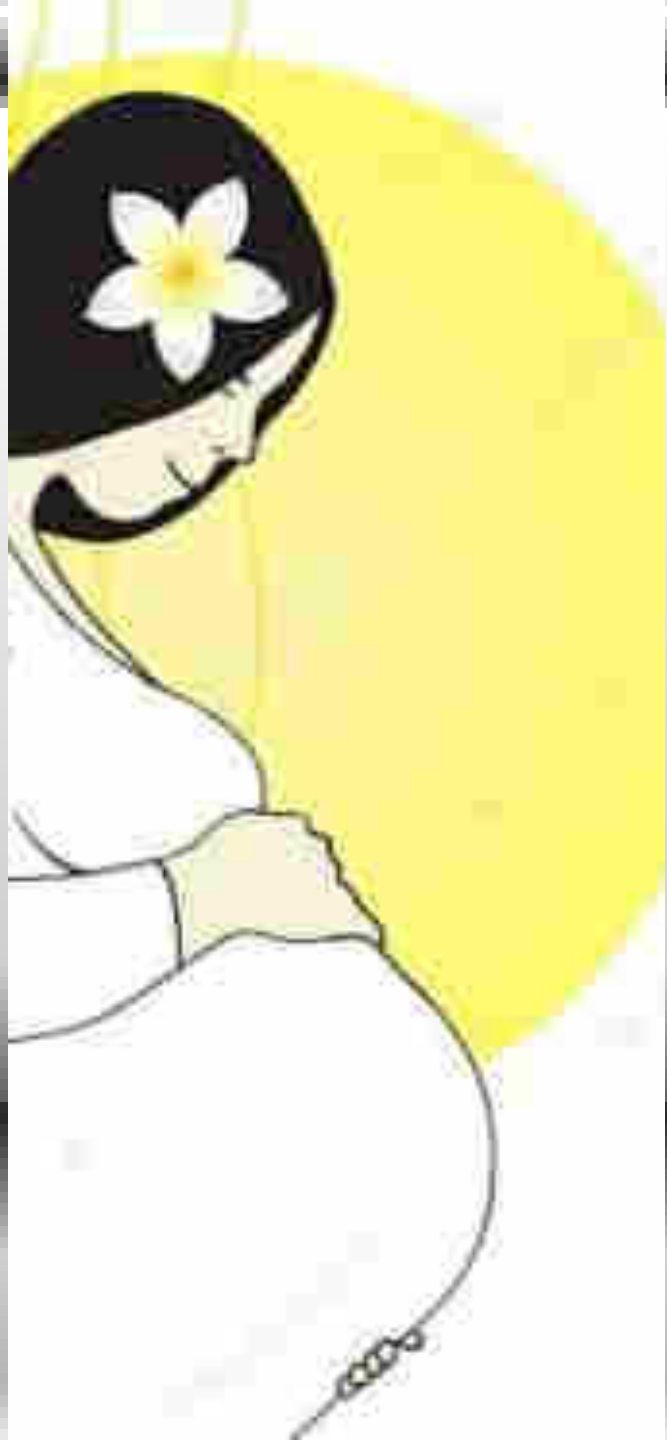
Preventive nephrology



By
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Ministry of Health , Damietta .



Real case scenario

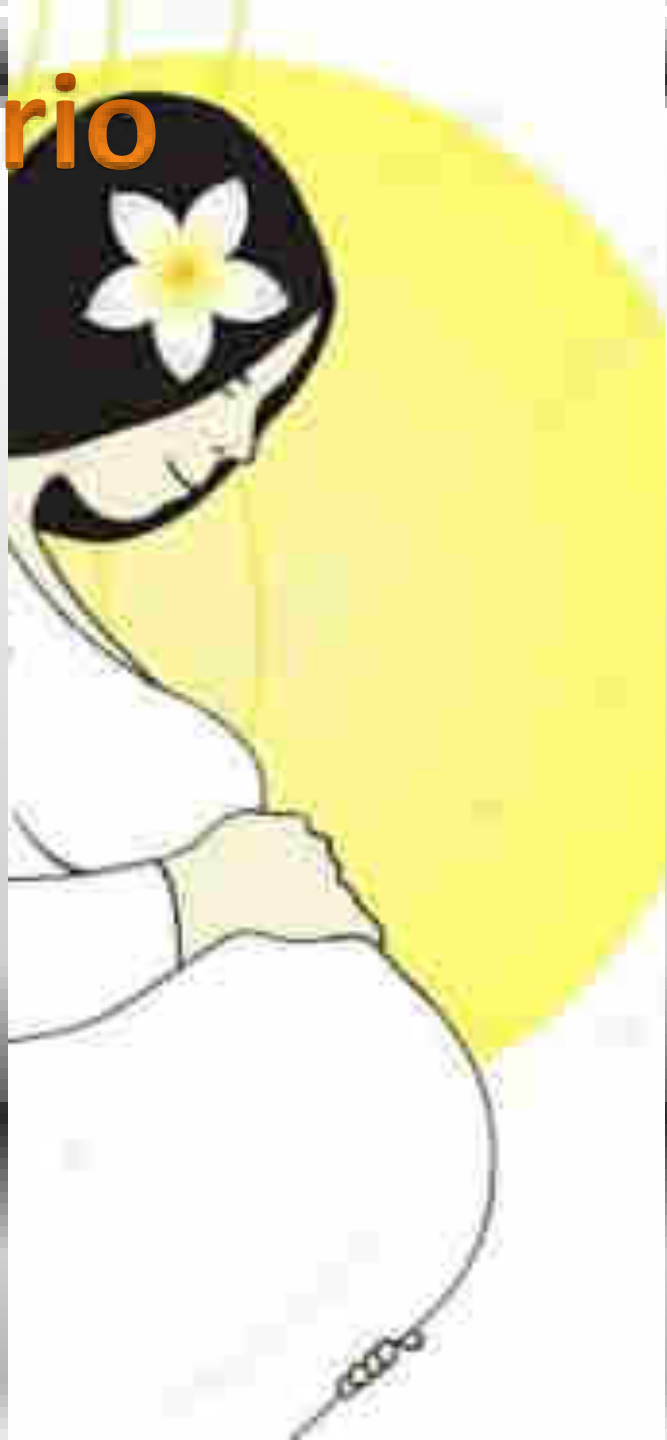
- 27 year-old female
- Primi gravida.
- Delivered by C.S-spinal anasethia>>>>full term baby
- 10 hours later, the patient returned to home, she complained from headache.
- The obstetrician ordered to give fluids

Day 1

- Severe Headache, malaise, lethargy and dizziness.
- The family called the physician .
- No bleeding
- Fluids, analgesics, assurance

Day 2

- The patient became dyspneic .
- The obstetrician asked the family to consult chest physician. The chest physician ordered CBC which revealed leukocytosis and HB 9 g/dl.
- Blood pressure : 100/70 mmHg ----
- He called the obstetrician and started broad spectrum antibiotic



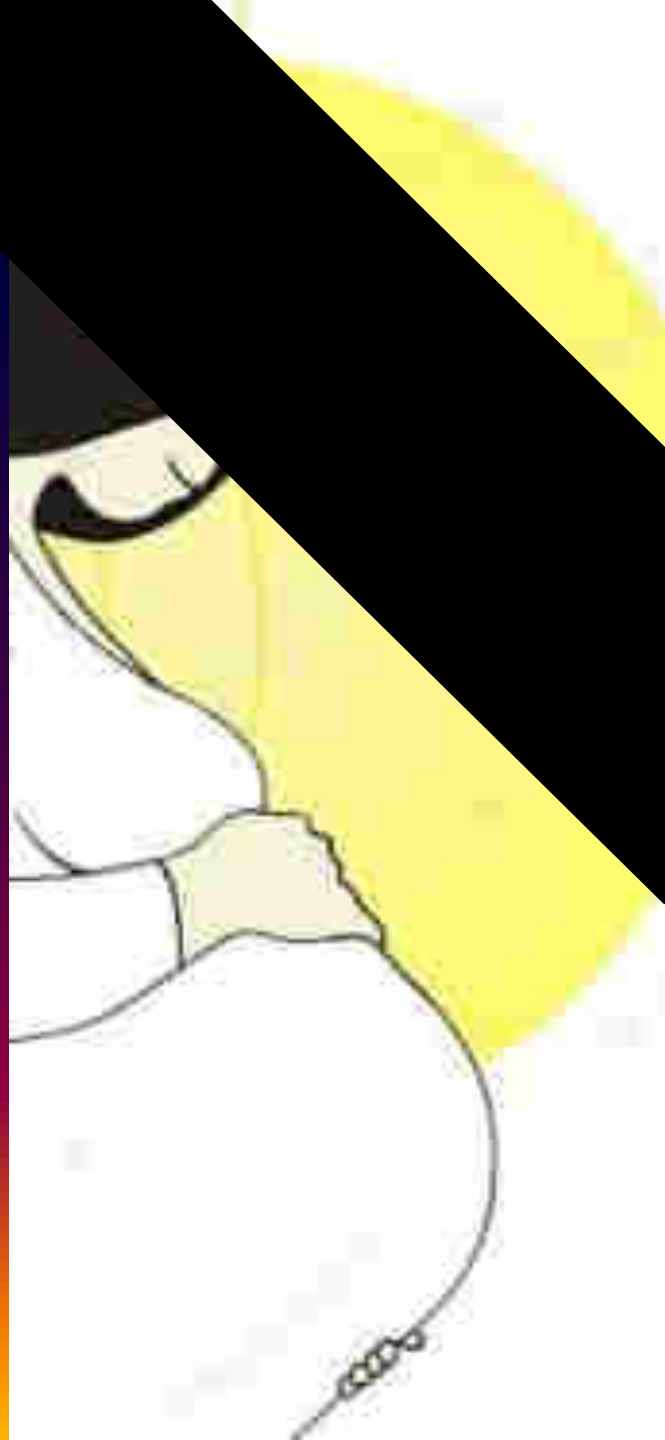
Real case scen

Day 3

- The patient became feverish
- The obstetrician accompanied the patient to the emergency hospital .
- They spent 10 hours in the hospital .
- CBC revealed leukocytosis.us revealed small collection 5*5
- The patient returned to her locality

Diagnosis :infected collection
Treatment: iv antibiotics

The ICU physician said that the patient is unfit for dialysis (hemodynamically unstable) .Noradrenaline was started upon nephrology order. A Hemodialysis session was done for 1 hour…….the patient arrested 1 hour after



Real case scen

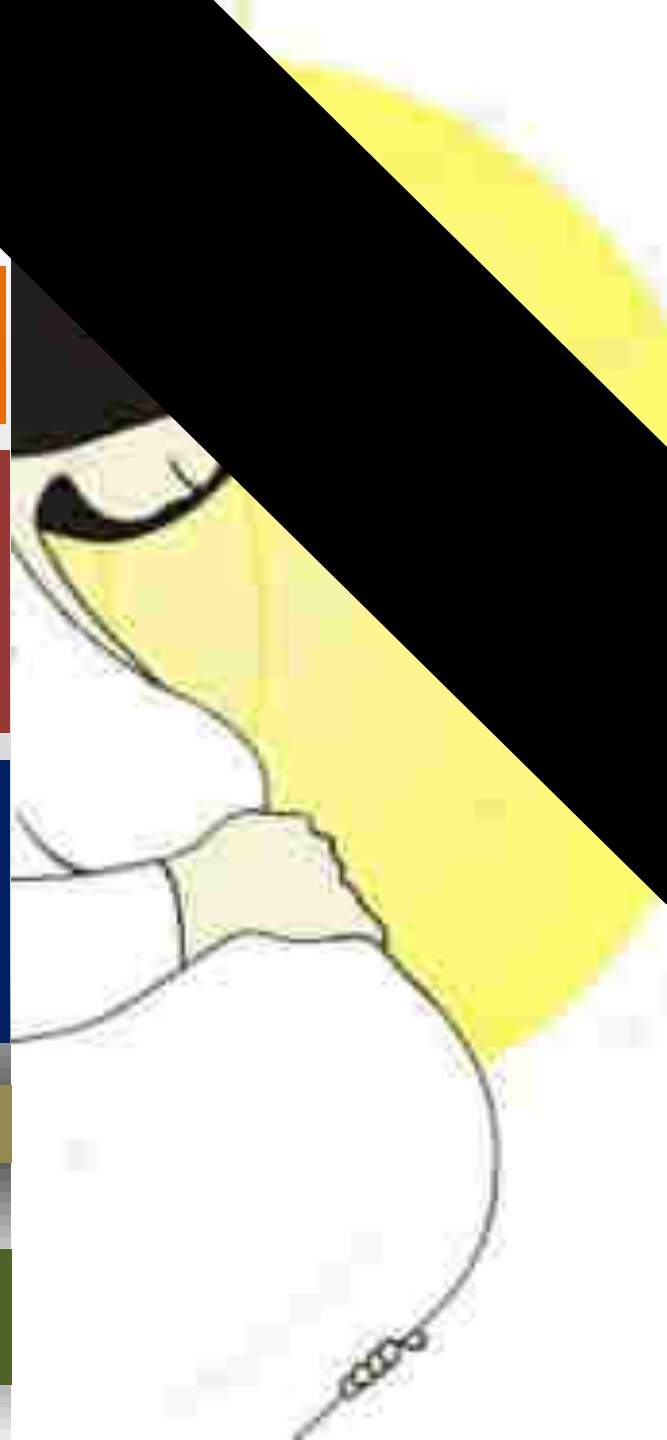
Q 2.1 what is the diagnosis ?

Q 2.2 where is the defect in management ...in which day ????

2.3 who is responsible for the patient death ? obstetrician – intensivist – the nephrologist ???

Q2.4 How can you diagnose sepsis ???

Q2.5 what antibiotics would you start in day 2 ???



NO

Vasodilatation

Capillary leak

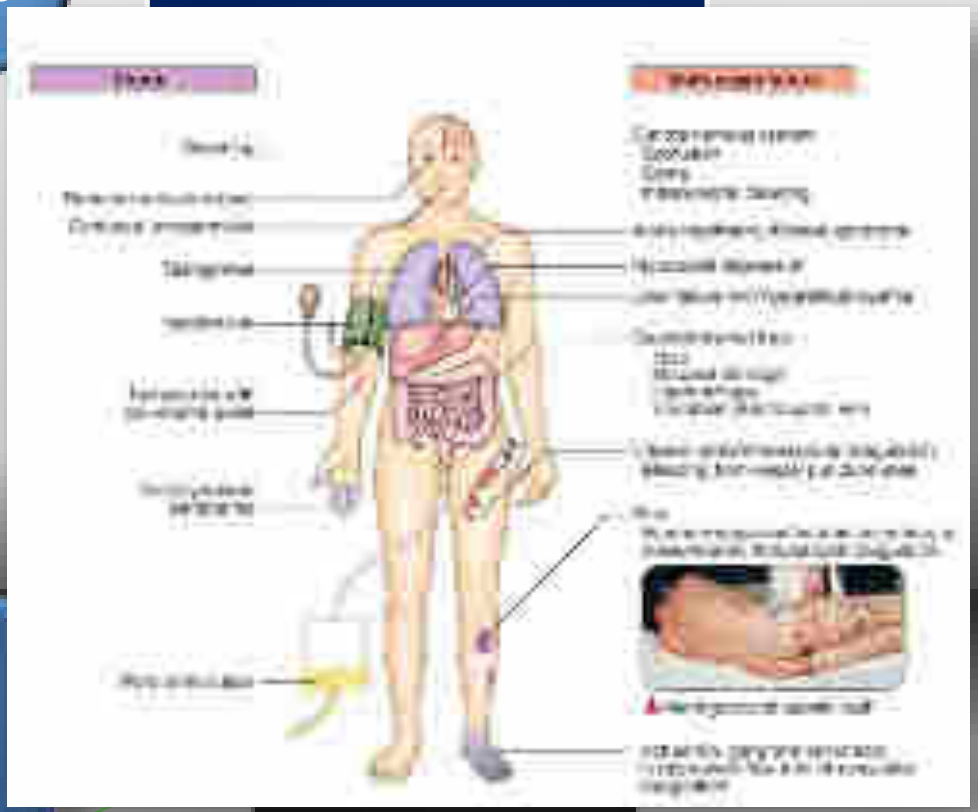
Endothelial damage

SIRS

SEPSIS

IL2

BACTERIAL MEDIATORS



Real case scenario: Diagnosis

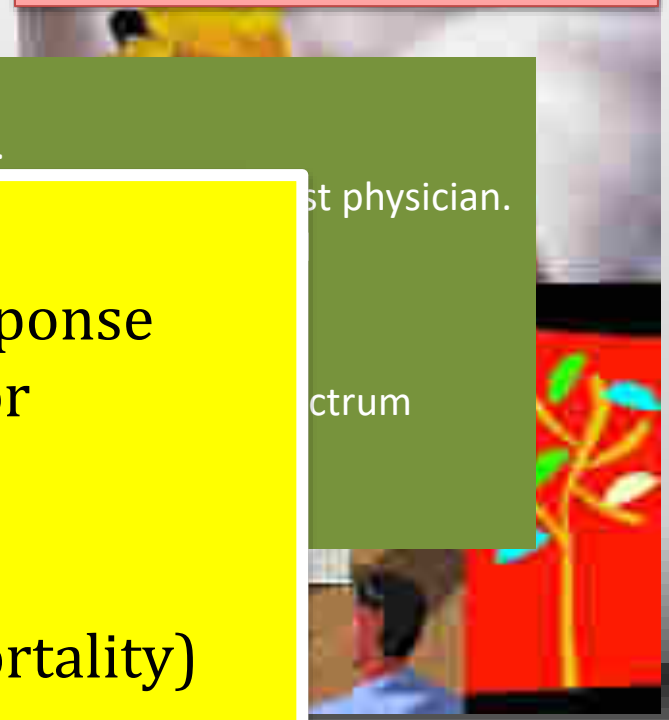
SIRS

2 OR MORE OF THE FOLLOWIN

- Temp> 38C or <36C
- HR> 90beat/minute
- RR>20 breath/minu
- WBC>12*1000/mm

Systemi
respor

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Day 2

- The patient became dyspneic .

st physician.

ctrum

- Sepsis =

Systemic inflammatory response syndrome Plus unknown or suspected infection

- Septic shock (higher mortality)

Real case scenario: Diagnosis

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- Iv broadspectrum antibiotics
- iv fluids
- Glucocorticoids
- Oxygen
- Inotropes
- Airway



Real case scenario: Diagnosis

Septic Acute Kidney Injury

Stage	Serum creatinine (SCr) criteria	Urine output criteria
1	1.5 to 1.9 times baseline OR ≥26 µmol/L (≥3.0 mg/dL) increase	<0.5 ml/kg/hr for 6-12 hrs
2	2 to 2.9 times baseline	<0.5 ml/kg/hr for ≥12 hrs
3	Serum creatinine increase 3.0 times baseline OR Increase in serum creatinine ≥354 µmol/L (≥4.0 mg/dL) OR Initiation for RRT OR In patients <18 years, decrease in eGFR to <35 ml/min per 1.73 m²	<0.3 ml/kg/hr for ≥24 hrs OR Anuria for ≥12 hrs

* Must have met initial criteria for definition of AKI

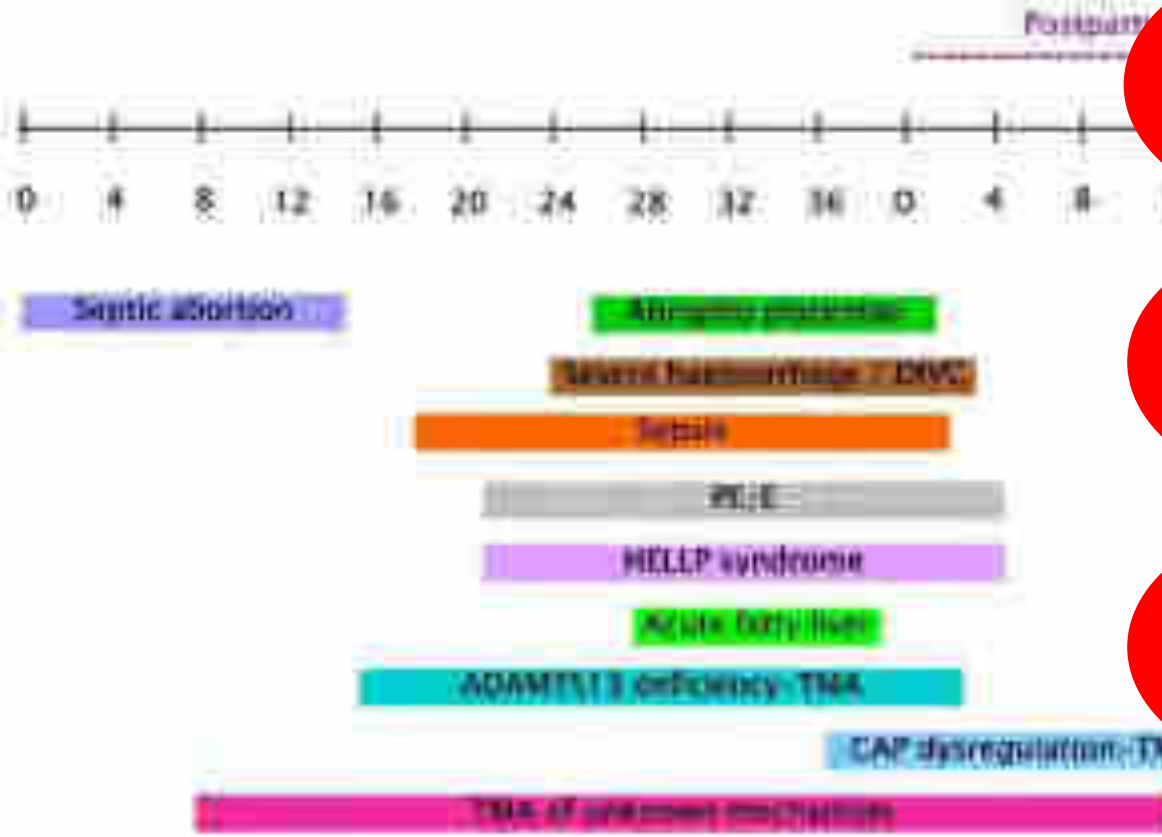
Reference: Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO Clinical Practice Guideline for Acute Kidney Injury. Kidney inter., Suppl. 2012; 2: 1–138

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what are causes of maternal AKI

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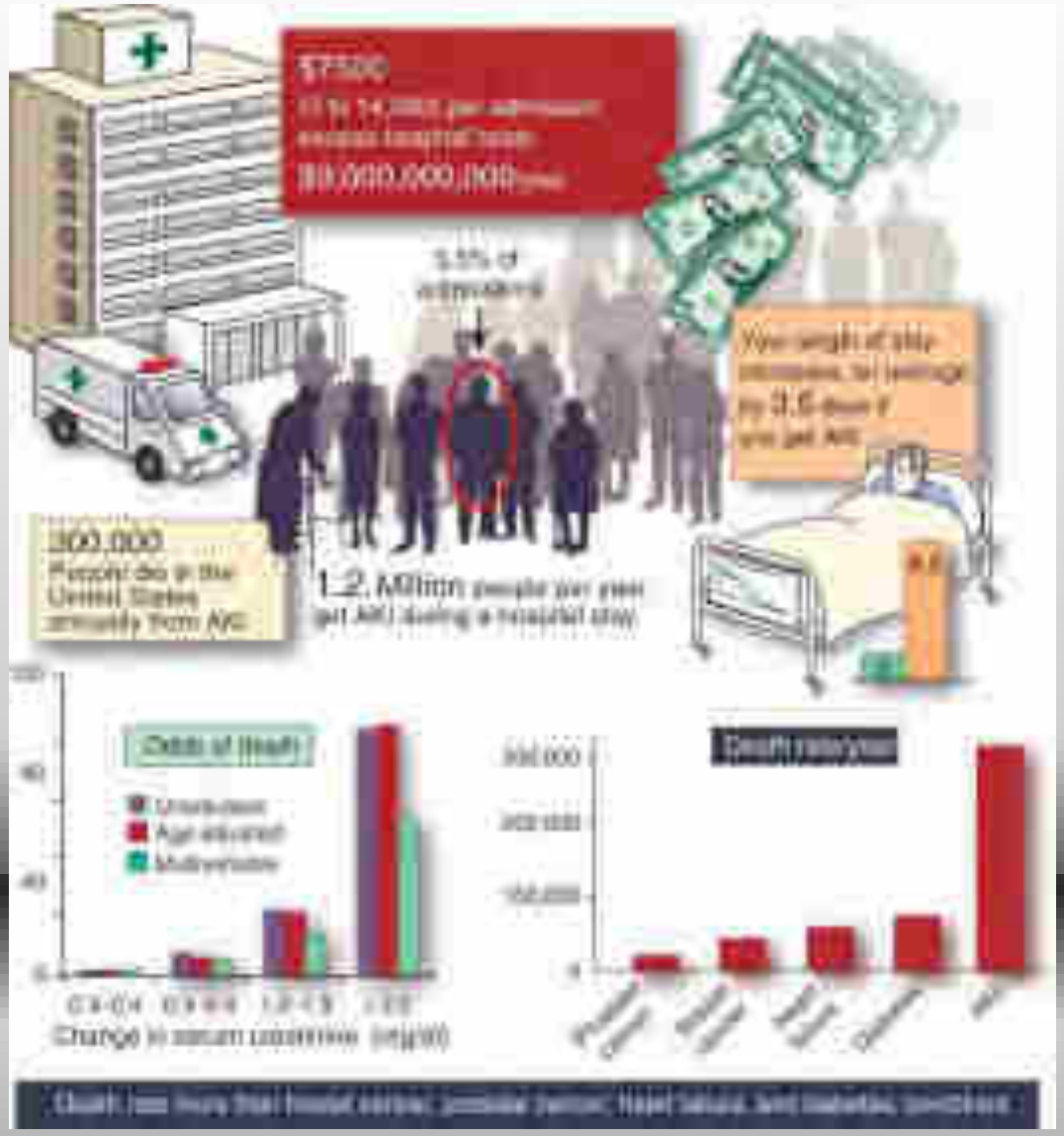
Eclampsia

Hemorrhage

Sepsis

Figure 1. | Main causes of pregnancy-related AKI depending on their predominant timing of occurrence during pregnancy. CAP, complement alternative pathway; DIVC, disseminated intravascular coagulation; PLE, pre-eclampsia/eclampsia; TMA, thrombotic microangiopathy

Awareness of AKI



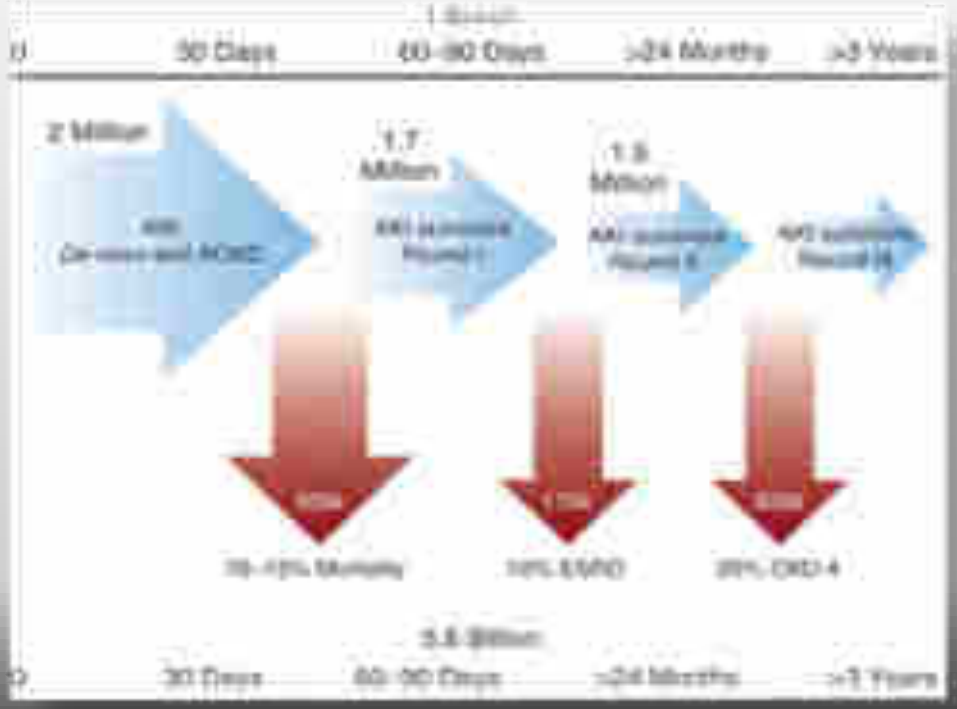
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The global burden of (AKI). Modified from Chertow *et al*

Awareness of AKI

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Outcome of AKI in
High income countries

Awareness of AKI

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Outcome of AKI in
Middle and low income
countries

Clinical problems: ANC

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low Hb levels

Under estimation of CKD

Late diagnosis of gestational hypertension or preeclampsia

Infrequent follow up

Insufficient treatment of acute pyelonephritis

ANC

Unequal size of kidneys

Renal artery stenosis

Chronic pyelonephritis

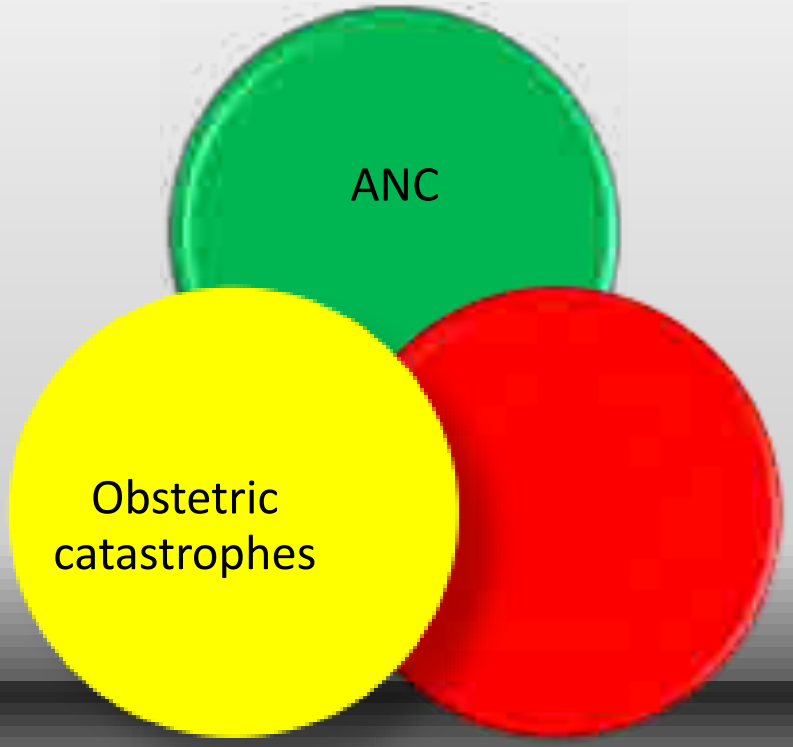
CKD

- Dysplastic kidneys
- Hydronephrosis due to obstruction
- Cortical scarring due to infarcts, pyelonephritis or associated with vesicoureteral reflux
- Renal masses or enlarged kidneys due to infiltrative diseases
- Renal artery stenosis
- Small and hyperechoic kidneys (common in more severe CKD due to many parenchymal diseases
- Polycystic kidneys

Chronic kidney disease can be identified by Structural abnormalities as markers of kidney damage detected by imaging

Clinical problems : Catastrophes

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prolonged shock

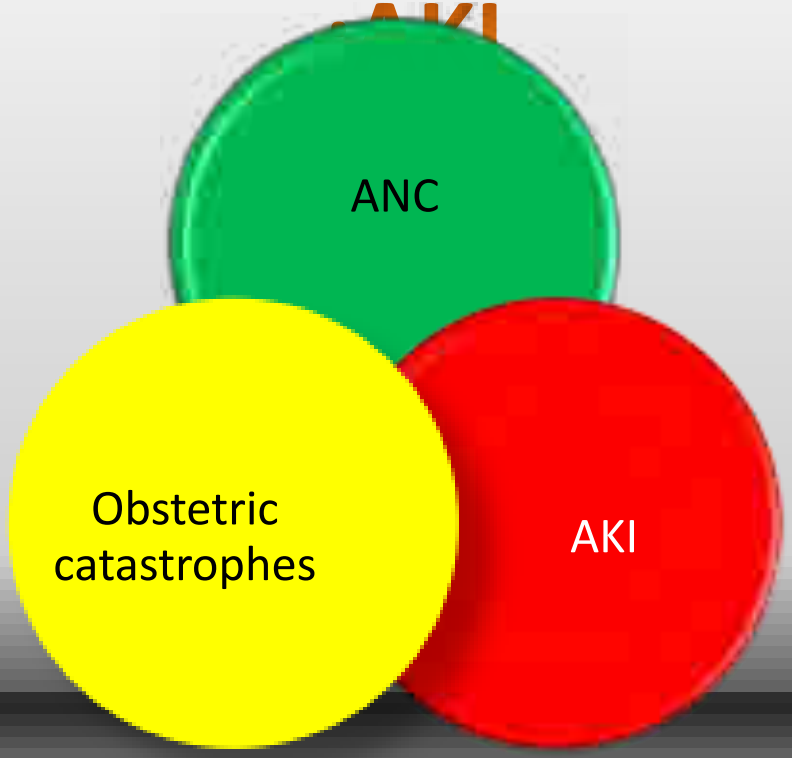
Hemorrhage
Absence of blood transfusion facilities

Late diagnosis of sepsis

Late management of sepsis

Late recognition of AKI

Clinical problems AKI



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Unprepared ICU

Blood gases and serum potassium unavailable

no urgent dialysis available

Un cooperative nephrologist

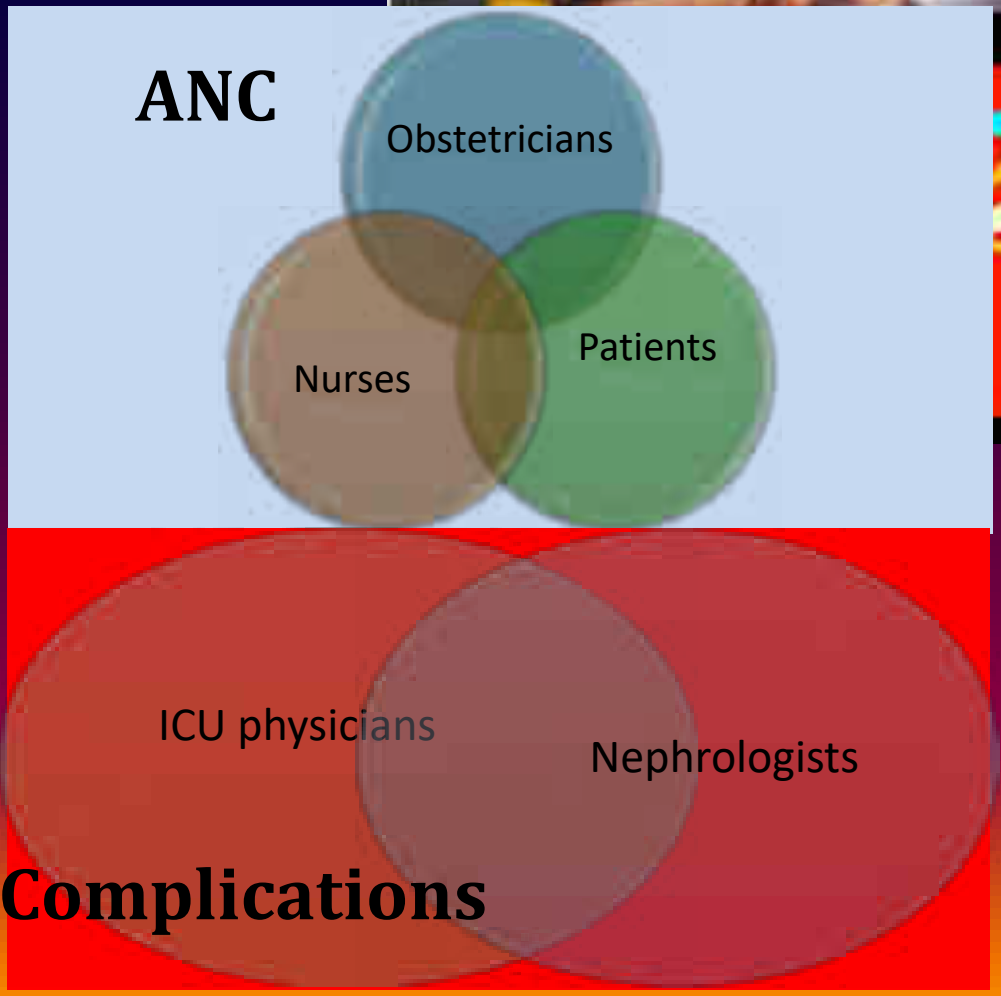
No HD machine in ICU

Medico legal considerations

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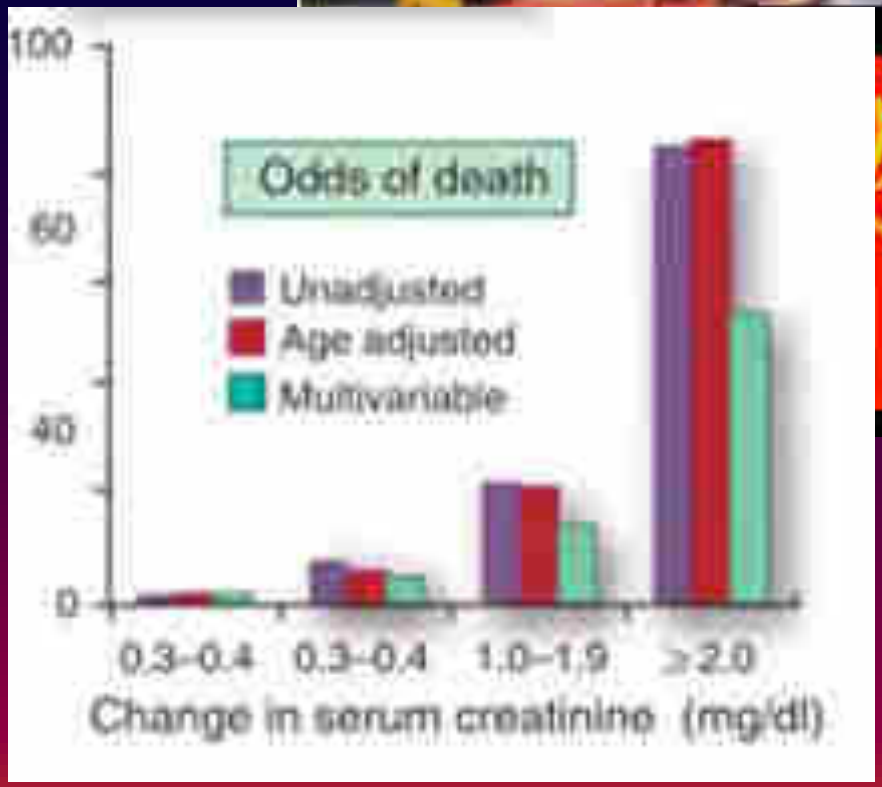
CURRENT SITUATION



Preventive Nephrology



At the practical level, we propose to develop a toolkit containing simple, immediately applicable measures to ensure early detection and fast action whenever AKI develops.



Hemorrhage

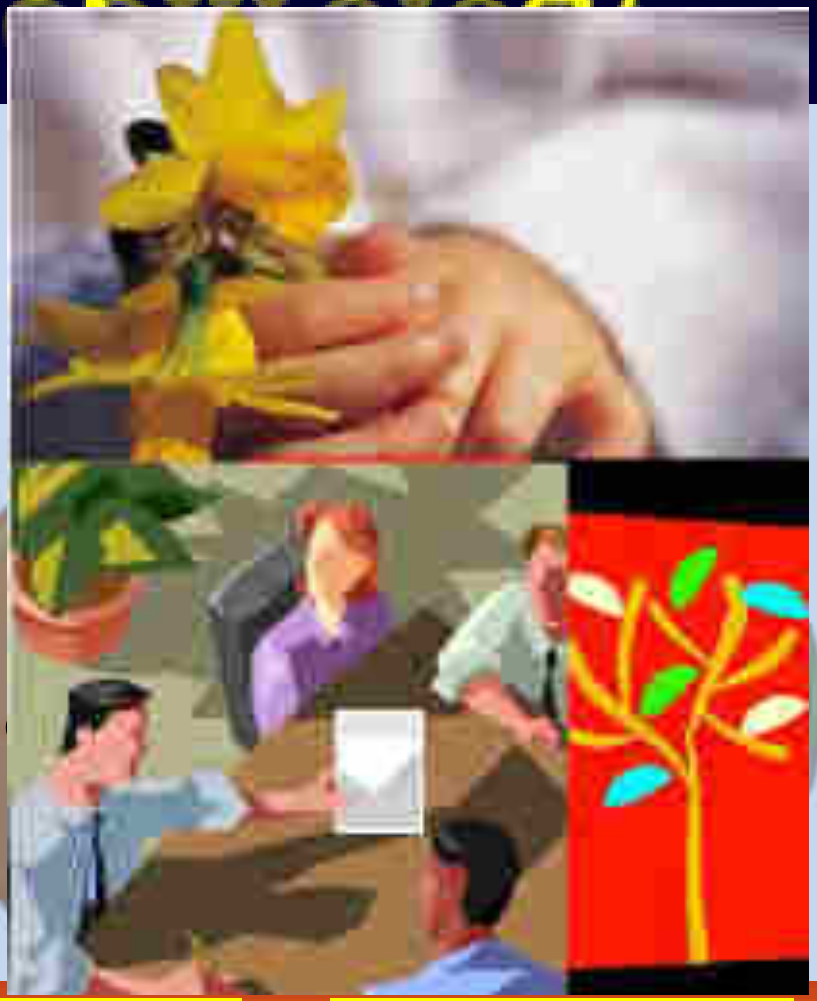
Sepsis

Eclampsia

Preventive Nephrology

OUR TARGET
C0-0RDINATION

MATERNAL AKI PREVENTION PROGRAM: A NEW ALLOCATION SYSTEM



ANC

Treatment

Early diagnosis of catastrophes

Early referral

Better outcomes

ANC

Algorithm

- ❑Blood pressure
- ❑CBC
- ❑Kidney function
- ❑Urine analysis
- ❑Abdominal pelvic us

No

Continue ANC

Abnormality in 2or 3 or 4

Yes

Allocate

- Unequal size of kidneys
- Renal artery stenosis
- Chronic pyelonephritis
- CKD

ANC

Algorithm

- ❑Blood pressure
- ❑CBC
- ❑Kidney function
- ❑Urine analysis
- ❑Abdominal pelvic us

No

Continue ANC

Abnormality in 2or 3 or 4

Yes

Allocate

Proteinuria

Chronic Glomerulo nephritis

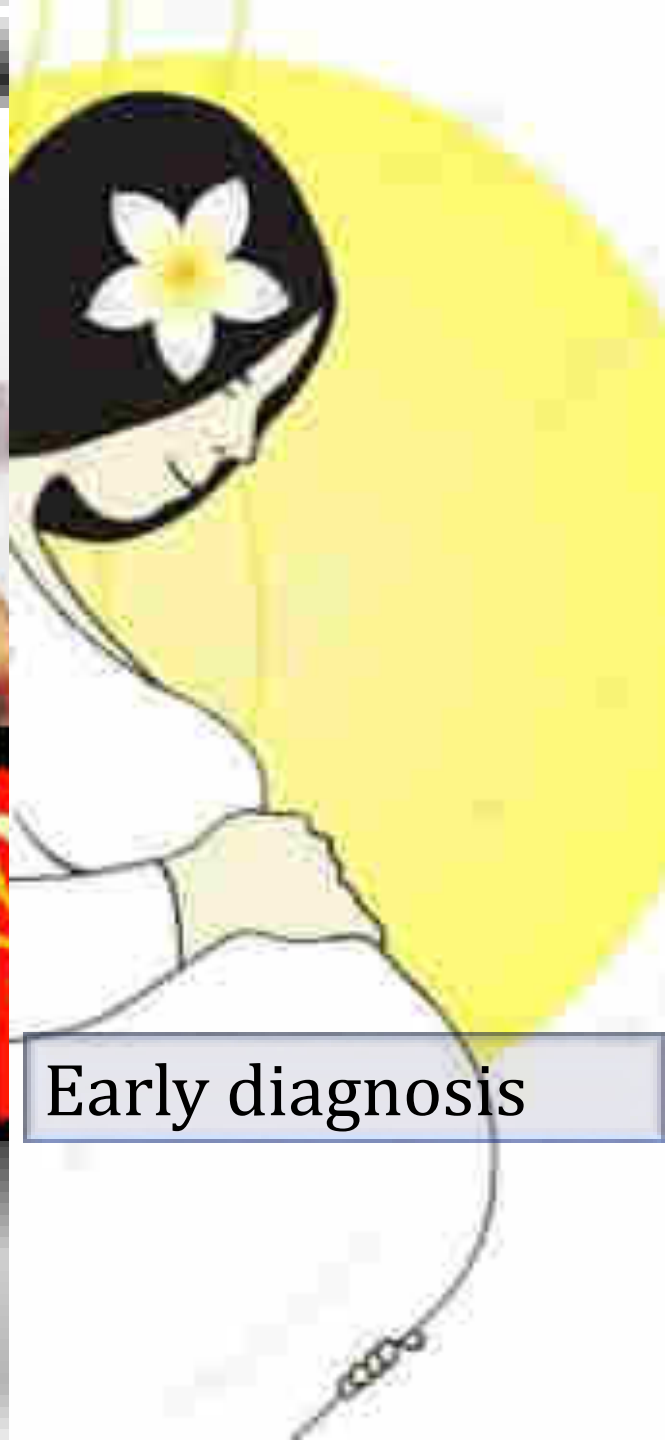
Preeclampsia

ANC: high risk pregnancy

- Diabetic, Hypertensive
- Gestational hypertension
- Previous eclampsia
- kidney function abnormalities
- History of abortion
- Anemia

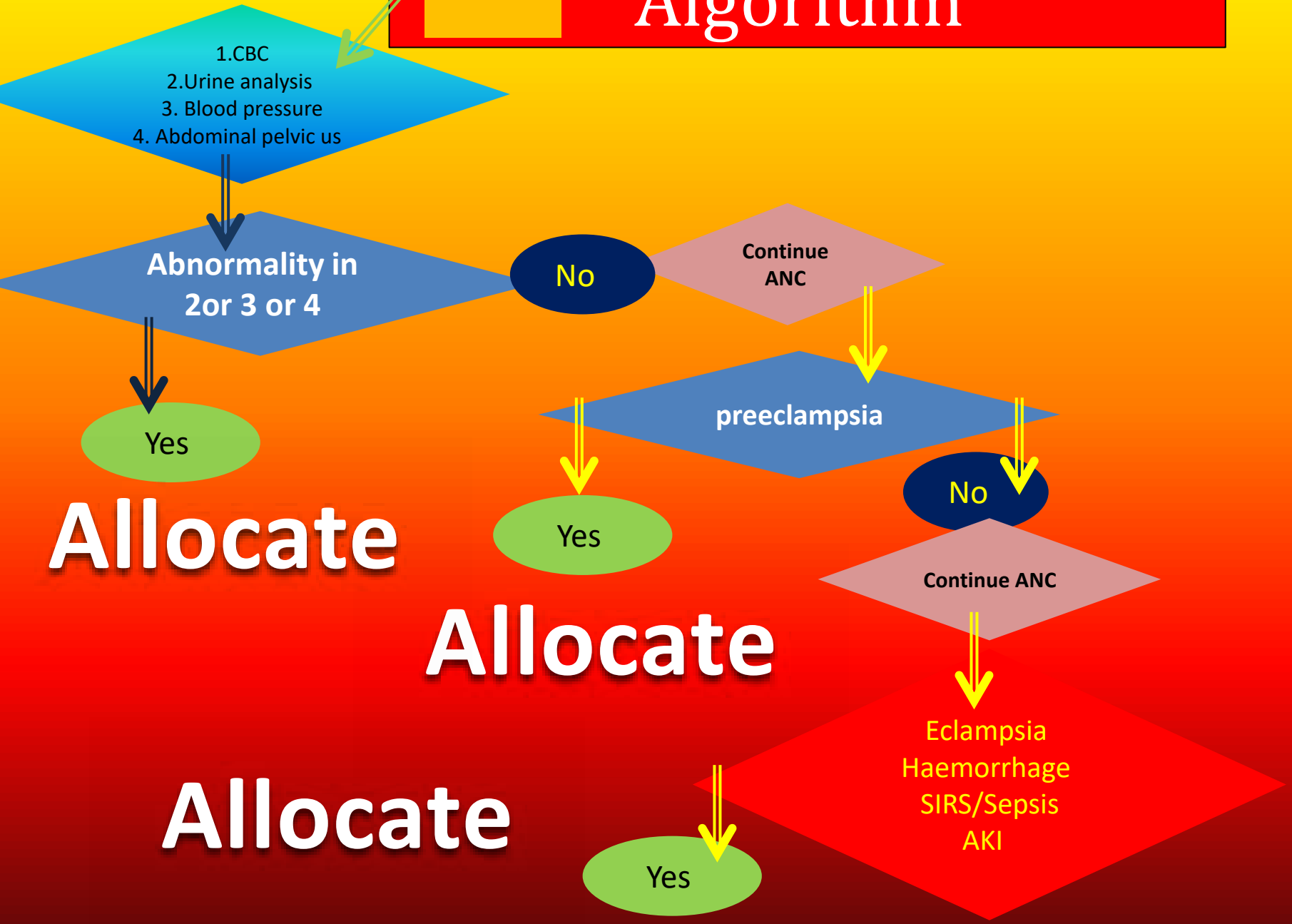


- Acute pyelonephritis
- Chronic Kidney Disease
- Acute Kidney Injury
- Chronic pyelonephritis



Early diagnosis

ANC Algorithm



ANC Algorithm

Allocated cases





Blood bank

ABG, K

Nephrologist

ICU &Dialysis machine

MUNC

MNDU

Mansoura International hospital

Management in hospital

Recovered condition without Kidney impairment

ICU physicians

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- Management of obstetric catastrophes
  - Systemic Inflammatory Response Syndrome
  - Sepsis
  - Eclampsia
  - HELLP variant
  - TTP
- Care of maternal AKI
  - Discussion of cases
  - Identification of AKI
  - Daily clinical assessment of patient with AKI
  - Fluid chart
  - Daily Lab in cases of AKI
  - When to initiate dialysis in cases of AKI





Can we prevent maternal AKI in Egypt ???

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Recognition

Response

Renal support


Pre-conception
Lupus nephritis
Proteinuria
CKD
Nephrotic syndrome
DM with renal problems
Essential hypertension
Previous eclampsia
During pregnancy
Proteinuria
Preeclampsia versus chronic HTN
Gestational hypertension
Lupus nephritis
Post partum
Follow up
Eclampsia
Renal problems during pregnancy

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Obstetric nephrospeed