Abstract N°2

**Cockcroft&Gault and CKD-EPI equations: are these equations concordant to adjust drug dosage?**

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Introduction:

When obese patients are considered, one important issue is the question of body surface area (BSA) indexation. In Pharmacology, the Cockcroft&Gault (CG)equation is still recommended to adapt drug dosage. In Nephrology, KDIGO recommend using CKD-EPI equation to estimate glomerular filtration rate (eGFR) and to “de-index” the equation to adjust drugs. Both in Pharmocology and Nephrology, the variable “weight” matters in the context of obesity. Therefore, adjusted ideal body weight (AIBW) is sometimes preferred to actual body weight in these patients. In this study, we test the concordance of the different equations to adjust drug dosage.

Methods:
Patients with body mass index (BMI) higher than 30 kg/m² were included. We calculate AIBW as followed: Ideal Body Weight + (0.4 \*(Actual Body Weight - Ideal Body Weight)). In this work, we will compare results obtained with CKD-EPI, using the “de-indexed” value, as recommended. It is calculated by multiplying eGFR by each individual’s body surface area and by dividing this intermediate result by 1.73 m2. CG and CGAIBW arenon-indexed and also expressed in mL/min. We calculated bias (defined as the mean difference between CKD-EPIdeindexed and CGs), precision (defined as the SD around the bias), and accuracy 30% (defined as the percentage of CKD-EPIdeindexed within ± 30% of CGs). All patients were then classified according the level of GFR (stage 1: eGFR > 90, stage 2: eGFR 60-90, stage 3: eGFR 30-60 and stage 4: eGFR<30 mL/min). We then calculated the concordance in this classification between these equations.

Results:
The population included 366 patients (185 women) from two different areas. Mean age was 55 ± 14 years and mean BMI was 36 ± 7 kg/m2. Mean eGFR by CG and CGAIBW were 96 ± 64 and 73 ± 45 mL/min, respectively. Mean eGFR by CKD-EPI deindexed was 77 ± 44 mL/min. In the global population, when we considered CG and CKD-EPIdeindexed, mean bias was -18.8 ± 24.7 and accuracy 30% between the equations was 86%. When we used CGAIBW, mean bias was +3.6 ± 8.6 and accuracy 30% was 99% (p<0.0001). Regarding the classification of the patients, the concordance between CG and CKD-EPI deindexed versus between CGAIBW and between CKD-EPI deindexed was 79.2% and 84.9%, respectively (p=0.06).

Conclusion:
In the context of obesity, we observed a good concordance between the results given by the CG equation and CKD-EPI deindexed if the AIBW is considered. Using actual weight induces discrepancies between the equations with potential consequences on drug dosage adjustment. Our study illustrates these potential discrepancies but it remained to be definitively proven that CKD-EPI deindexed (or CGAIBW ) performs better than CG with actual weight for the adjustment of drug dosage in obese patients.

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|  | **CG*****CKD-EPIdeindexed*** | **CG AIBW*****CKD-EPIdeindexed*** |
| *Biais* | -18.8 | 3.6 |
| *Precision* | 24.7 | 8.6 |
| *Accuracy 30%* | 86 | 99 |