

Renal Function

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9:06 PM

Learning Objectives:

- role & pathophysiology of SCr, BUN, BUN:SCr, and Cystatin-C
- GFR vs. CrCl
- when appropriate to use the following equations: MDRD, CKD-Epi, & C-G
- use C-G equation to calculate CrCl

Kidney

- excretory
- endocrine
- metabolic

BUN - reabsorption rate

SCr - degradation product of muscle Creatine; not reabsorbed; *not sensitive to acute ΔGFR (lag = 1-2 days)*

BUN:SCr - ↑ BUN:SCr, ↓ circulating volume

CYSTATIN-C - biomarker

GFR - blood filtration rate (estimated)

CrCl - creatinine filtration rate (measured over 24 hrs)

Roles

BUN	(used with SCr)
SCr	screening
BUN:SCr	screening
eGFR	diagnosing/staging
mCrCl (24 hrs)	dosing, GFR estimation
Cystatin-C	biomarker (lab)

C-G Equation	dosing
MDRD Equation	calculating eGFR
CKD-EPI Equation	calculating eGFR

MDRD & C-G Equation NOT FOR: (use mCrCl, monitor urine output & drug levels)

- unstable kidney
- malnourishment
- ↑/↓ muscle (*amputations*)

C-G Equation

$$\text{CrCl} = \frac{(140-A) * \text{IBW}}{\text{SCr} * 72} * 0.85 \quad (\text{female})$$

Female:	$\text{IBW} = 45.5 + (2.3 * \text{inches})$
Male:	$\text{IBW} = 50 + (2.3 * \text{inches})$

If...	Use...
Weight < IBW	Weight
Age > 65 & SCr < 1	SCr = 1