มหาวิทยาลัยราชภัฏนครปฐม

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Adult Nursing 1

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Learning outcomes

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- Describe patients with abnormalities in the urinary system.
- Describe Pathology, signs and symptoms of patients with abnormalities in the urinary system.
- Describe treatment in patients with abnormalities in the urinary system.
- Describe nursing diagnosis and nursing care in patients with abnormalities in the urinary system.

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Urinary tract disorders: overwiew

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- urinary tract infection : cystitis, Pyelonephritis
- acute glomerulonephritis
- Lithiasis
- CA bladder
- neurogenic bladder
- acute kidney injury
- chronic kidney disease
- male reproductive disorders

Urinary tract disorders

Part 3
kidney disease

Acute Kidney Injury

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AKI is defined as an abrupt decrease in kidney function, which encompasses both injury (structural damage) and impairment (loss of function) including serum creatinine (SCr) changes and urine output within 48 hours or 7 days.

KDIGO criteria

AKI is *defined* as any of the following:	
1	Increase in sCr ≥0.3 mg/dL (≥26.5 μmol/L) within 48 hours; or
2	Increase in sCr ≥1.5 times baseline, which is known or presumed to have occurred within the prior 7 days; or
3	Urine volume <0.5 mL/kg/h for 6 hours.

https://short.npru.ac.th/b04

Acute Kidney Injury

AKI is *staged for severity* according to the following criteria

Stage 1	1.5–1.9 times baseline OR ≥0.3 mg/dL (≥26.5 μmol/L) absolute increase in sCr	Urine volume <0.5 mL/kg/h for 6–12 hours
Stage 2	sCr ≥2.0–2.9 times baseline sCr ≥3.0 times from baseline OR	Urine volume <0.5 mL/kg/h for ≥12 hours
Stage 3	Increase in sCr to ≥4.0 mg/dL(≥353.6 μmol/L) OR Initiation of renal replacement therapy OR, In patients <18 years, decrease in eGFR to <35 mL/min per 1.73 m^2	Urine volume <0.3 mL/kg/h for ≥24 hours OR Anuria for ≥12 hours

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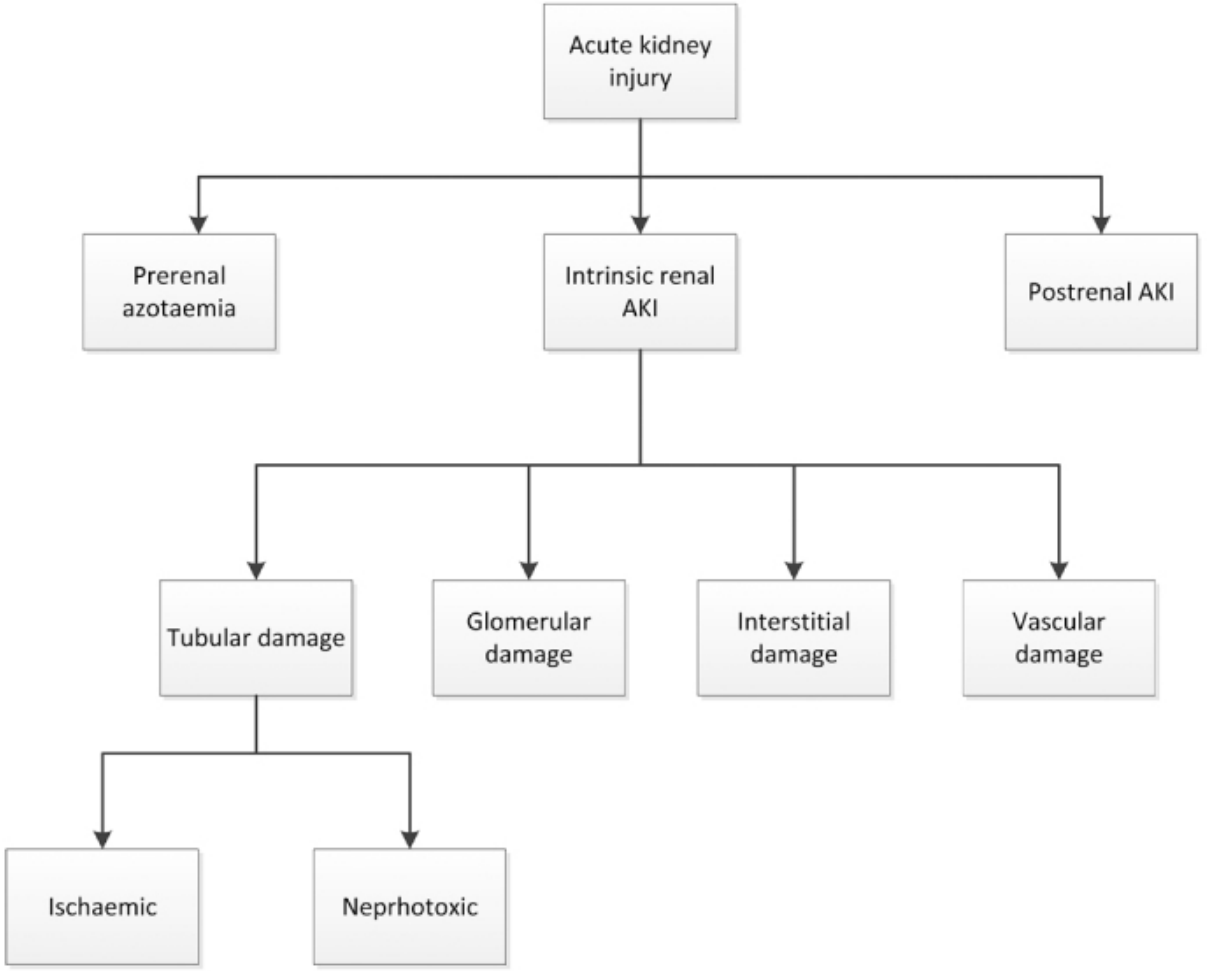
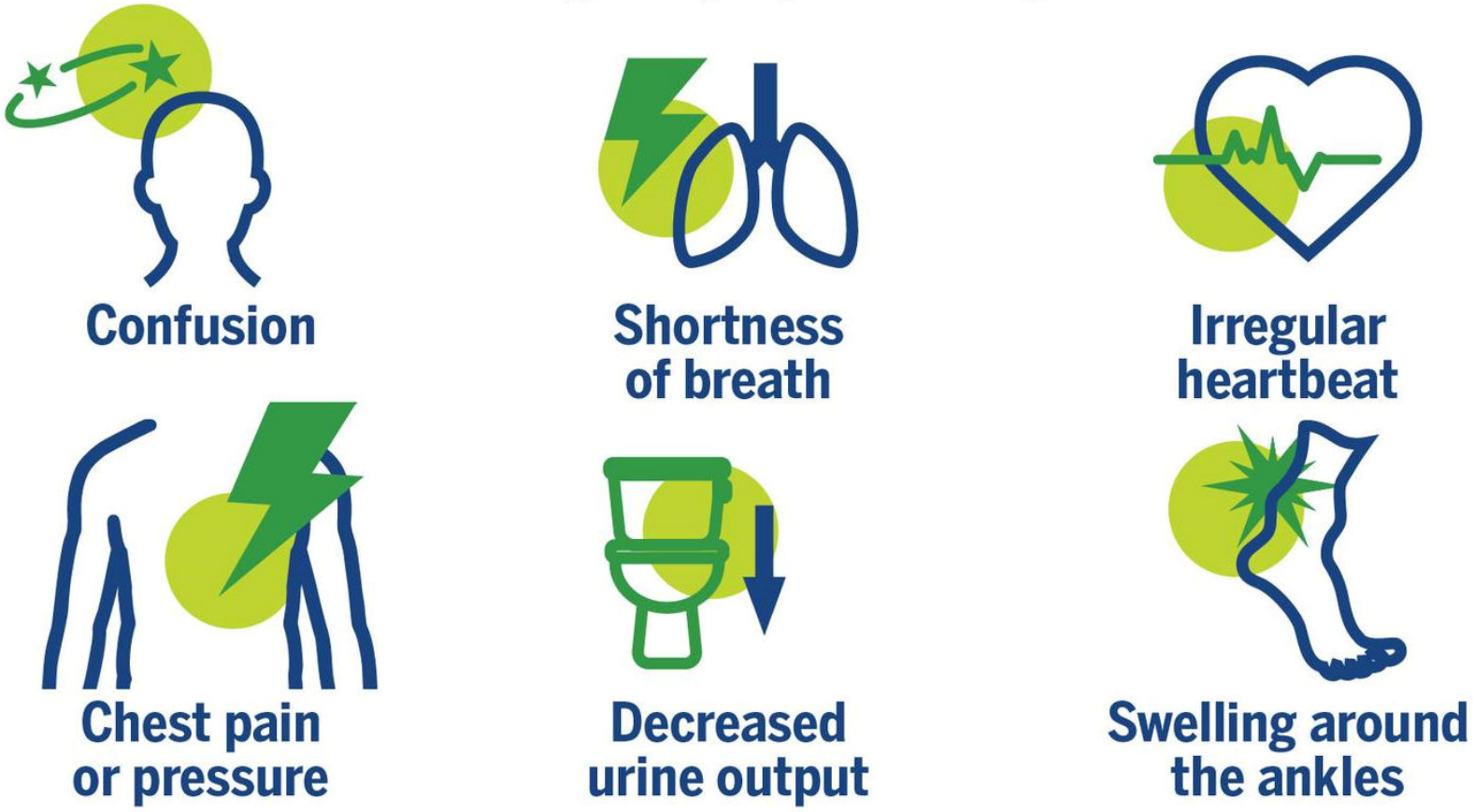
Acute Kidney Injury



Clin Biochem Rev. 2016 May; 37(2): 85–98.

Acute Kidney Injury

Symptoms



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Acute Kidney Injury

Treatment

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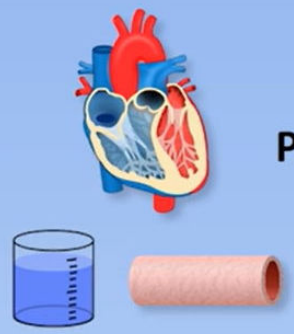
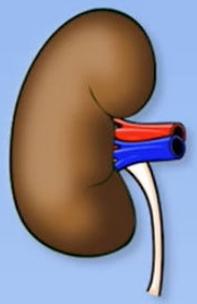


Prerenal

- Correct hemodynamic derangements
  - If low preload → IV Fluids
  - If high preload → Diuretics
  - If low contractility → Afterload reduction (not ACEIs) +/- inotropes
  - Hepatorenal syndrome → Treat underlying liver disease, ? Octreotide + midodrine + albumin



Intrarenal

- Treat the underlying disease
- ATN → No specific treatment
- AIN → Consider steroids if not improving with discontinuation of causative medication

Postrenal

- Relieve obstruction
  - Ureteral obstruction → nephrostomy tube(s) and/or ureteral stent(s)
  - Neurogenic bladder → Intermittent straight cath or long-term Foley
  - UTI → Antibiotics +/- temp Foley catheter
  - Medications → Stop meds
  - BPH → α blockers + temporary Foley catheter

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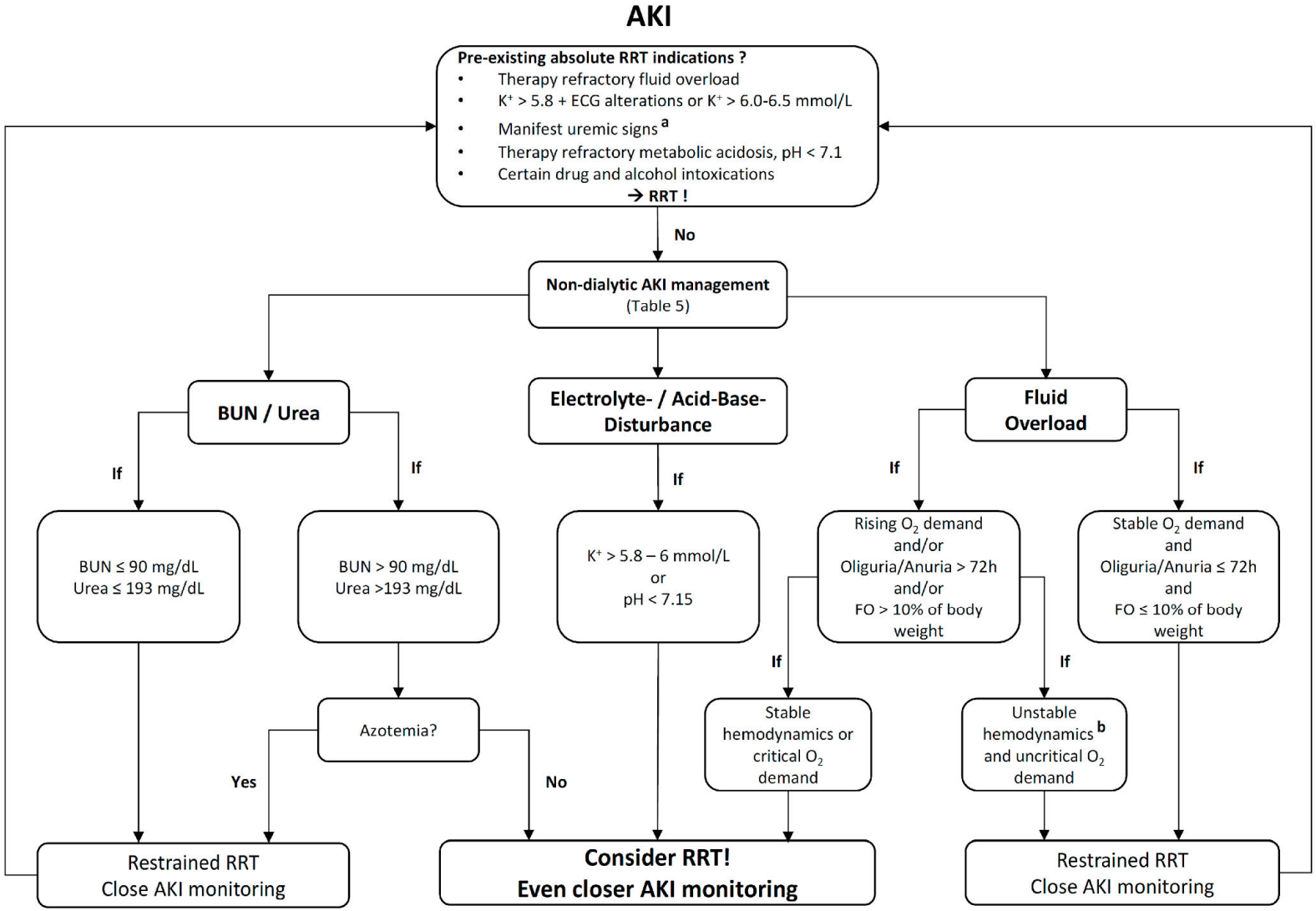
Acute Kidney Injury

Treatment



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chronic kidney disease : CKD

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- CKD is defined as the presence of kidney damage or an estimated glomerular filtration rate (eGFR) less than 60 ml/min per 1.73 square meters, persisting for 3 months or more. It is a state of progressive loss of kidney function
- The 2012 KDIGO CKD classification recommends details about the cause of the CKD and classifies it into 6 categories based on glomerular filtration rate (G1 to G5 with G3 split into 3a and 3b). It also includes the staging based on three levels of albuminuria (A1, A2, and A3), with each stage of CKD being sub-categorized according to the urinary albumin-creatinine ratio in (mg/gm) or (mg/mmol) in an early morning "spot" urine sample

chronic kidney disease : CKD

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The 6 categories include:

- G1: GFR 90 ml/min per 1.73 m^2 and above
- G2: GFR 60 to 89 ml/min per 1.73 m^2
- G3a: GFR 45 to 59 ml/min per 1.73 m^2
- G3b: GFR 30 to 44 ml/min per 1.73 m^2
- G4: GFR 15 to 29 ml/min per 1.73 m^2
- G5: GFR less than 15 ml/min per 1.73 m^2

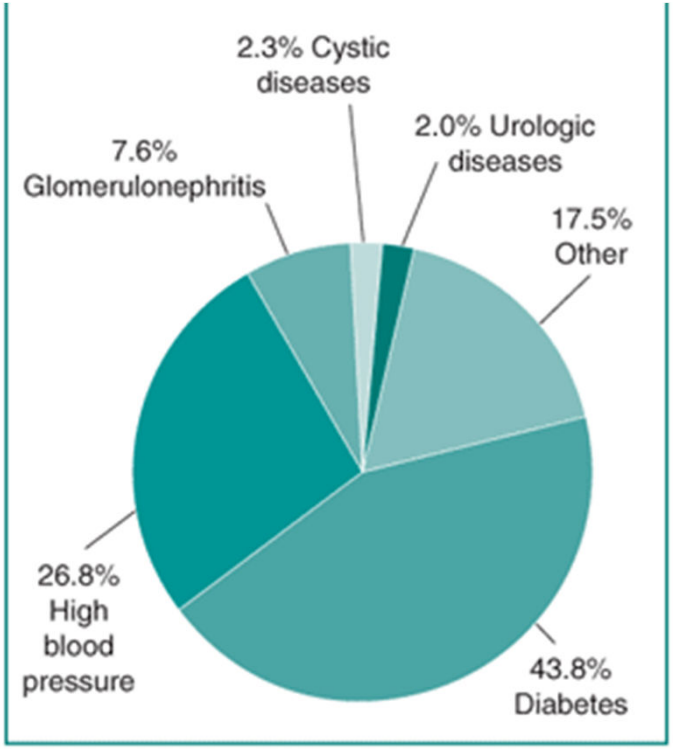
or treatment by dialysis

The 3 levels of albuminuria include an albumin-creatinine ratio (ACR)

- A1: ACR less than 30 mg/gm (less than 3.4 mg/mmol)
- A2: ACR 30 to 299 mg/gm (3.4 to 34 mg/mmol)
- A3: ACR greater than 300 mg/gm (greater than 34 mg/mmol).

The causes of CKD

- Diabetes mellitus type 2 (30% to 50%)
- Diabetes mellitus type 1 (3.9%)
- Hypertension (27.2%)
- Primary glomerulonephritis (8.2%)
- Chronic Tubulointerstitial nephritis (3.6%)
- Hereditary or cystic diseases (3.1%)
- Secondary glomerulonephritis or vasculitis (2.1%)
- Plasma cell dyscrasias or neoplasm (2.1)
- Sickle Cell Nephropathy (SCN) (<1%)



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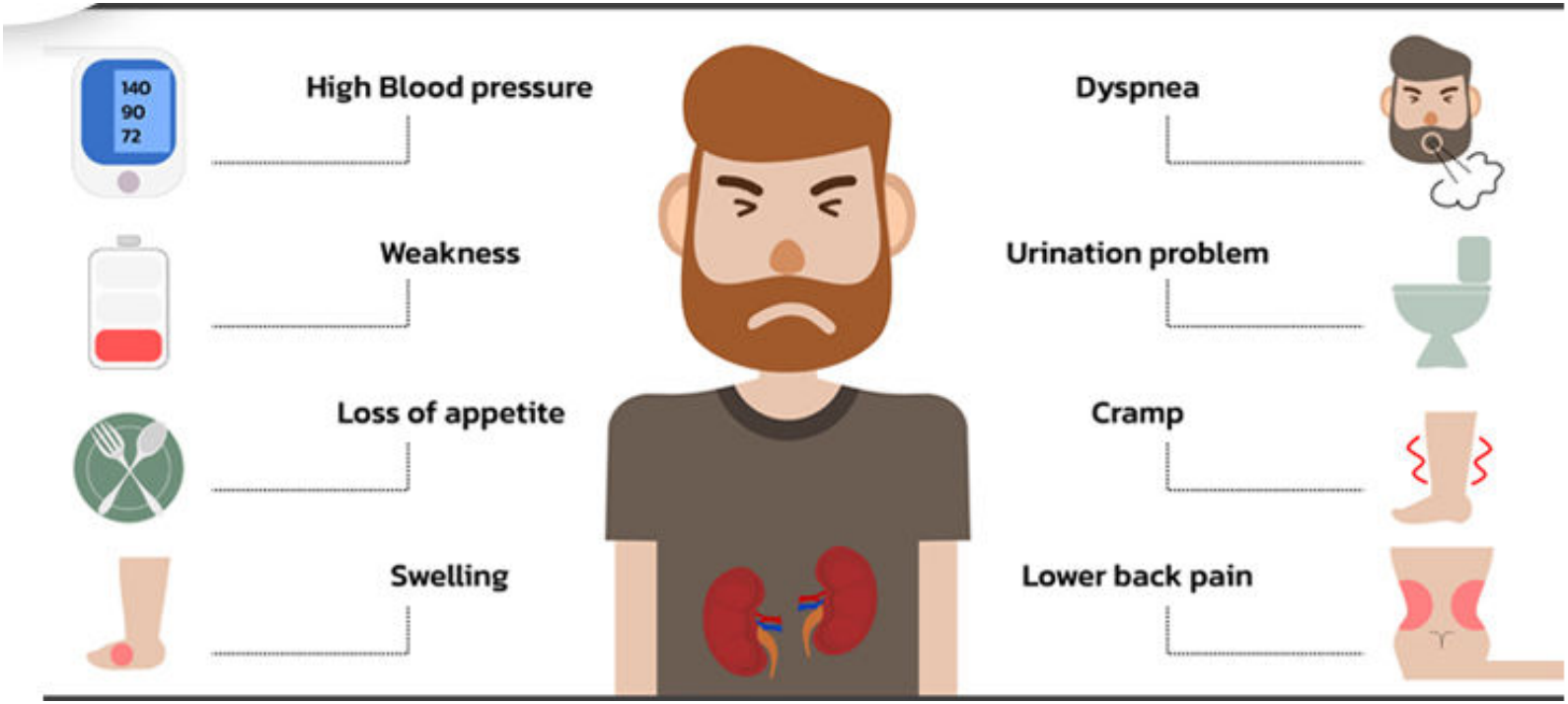
Signs & symptoms of CKD

Early CKD stages are asymptomatic, and symptoms manifest in stages 4 or 5



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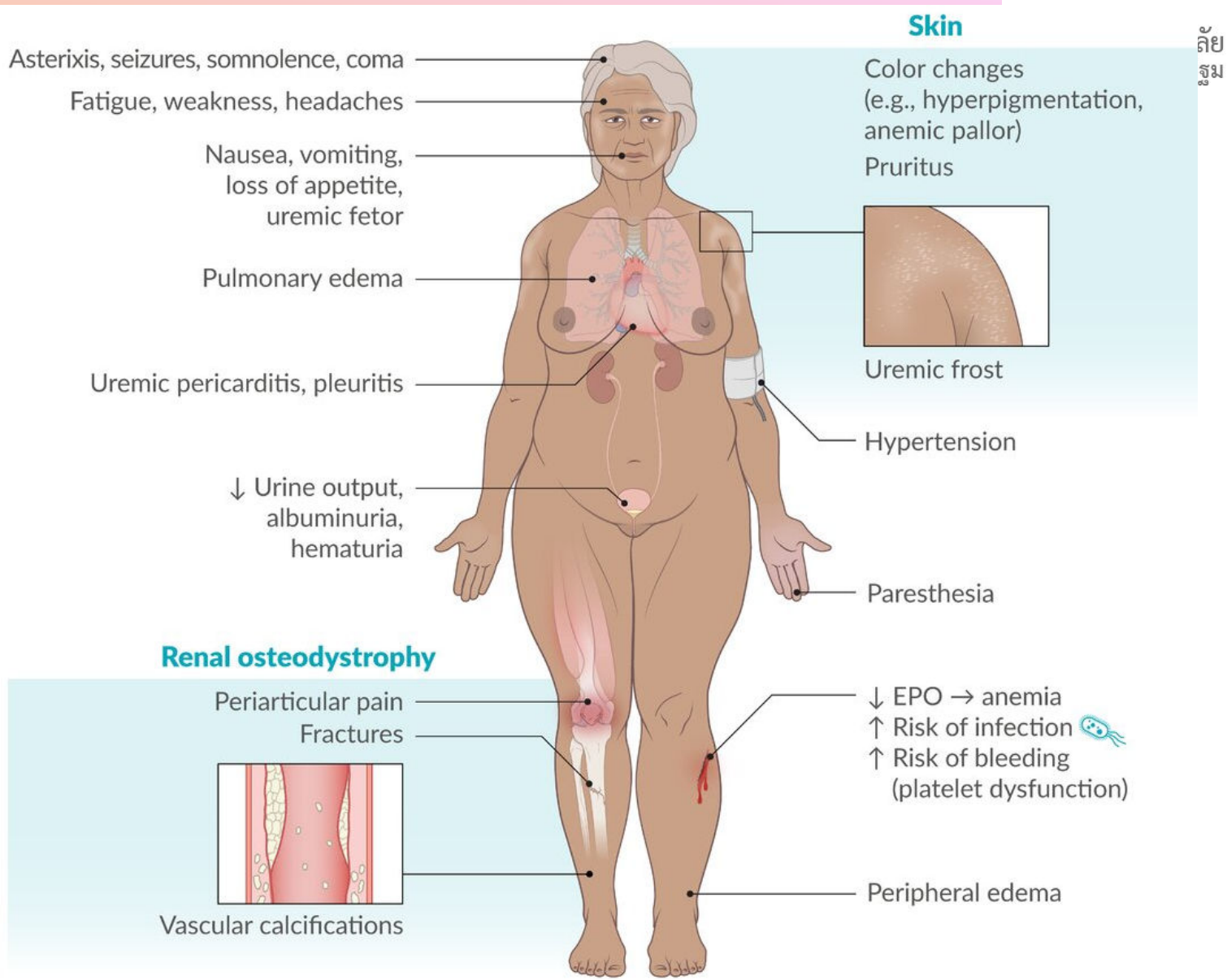
CKD

Signs & symptoms of CKD



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chronic kidney disease : CKD

Laboratory finding:

- Increase creatinine and BUN
- Decrease eGFR
- Hyperkalemia
- Metabolic acidosis
- Decrease Hb, normal MCV

Treatment

- Conservative
- Medications
  - ACE Inhibitors, ARB: help low blood pressure.
  - Diuretics: remove extra fluid from body
  - Statins: help lower cholesterol levels.
  - Erythropoietin-stimulating agents: elp build red blood cells if have anemia.
  - Vitamin D and calcitriol. These help prevent bone loss.
  - Phosphate binders. These help remove extra phosphorus in your blood.
- Dialysis: Hemodialysis, Peritoneal dialysis
- Kidney transplant

Hemodialysis

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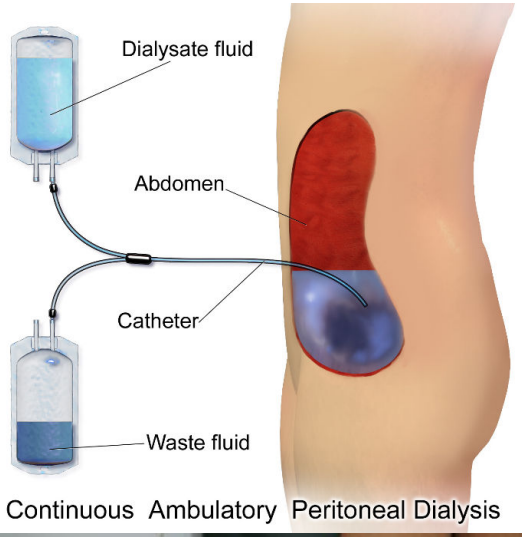

Continuous Ambulatory Peritoneal Dialysis

https://short.npru.ac.th/b0d

https://short.npru.ac.th/b0e

Nursing Problem

- Management of fluid and electrolyte balance
- Blood pressure control
- Monitoring and management of renal function
- Medication administration and compliance
- Dietary modifications and nutritional support
- Assessment and management of complications (e.g., anemia, cardiovascular disease)
- Education on self-care and lifestyle modifications
- Regular assessment and management of comorbidities (e.g., diabetes, hypertension)

: LMS

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