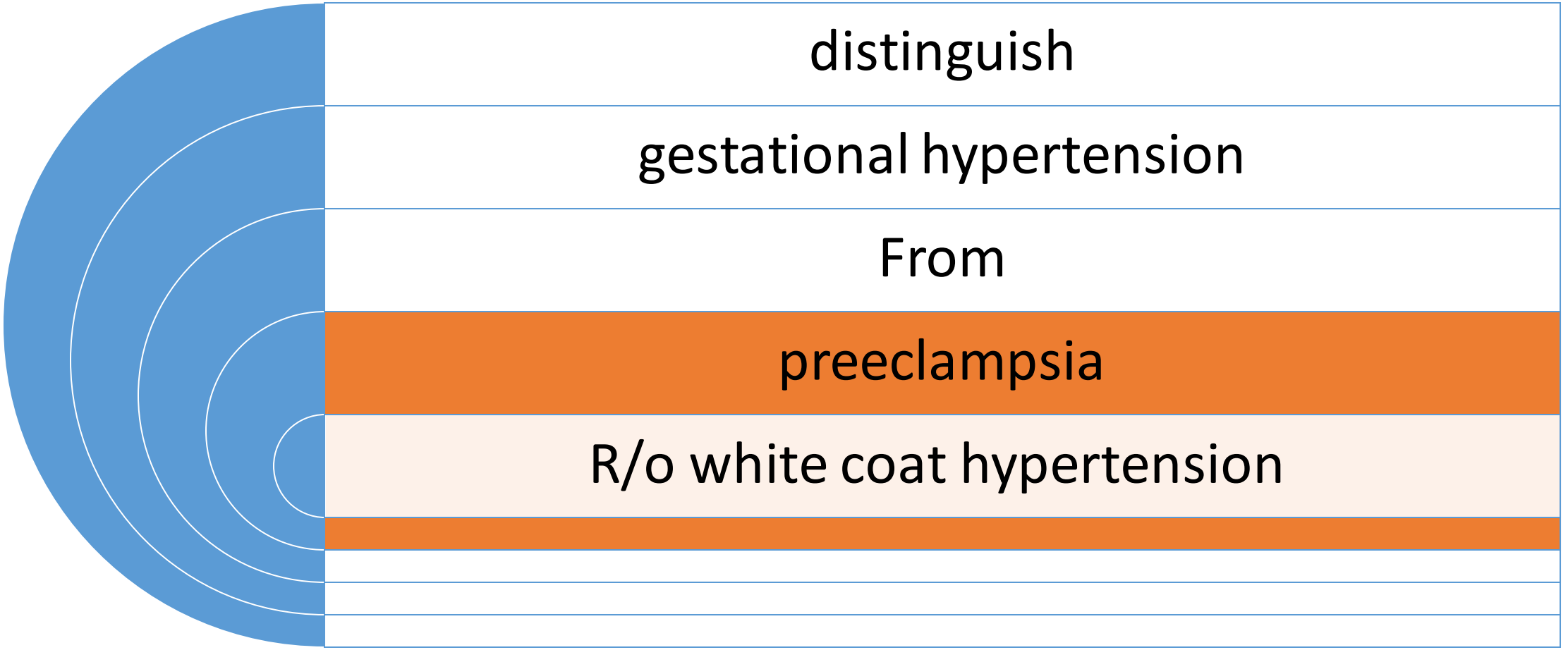
or chronic hypertension???

with or without superimposed preeclampsia

PREVALENCE

- most common cause of hypertension during pregnancy.
- 6 to 17 % of healthy nulliparous
- 2 to 4 % of multiparous women
- highest in HX of preeclampsia in a previous pregnancy,
- multifetal gestation
- obese women

DIAGNOSTIC EVALUATION



Measure protein excretion

A urine dipstick of negative to trace

should not be used to definitively exclude significant proteinuria

false negative results occur

A positive urine dipstick

if only +1,

requires confirmation

false positives occur.

Urine protein can be quantitated

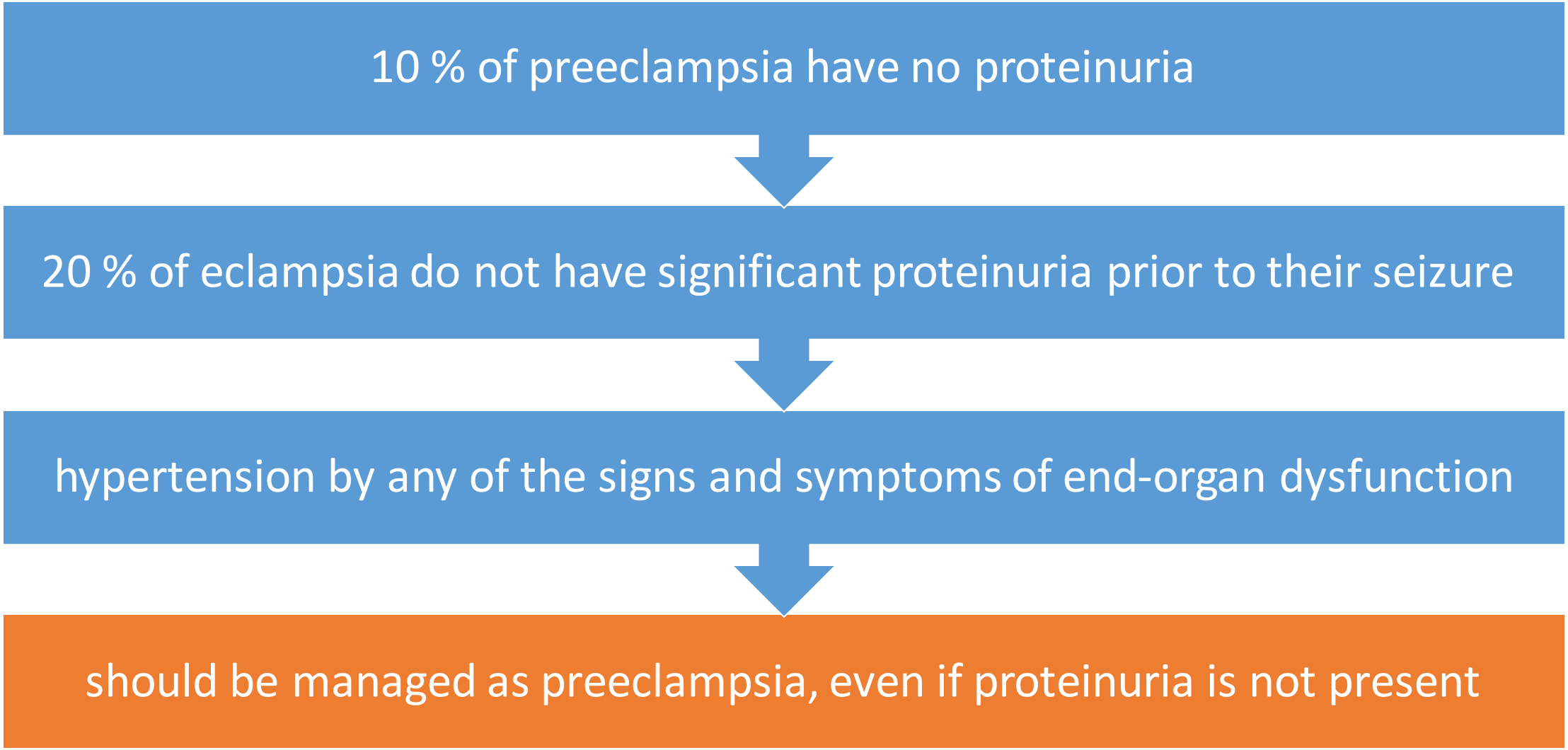
urine protein-to-creatinine ratio ≥0.26 mg protein/mg creatinine (30 mg/mmol) on a random urine sample

with a 24-hour urine collection.

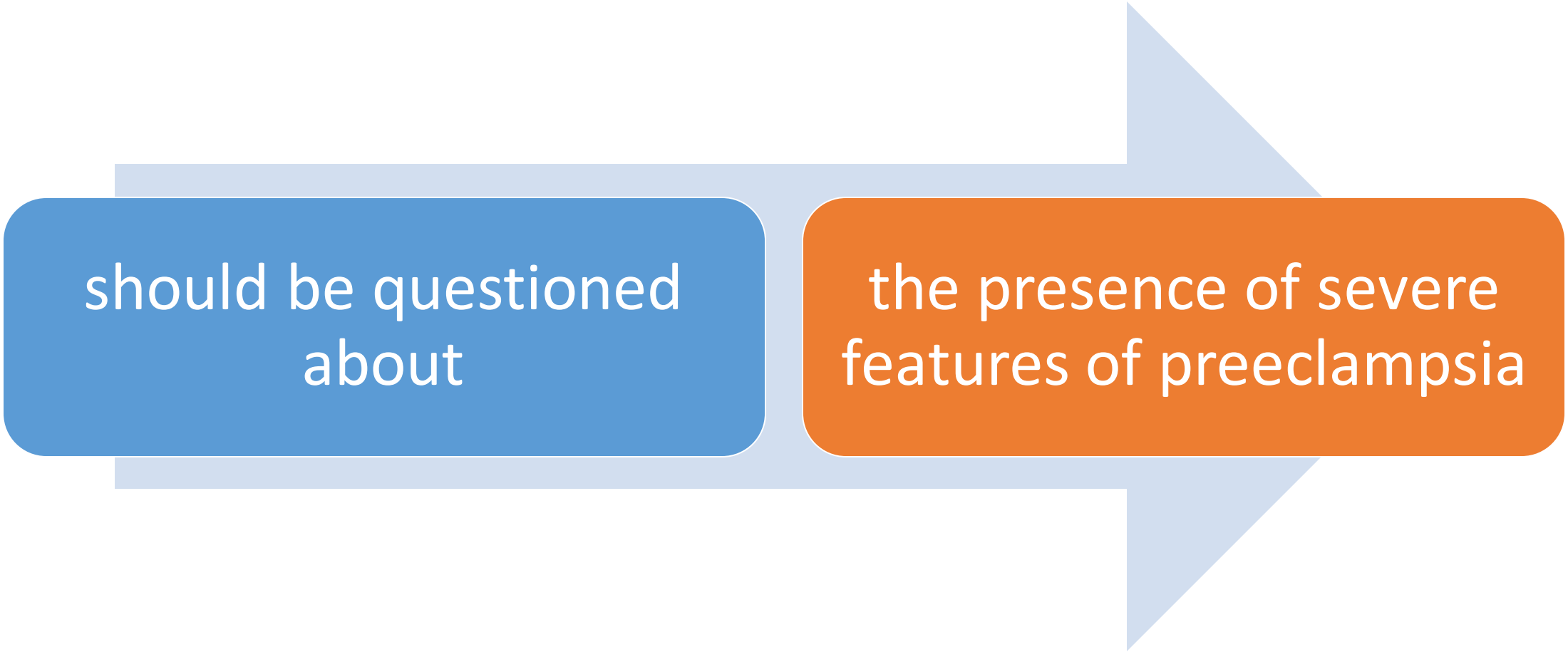
24-hour urine collection

most widely accepted diagnostic criteria for preeclampsia.

protein-to-creatinine ratio is convenient for patients who have difficulties collecting and/or transporting a 24-hour specimen


10 % of preeclampsia have no proteinuria
20 % of eclampsia do not have significant proteinuria prior to their seizure
hypertension by any of the signs and symptoms of end-organ dysfunction
should be managed as preeclampsia, even if proteinuria is not present

Evaluate for features of severe disease



Rule out other causes of acute hypertension

pheochromocytoma

use of drugs that can produce a hyperadrenergic state, such as cocaine

Perform laboratory evaluation

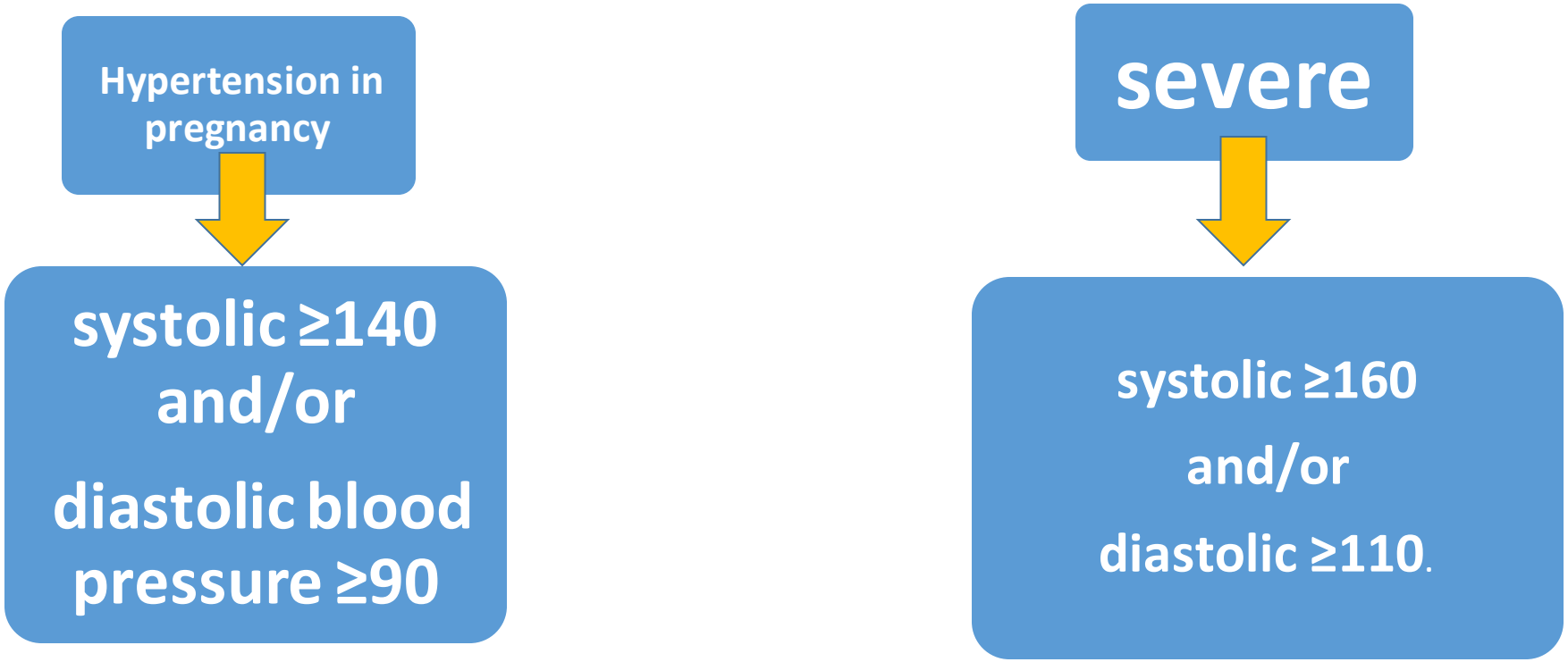
end organ involvement ⟺ occurs with preeclampsia ,

thrombocytopenia,

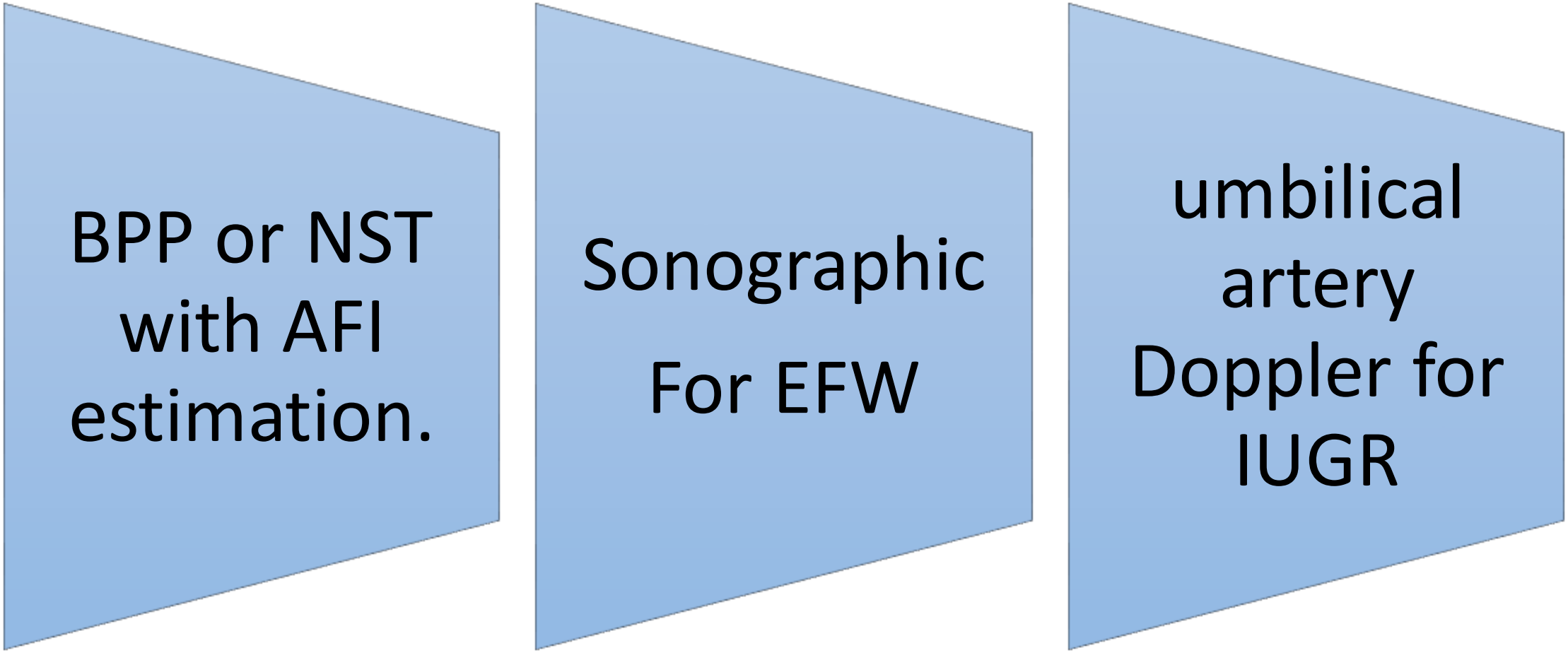
creatinine >1.1 mg/dL

doubling of hepatic transaminases

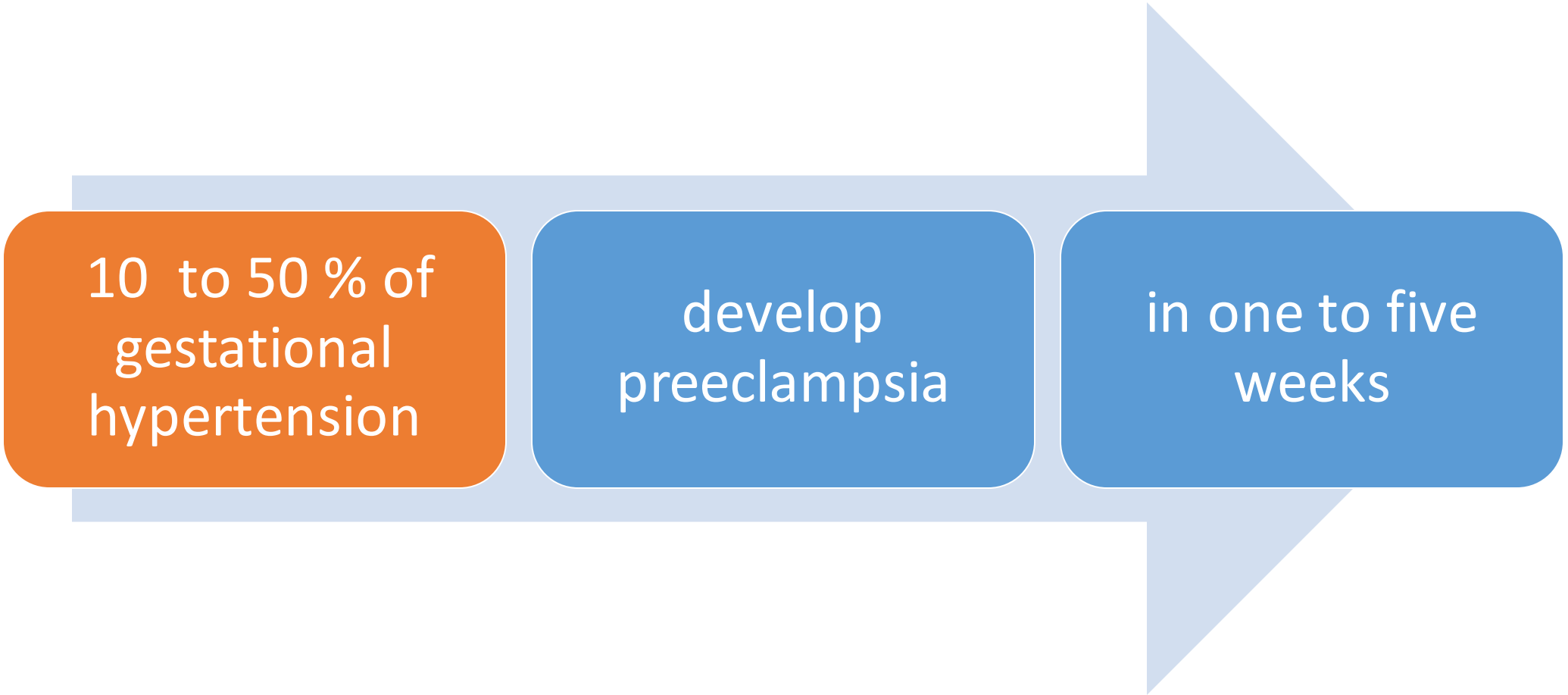
Determine the severity of hypertension



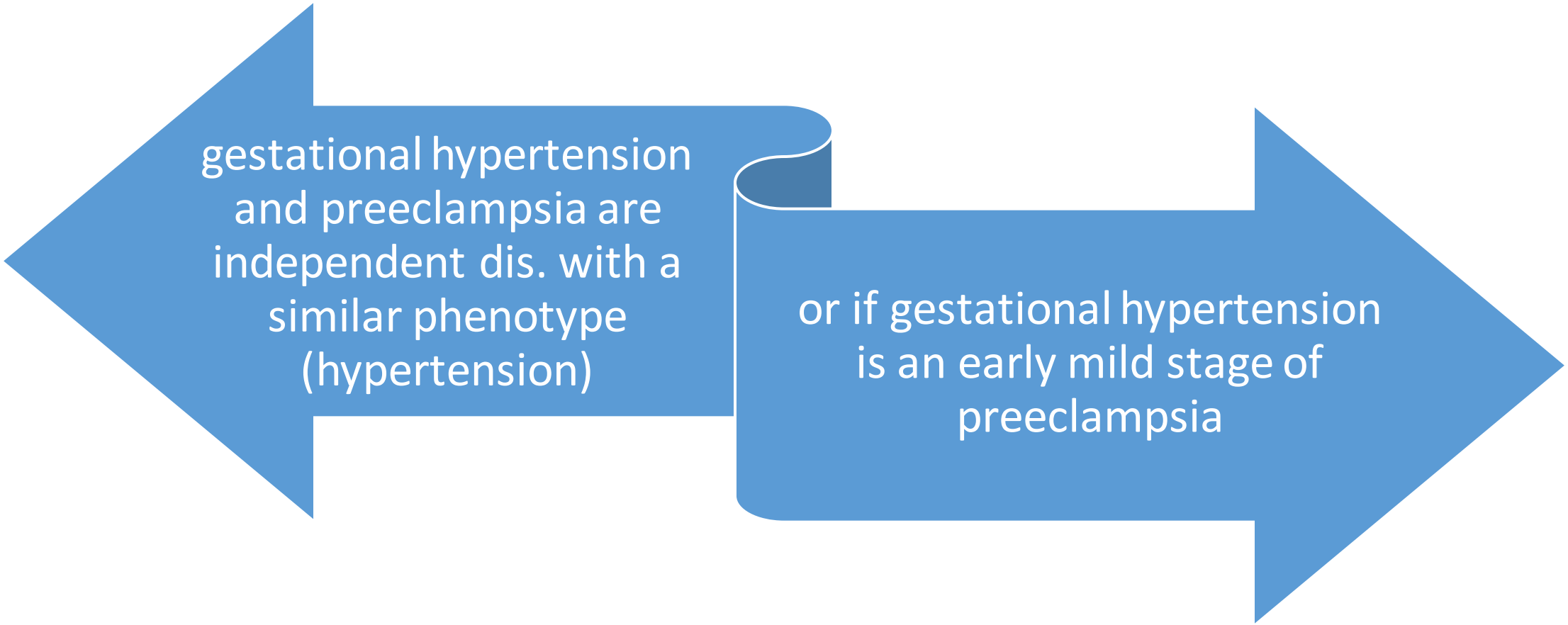
Assess fetal well-being



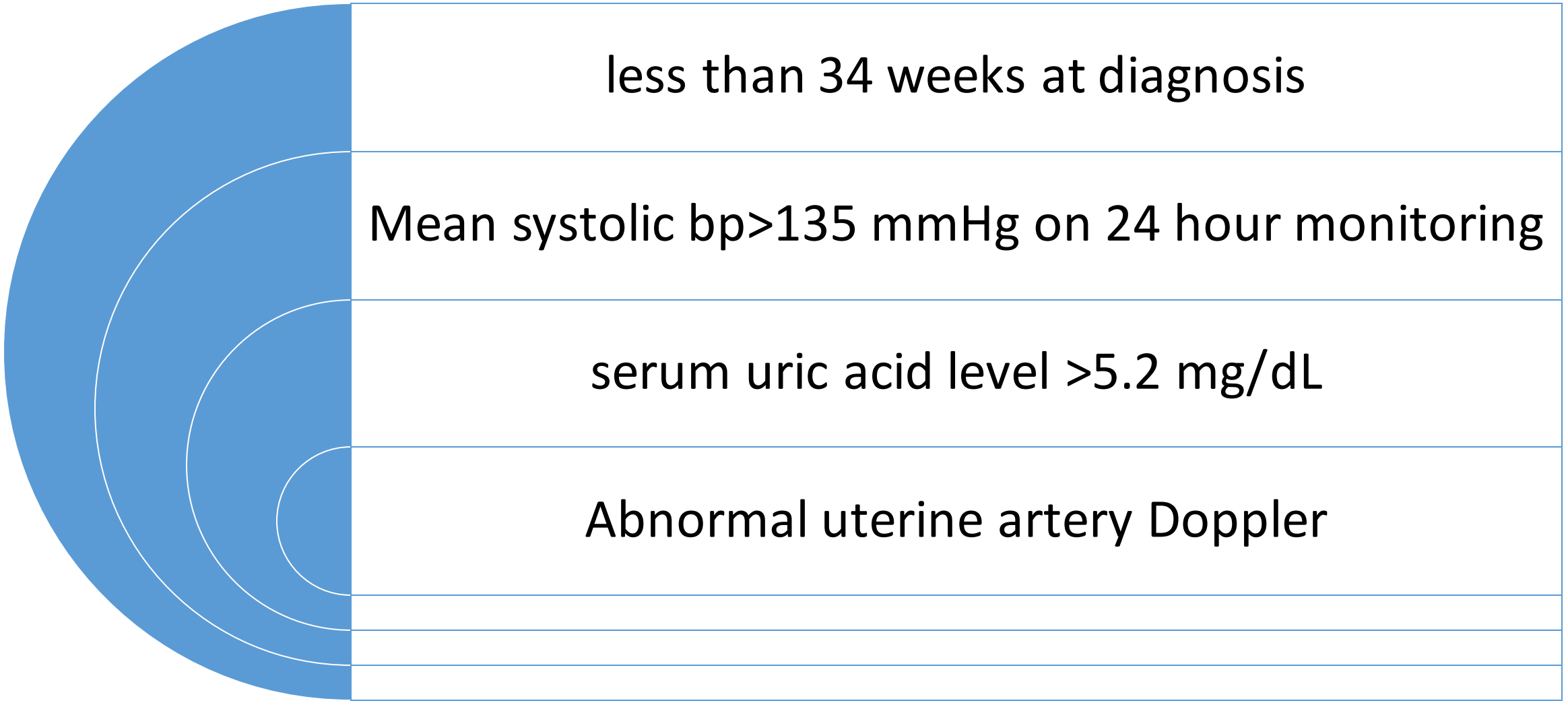
RISK OF PROGRESSION TO PREECLAMPSIA



not clear whether



increased risk for progression to preeclampsia include



MANAGEMENT

— The decision to deliver balance three competing factors:

(1) the fetal benefits from expectant management

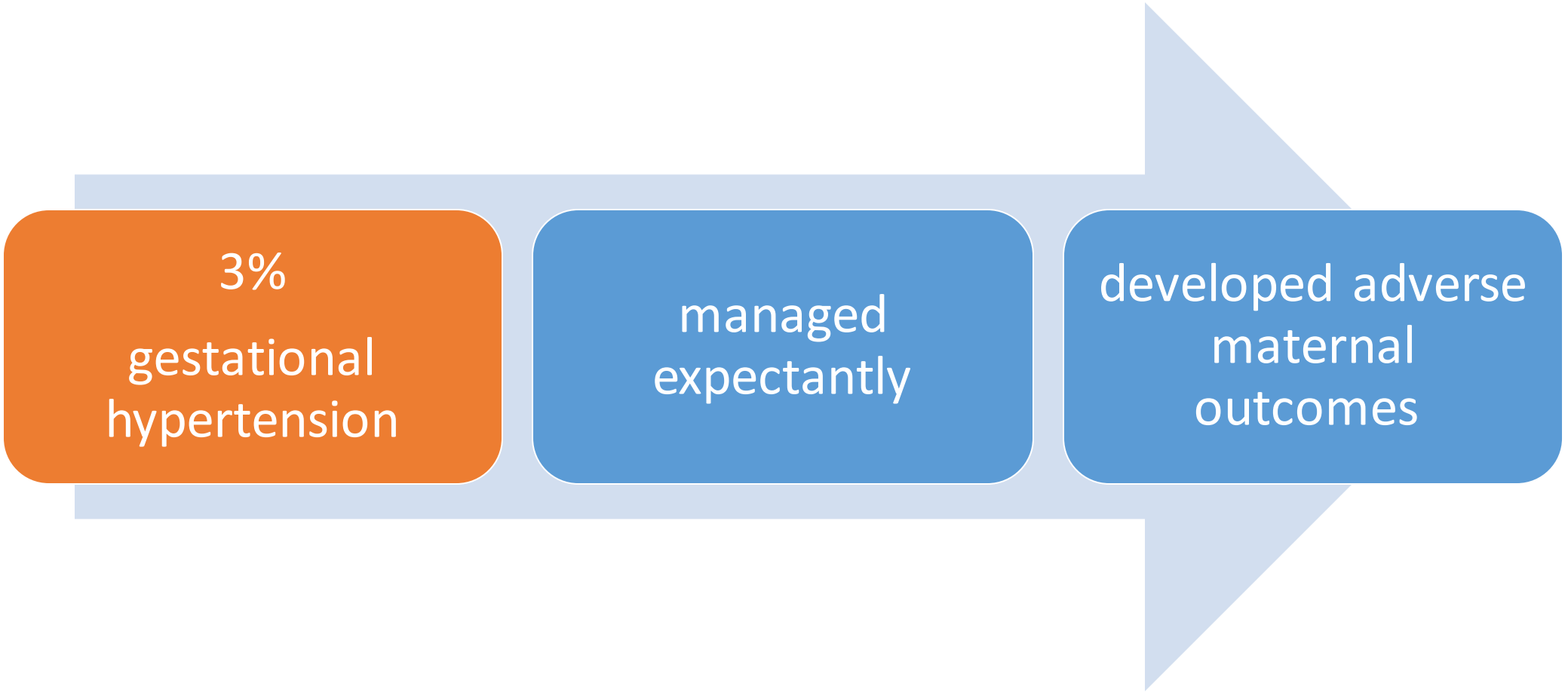
(2) the maternal and fetal benefits from early intervention

(3) the maternal and fetal risks from expectant management

MANAGEMENT


Non severe gestational hypertension
close surveillance
risk of serious sequelae
manage expectantly
deliver when their clinical situation deteriorates or at term

MANAGEMENT


3%
gestational hypertension
managed expectantly
developed adverse maternal outcomes

Blood pressure less than 160/110

without severe BP elevation

managed safely as outpatients

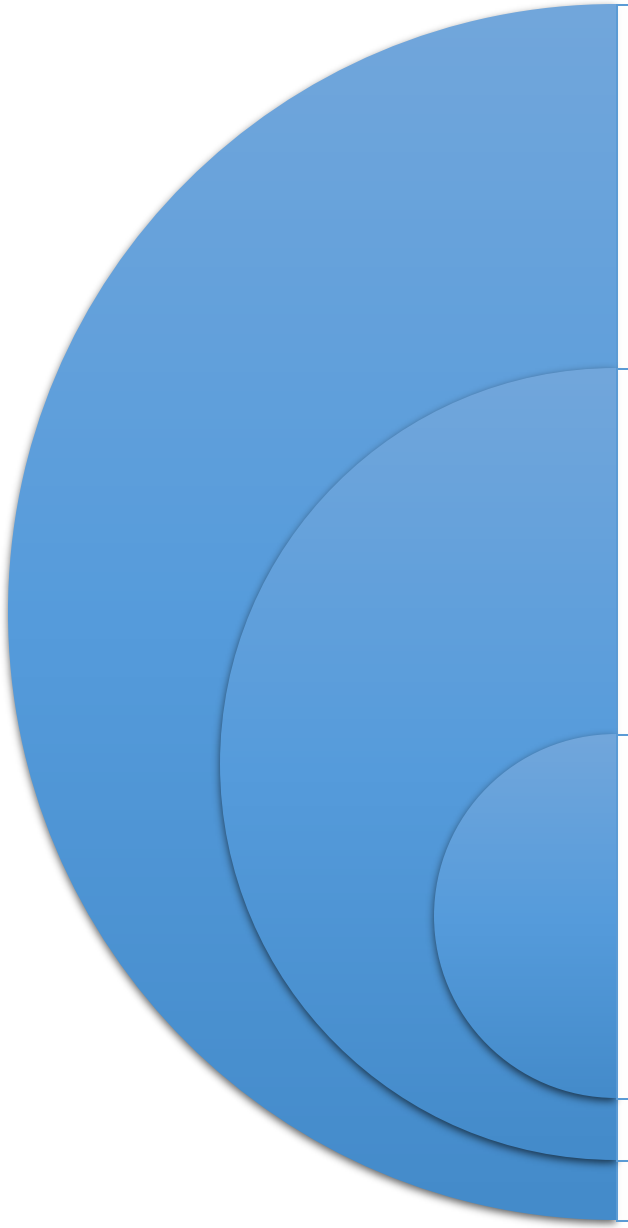
with weekly or twice weekly office visits

assess maternal symptoms and fetal well-being,

protein excretion, platelet, creatinine, LFT.

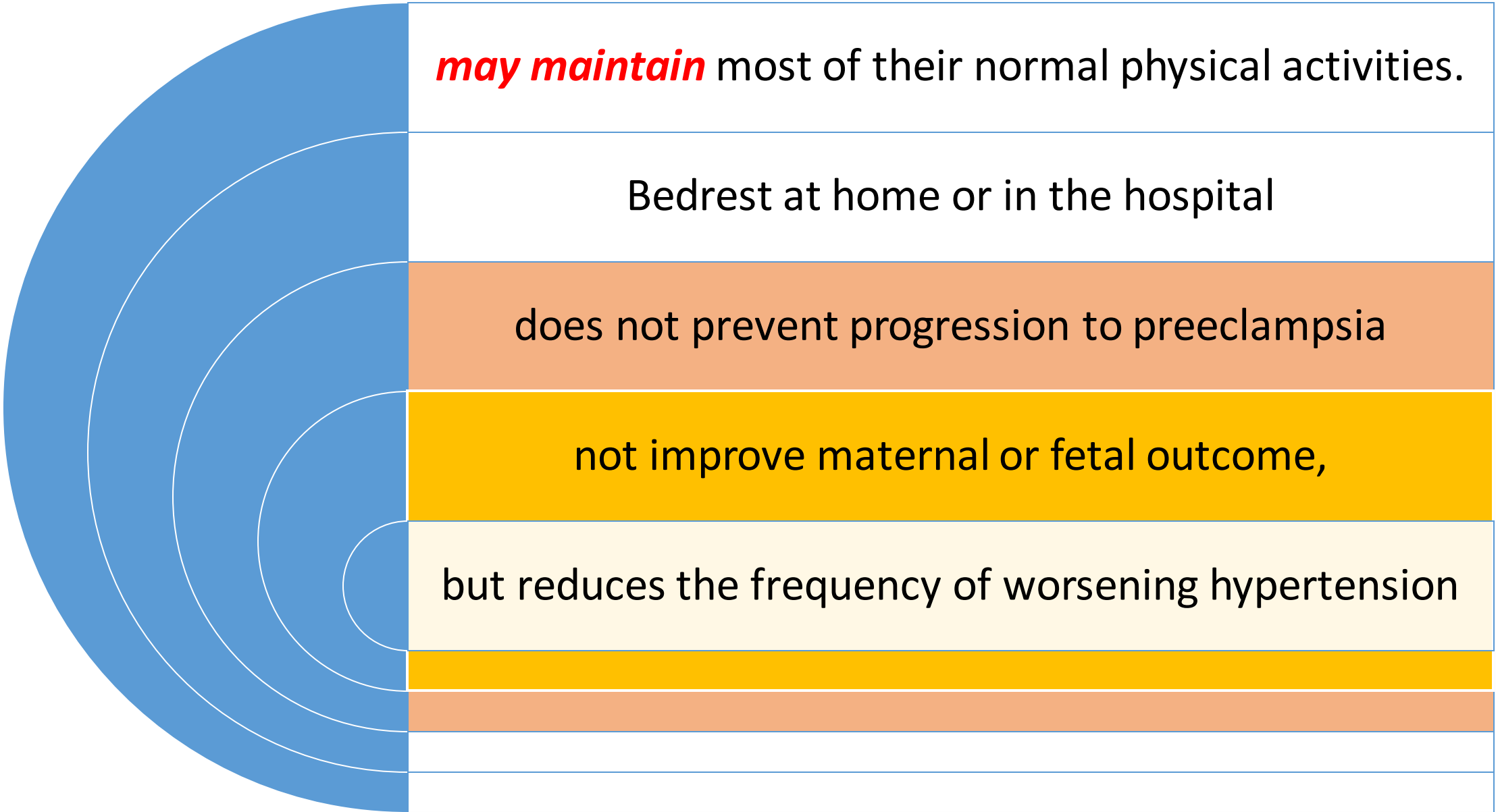
Home BP monitoring can be useful to determine the patient's average and peak blood pressure.

Patient education and counseling



report any symptoms suggestive of preeclampsia
review signs of possible fetal impairment,
such as decreased fetal movement and vaginal bleeding, and signs of preterm labor

Level of physical activity



Level of physical activity

not advise bedrest for hypertension,

particularly those with stable chronic hypertension.

Restricted activity is associated with

bone loss,

increased risk of thromboembolic events

Level of physical activity

- Reduced activity for women with preeclampsia
- may improve uteroplacental blood flow
- prevent exacerbation of hypertension,
- particularly if blood pressure is not adequately controlled;
- no evidence that it significantly improves major maternal or fetal outcomes.

exercise

against strength training and pure isometric exercise, such as weight lifting,

can acutely raise blood pressure to severe levels.

Aerobic exercise cause a modest rise in systolic pressure, usually with no change or a slight reduction in diastolic pressure.

In the absence of information about a woman's blood pressure response to her usual aerobic exercise activities, **we advise against aerobic exercise**

at work

Whether and how many hours the patient continues to work outside her home ??

depends on multiple factors,

her blood pressure at work.

These decisions should be made on a case-by-case basis

at work

the ***physical demands*** of the woman's job are evaluated on a case-by-case basis,

especially in women who have medical or obstetrical disorders that are unstable or associated with impaired placental perfusion (eg, preeclampsia, fetal growth restriction).

at work

long working hours (>40 hours per week)

shift work (working a schedule other than 7 AM to 5 PM five days a week),

prolonged standing (>3 to 4 hours of continuous standing),

lifting and heavy physical work

may increase the risk of preterm delivery, SGA infant, miscarriage, and pregnancy-associated hypertension to a small degree, but the confidence intervals for many of the variables were not significant,

Low-dose aspirin

prevents preeclampsia in gestational hypertension unclear.

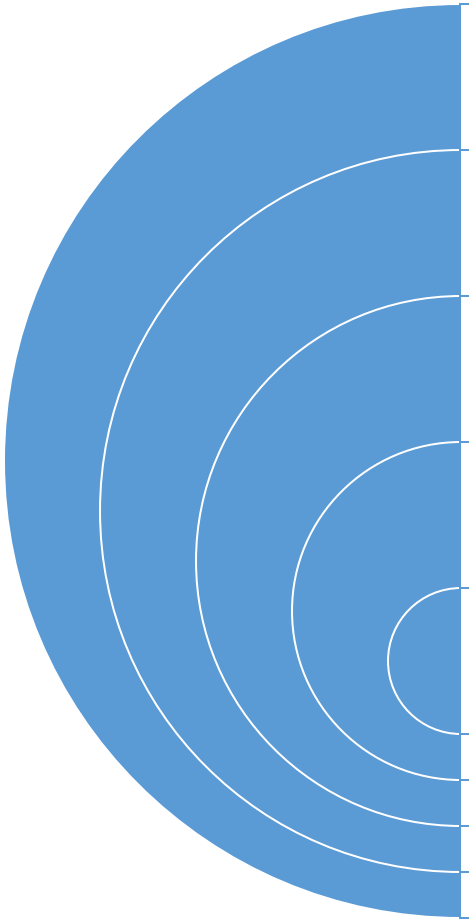
We do not begin aspirin for prevention of preeclampsia after 20 w and therefore do not prescribe for gestational hypertension

modest reduction in preeclampsia and its sequelae (growth restriction, preterm birth)

(ACOG)

- monitoring at least in-office weekly
- assessment of proteinuria, plt, cr, LFT
- home blood pressure monitoring

Fetal assessment



fetal movement daily

call if it is decreased or absent

either a NST biophysical profile weekly.

Testing is begun at 32 weeks

monitor fetal growth every three to four weeks

Antihypertensive therapy

not prescribe antihypertensive drugs for antepartum of gestational hypertension,

unless

HTN is severe

or approaching the severe range

or the patient has preexisting end organ dysfunction (eg, renal, cardiac) that may be worsened by hypertension.

drug therapy of mild hypertension

not improve maternal or neonatal outcome

treatment of severe hypertension

blood pressure goal

130 to 150 mmHg systolic

80 to 100 mmHg diastolic

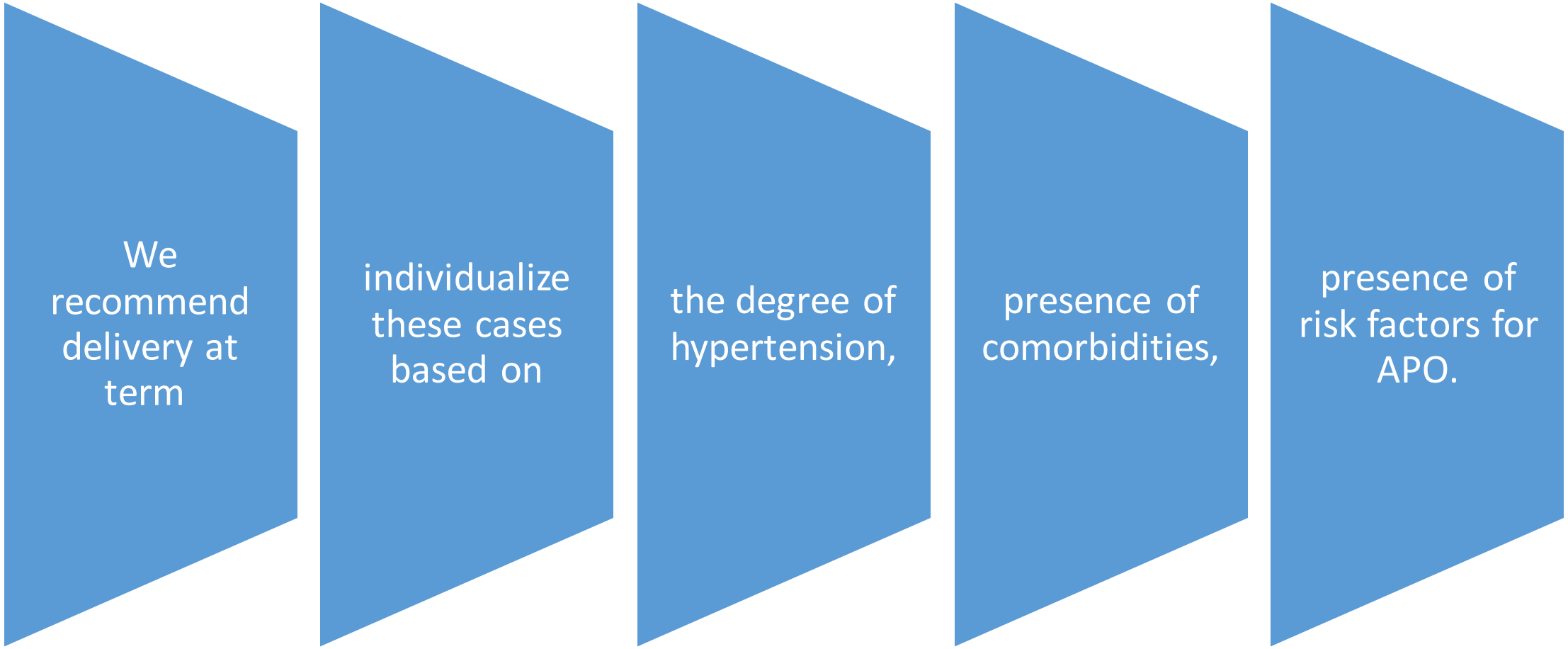
Antenatal corticosteroids

— If patient is at increased risk for delivery within seven days and before 34 weeks

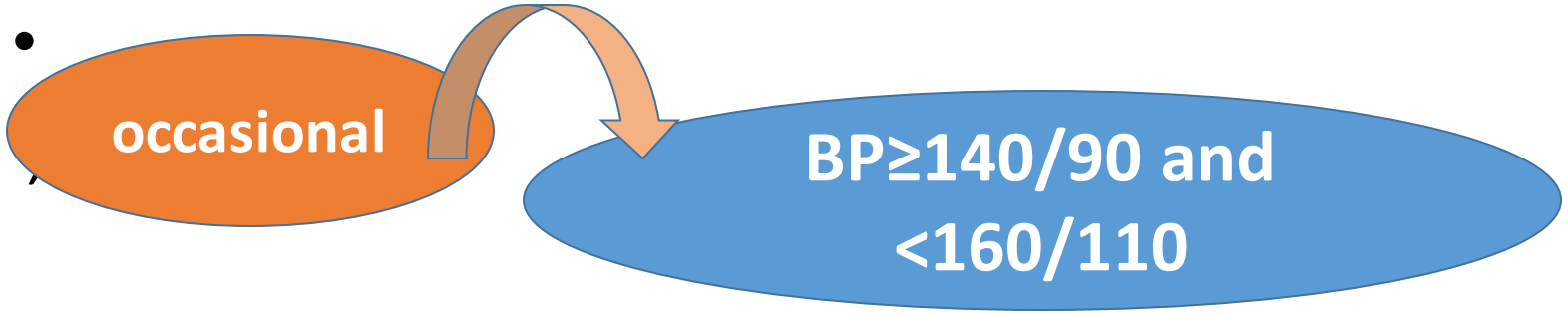
late preterm gestational ages is more controversial.

betamethasone is reasonable for patients suspected to be at risk for rapid progression to preeclampsia

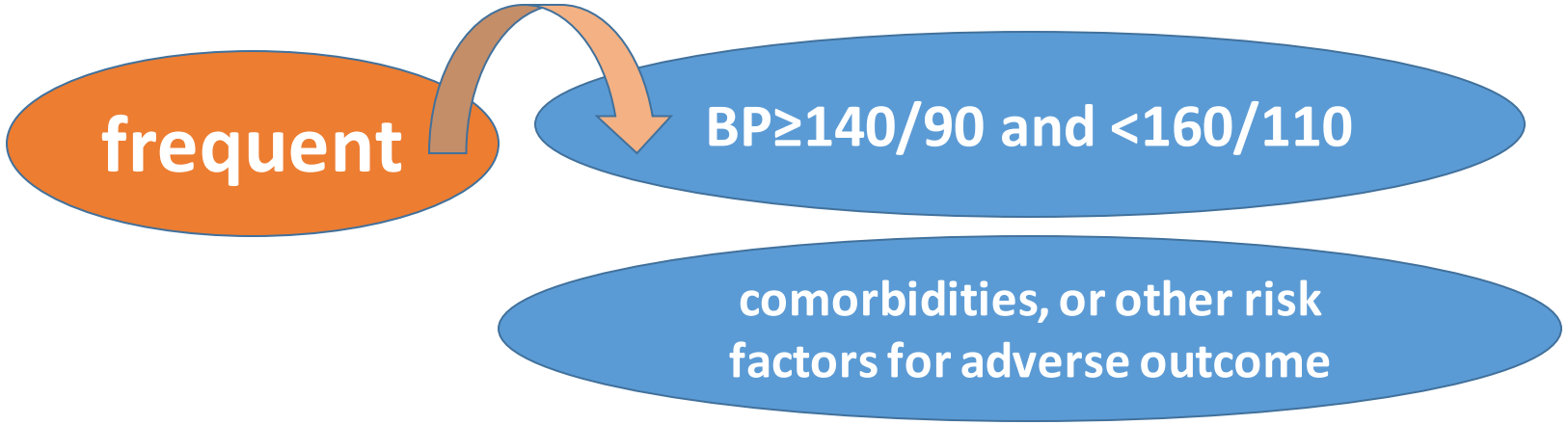
Controversial **Timing of delivery**



•



deliver at 38+0 to 39+6 w



we deliver at 37+0 weeks.

Society for Maternal-Fetal Medicine

delivery at 37+0 to 38+6 weeks **for all women** with any degree of gestational hypertension because of the risk of progression to preeclampsia

ACOG

suggests **delivery rather than expectant** management for women with uncomplicated gestational hypertension at ≥37+0 weeks

Intrapartum management

monitor for proteinuria,

worsening hypertension

symptoms of severe disease

We do not administer magnesium sulfate seizure prophylaxis unless the patient develops severe hypertension or symptoms or laboratory abnormalities associated with severe preeclampsia.

ACOG suggests use of magnesium sulfate seizure prophylaxis for women with gestational hypertension with severe features, preeclampsia, or eclampsia

Blood pressure greater than 160/110 mmHg

— severe gestational hypertension

complications **comparable to those with preeclampsia** with severe features,

ACOG recommends managing these patients similarly

Postpartum course

— become normotensive within the **first postpartum week**

returns to normal by 12 weeks postpartum, → transient hypertension of pregnancy.

hypertensive at the 12th postpartum week, → chronic hypertension

The mean time to normalization of blood pressure postpartum after preeclamptic pregnancies is **approximately two weeks.**

The slower rate of recovery in preeclampsia may reflect the time required for resolution of the endothelial injury

use nonsteroidal anti-inflammatory agents for postpartum analgesia should be individualized,

cause elevations in blood pressure in nonpregnant individuals with hypertension.

If blood pressure is elevated in the postpartum period, we recommend avoiding these drugs

recurrence rate

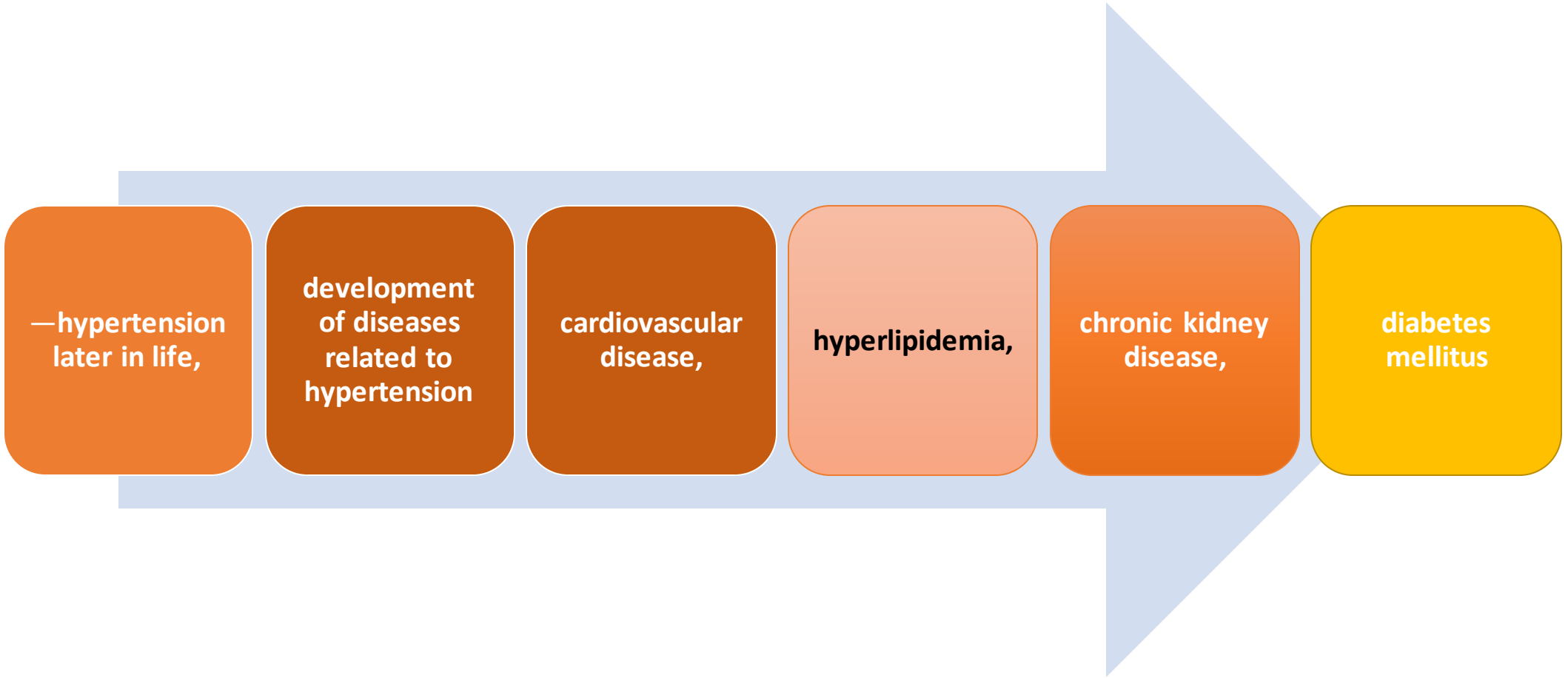
- higher than that for preeclampsia
- 5 percent for preeclampsia
- gestational hypertension >20 percent

Recurrence risk

— 22 percent developed hypertension in a subsequent pregnancy

low-dose aspirin in future pregnancies to reduce their risk of developing preeclampsia.

Long-term prognosis



PERINATAL OUTCOME

- **Nonsevere hypertension**

–generally favorable

SGA newborn at term increased

Severe hypertension

preterm delivery, (SGA), and abruptio placentae

Diet

A normal diet without significant salt restriction

salt restriction may induce low intravascular volume

probiotic use during pregnancy

may have beneficial maternal effects,

reduced risk of inflammatory events and preeclampsia,

improved maternal glucose metabolism

preconception

evaluation should be performed to ascertain the following information:

- The extent of target-organ damage.
- The patient's overall cardiovascular risk status.
- To rule out identifiable (secondary) and often curable causes of hypertension

preconception

The main goals on the physical examination

to evaluate for signs of end-organ damage (such as retinopathy)

of a cause of identifiable hypertension

preconception

- **Laboratory testing** —
- ●Blood chemistries
- electrolytes, glucose, and creatinine.
- ●Lipid profile.
- ●Urinalysis to detect hematuria and an albumin/creatinine ratio to estimate albumin excretion.
- ●Electrocardiogram (ECG).

before trying to get pregnant?

— get blood pressure under control.

If taking blood pressure medicines, changing dose or switching to a different medicine. sure that medicine is safe in pregnancy.

BMI

GDM ,Preeclampsia, Placental abruption,IUGR ,PTL

Lab test APS

before trying to get pregnant?

- **Can I have a normal vaginal delivery?** — Yes
- **Will my baby be healthy?** — Probably ptl
- Prefer single pregnancy
- Need close surveillance
- ASA 12w
- Under lying dis .for hypertension

severe preexisting hypertension in the first trimester,

- Superimposed preeclampsia – 50 %
- Abruptio placenta – 5 to 10 %
- Preterm birth – 62 to 70 %
- Fetal growth restriction – 31 to 40 %

Blood pressure measurement

mercury sphygmomanometer gold standard

Blood pressure is obtained after five minutes of rest,

with the patient sitting with feet on the ground and legs uncrossed or in a semi-reclining position with her back supported.

Whether sitting or in semi-Fowler, the arm should be supported and at heart level. Measurement of blood pressure in left lateral recumbency, on the left arm, does not differ substantially from blood pressure that is recorded in the sitting position, and may be used if a seated blood pressure is not feasible

An appropriately sized cuff should be used

- width of bladder 40 %of circumference and encircling 80 % of the upper arm.
- A large adult cuff → upper-arm circumference of 35 to 44 cm,
- thigh cuff → upper-arm circumference is 45 to 52 cm.
- If an auscultatory method is used,
- first audible sound (Korotkoff I) → systolic pressure
- disappearance of sound (Korotkoff V) → diastolic pressure

- Caffeine
- Nicotine
- exercise
- within 30 minutes of measurement can increase readings.
- Empty bladder
- No talk

Step 3: Take the proper measurements needed for diagnosis and treatment of elevated BP/hypertension	1. At the first visit, record BP in both arms. Use the arm that gives the higher reading for subsequent readings. 2. Separate repeated measurements by one to two minutes. 3. For auscultatory determinations, use a palpated estimate of radial pulse obliteration pressure to estimate SBP. Inflate the cuff 20 to 30 mmHg above this level for an auscultatory determination of the BP level. 4. For auscultatory readings, deflate the cuff pressure 2 mmHg per second, and listen for Korotkoff sounds.

Normal BP
Systolic <120
and
diastolic <80

•Elevated BP
Systolic 120 to 129
and diastolic <80

•Hypertension:

-Stage 1 – Systolic 130 to 139
or diastolic 80 to 89

-Stage 2 – Systolic at least 140
or diastolic at least 90

Step 2: Use proper technique for BP measurements	1. Use a BP measurement device that has been validated, and ensure that the device is calibrated periodically.* 2. Support the patient's arm (eg, resting on a desk). 3. Position the middle of the cuff on the patient's upper arm at the level of the right atrium (the midpoint of the sternum). 4. Use the correct cuff size, such that the bladder encircles 80% of the arm, and note if a larger- or smaller-than-normal cuff size is used. 5. Either the stethoscope diaphragm or bell may be used for auscultatory readings.

Checklist for accurate measurement of blood pressure

Step 1: Properly prepare the patient	1. Have the patient relax, sitting in a chair (feet on floor, back supported) for >5 minutes. 2. The patient should avoid caffeine, exercise, and smoking for at least 30 minutes before measurement. 3. Ensure patient has emptied his/her bladder. 4. Neither the patient nor the observer should talk during the rest period or during the measurement. 5. Remove all clothing covering the location of cuff placement. 6. Measurements made while the patient is sitting or lying on an examining table do not fulfill these criteria.