Case Renal-1

A 45 YO WM who weighs 89 Kg is 5'11" and has a SrCr = 1.2 mg/dl is going to require vancomycin. Please determine her IBW, BMI, CrCl-WT, BSA and CrCl to be used in determining a dose for this patient. Also compute GFR-MDRD and normalized CrCl for comparison.

IBW = 75.3 Kg, BMI = 27.4 Kg/m^2, CrCl-WT = 80.8 Kg, BSA = 2.13 m^2 and CrCl = 88.8 ml/min, GFR-MDRD = 65.5 ml/min/1.73 m^2, GFR-CKD-EPI = 72.6 ml/min/1.73 m^2, CrCl Norm = 72.3 ml/min/1.73 m^2

IBW = 50.0 + 2.3*11 = 75.3 Kg

BMI = 89 Kg/ (71 in * 0.0254 m/in)^2 = 27.4 Kg/m^2

CrCl-WT = AdjWT = 75.3 Kg + 0.4*(89 Kg – 75.3 Kg) = 80.8 Kg [Because BMI > 25]

BSA = 89 $Kg^{0.5378}$ * (71 in. * 2.54 cm/in)$^{0.3964}$ * 0.024265 = 2.13 m^2

CrCl = (0.85+1*0.15)*(140-45)*80.8/(1.2*72) = 88.8 ml/min

GFR-MDRD = 175*$1.2^{-1.154}$*$45^{-0.203}$*(0.742+1*0.258)*(1+0.21*0) = 65.5 ml/min/1.73 m^2

SrCr is > 0.7+0.2*1 so SrCrExp = 0.88

GFR-CKD-EPI = 144-(1*3)(1+0.155*0)*(0.993^{45})*(1.2 / (0.7+(0.2*1))$^{(-0.329-0.88)}$ = 72.6 ml/min/1.73 m^2

CrCl Norm = 88.8 ml/min * 1.73 /2.13 = 72.3 ml/min/1.73 m^2

Case Renal-2

A 37 YO WM paraplegic is admitted with a decubitus ulcer and an advancing cellulitis. The patient had one kidney removed when he was a child and has had recurrent urinary tract infections. He now has mild chronic renal impairment. He will be on placed on cefazolin. The patient if 5'9", weighs 90 Kg and has a serum creatinine of 1.6 mg/dl. In order to know if the dose needs to be adjusted, please estimate the patient's creatinine clearance.

CrCl = 70.1 ml/min

IBW = 50.0 + 2.3*9 = 70.7 Kg

BMI = 90 Kg / (69 in *0.0254 mg/in)^2 = 29.3 Kg/m^2 (Over 25 so needs an adjusted weight)

CrCl-Wt = AdjWt = 70.7 Kg + 0.4*(90-70.7 Kg) = 78.4

CrCl = (0.85+1*0.15)*(140-37)*78.4/(1.6*72) = 70.1 ml/min

Case Renal-3

A 65 YO WF that you had treated 2 weeks ago with an aminoglycoside now requires vancomycin. Your monitoring form indicates that her IBW is 63.9 Kg (she is not overweight) and her CrCl was 43.5 ml/min. Her SrCr is stable but is slightly higher at 1.6 mg/dl. What CrCl estimate would you use to compute her vancomycin dose?

CrCl = 35.4 ml/min

CrCl = (0.85+0*0.15)*(140-65)*63.9/(1.6*72) = 35.4 ml/min

Case Renal-4

An 11 year old boy needs to be placed on a cephalosporin. Estimate the renal function to determine if a dosage adjustment is necessary. The boy weighs 38.5 Kg, is 36 inches tall and has a SrCr of 0.95 mg/dl.

CrCl = 39.1 ml/min

11 year old so must use the Shull equation:
CrCl = [(3.5*11) + 23.6] / 0.95 = 65.4 ml/min/1.73 m^2
But that is normalized, so must un-normalize to dose:
BSA = 38.5 $Kg^{0.5378}$ * (36 in. * 2.54 cm/in)$^{0.3964}$ * 0.024265 = 1.035 m^2
CrCl = CrCl Norm * BSA / 1.73 = 65.4 * 1.035 /1.73 = 39.1 ml/min

Case Renal-5

- A 42 YO WF weighs 69 Kg is 5'1" and has a SrCr = 1.2 mg/dl and is going to require a cephalosporin. Please determine her CrCl to know whether or not a dosage adjustment will be required.

IBW = 47.8 Kg, CrCl = 54.3 ml/min

IBW = 45.5 + 2.3*1 = 47.8 Kg
BMI = 69 Kg / (61 in * 0.0254 m/in)^2 = 28.7 Kg/m^2 (> 25 so adjusted weight is needed)
CrCl-Wt = AdjWT = 47.8 Kg + 0.4*(69 – 47.8 Kg) = 56.3 Kg
CrCl = (0.85+0*0.15)*(140-42)*56.3/(1.2*72) = 54.3 ml/min