CHRONIC RENAL FAILURE

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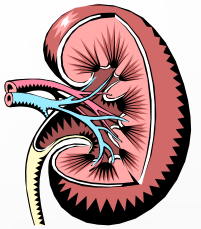
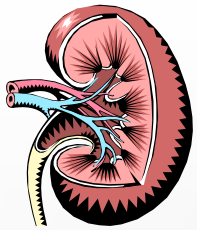
REVIEW



- RECALL FUNCTIONS OF THE KIDNEYS?
- RECALL NORMAL CREATININE & BUN; OTHER LAB TESTS?
- REVIEW DIAGNOSTIC TOOLS

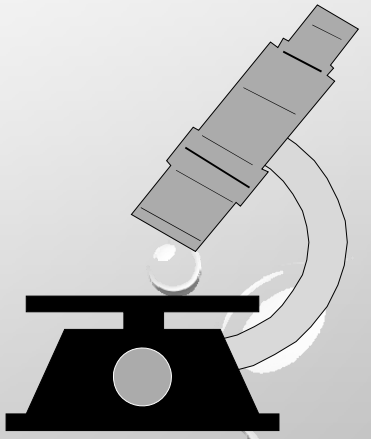
FUNCTIONS OF THE KIDNEYS



- REGULATES VOLUME AND COMPOSITION OF EXTRACELLULAR FLUID
- EXCRETION OF NITROGENOUS WASTE PRODUCTS
- BP CONTROL VIA RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM- ***RECALL RAAS***
- VITAMIN D ACTIVATION
- ACID-BASE BALANCE (HCO_3 & H) REGULATION THROUGH PROCESS OF _____, ____ AND _____. filtration, secretion, reabsorpton
- PROSTAGLANDIN SYNTHESIS
- ERYTHROPOIETIN PRODUCTION

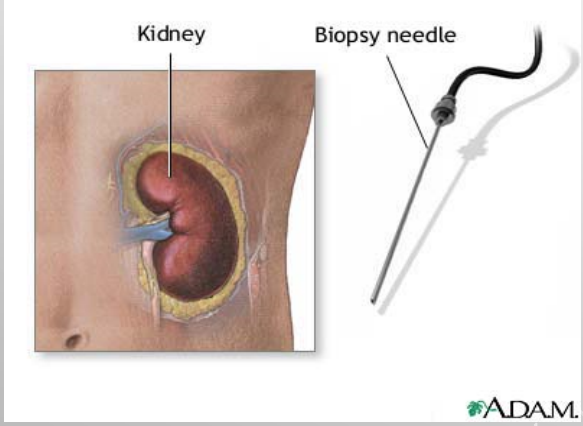
DIAGNOSTIC TOOLS FOR ASSESSING RENAL FAILURE

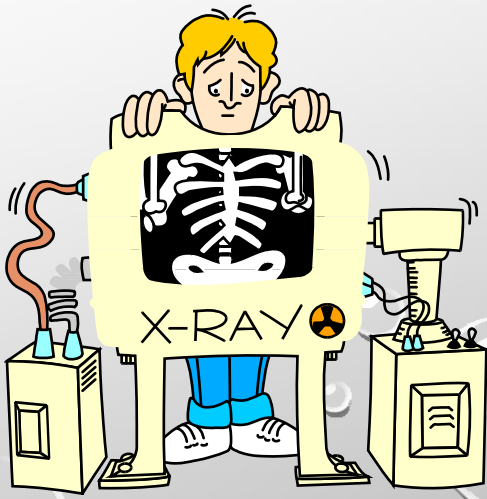
- BLOOD TESTS
  - BUN ELEVATED (NORM 10-20 MG/DL)
  - CREATININE ELEVATED (NORM 0.6 - 1.4 MG/DL)
  - K ELEVATED (TEXT NORM 3.5-5.0 MEQ/L)
  - PO_4 ELEVATED (TEXT NORM 2.8-4.5MG/DL)
  - CA DECREASED (TEXT NORM 8.5-10.5MG/DL)
- URINALYSIS
  - SPECIFIC GRAVITY (TEXT NORM 1.003-1.030
  - PROTEIN (TEXT NORM 0-TRACE)
  - CREATININE CLEARANCE (TEXT NORM 85-120ML/MIN)



DIAGNOSTIC TOOLS

- ULTRASOUND
- X-RAYS
- BIOPSY *MOST DEFINITIVE





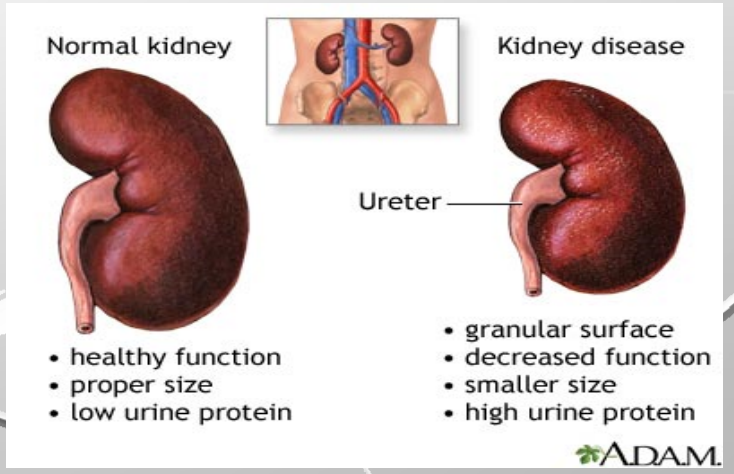
CHRONIC RENAL FAILURE/ CHRONIC KIDNEY DISEASE (CKD)

- SLOW PROGRESSIVE RENAL DISORDER RELATED TO NEPHRON LOSS, OCCURRING OVER MONTHS TO YEARS

- CULMINATES IN END STAGE RENAL DISEASE (ESRD)

CHARACTERISTICS OF CKD - ESRD

- CAUSE & ONSET OFTEN UNKNOWN
- LOSS OF FUNCTION PRECEDES LAB ABNORMALITIES
- LAB ABNORMALITIES PRECEDE SYMPTOMS
- SYMPTOMS (USUALLY) EVOLVE IN ORDERLY SEQUENCE
- RENAL SIZE IS USUALLY DECREASED



CAUSES OF CKD

- *DIABETES
- *HYPERTENSION
- GLOMERULONEPHRITIS
- CYSTIC DISORDERS
- DEVELOPMENTAL - CONGENITAL
- INFECTIOUS DISEASE

- Neoplasms
- Obstructive disorders
- Autoimmune diseases (lupus)
- Hepatorenal failure
- Scleroderma
- Amyloidosis
- Drug toxicity-(**overuse some common drugs, as aspirin, NSAID as ibuprofen, cocaine and acetaminophen)**

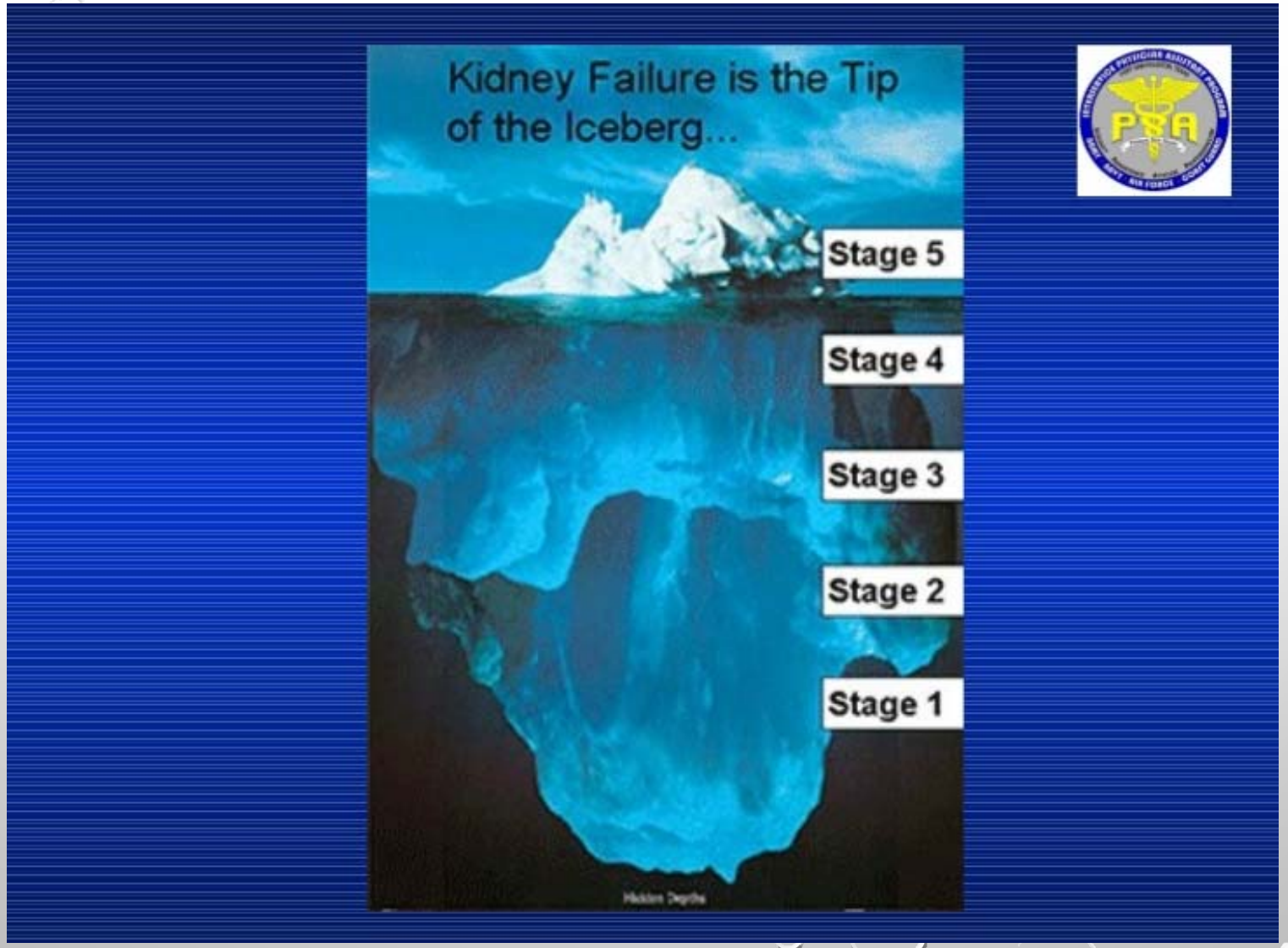
NSAIDs-…cause prerenal ARF by blocking prostaglandin production > also alters local glomerular arteriolar perfusion… (reduces renal blood flow)

GLOMERULAR FILTRATION RATE (GFR)-DETERMINE STAGE CKD (MOST ACCURATE EVALUATION)

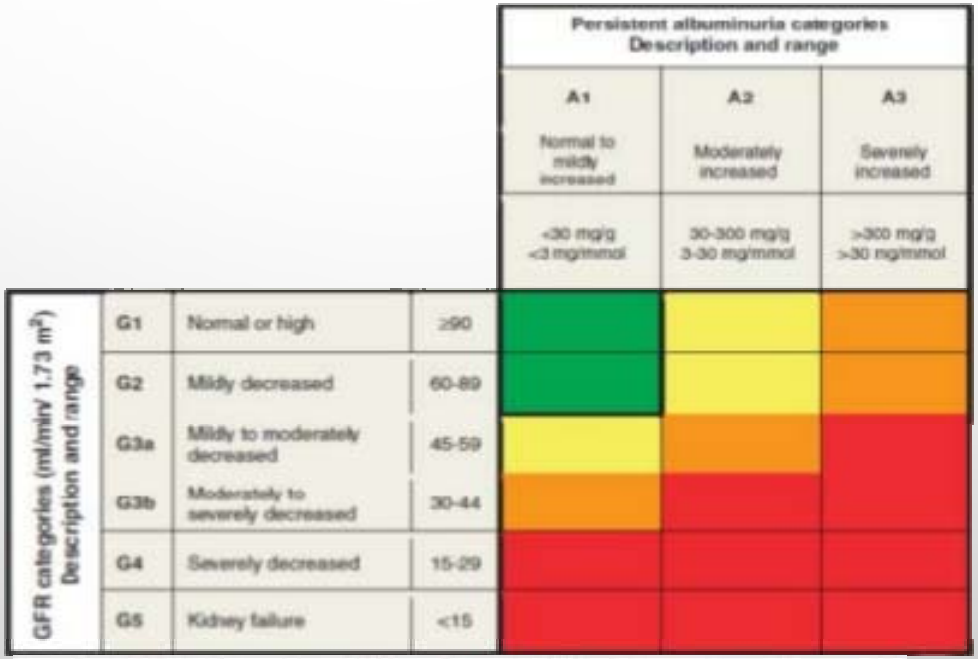
- 24 HOUR URINE FOR CREATININE CLEARANCE
- FORMULA- URINE CREATININE X URINE VOLUME
- SERUM CREATININE
- CAN ESTIMATE CREATININE CLEARANCE BY:

$$\frac{140 - \{\text{AGE X WEIGHT (KG)}\}}{72 \text{ X SERUM CREATININE}}$$

- WHAT IS NORMAL GFR? 90 - 120 mL/min


Kidney Failure is the Tip of the Iceberg…
Stage 5
Stage 4
Stage 3
Stage 2
Stage 1

Proteinuria is an important risk factor for the progression of CKD. Increased protein filtration results in excess reabsorption of filtered proteins by proximal tubular cells.



Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk
Orange: high risk; Red: very high risk

STAGES OF CKD
NKF CLASSIFICATION SYSTEM

STAGE 1: GFR > 90 ML/MIN DESPITE KIDNEY DAMAGE

STAGE 2: MILD REDUCTION (GFR 60 – 89 ML/MIN)

GFR OF 60 MAY REPRESENT 50% LOSS IN FUNCTION.