

Fibroblast Growth Factor 23 and Iron Deficiency Anemia in Chronic Kidney Disease



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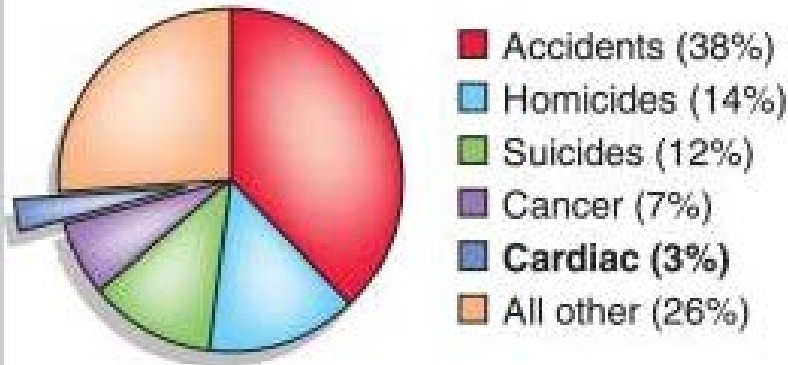
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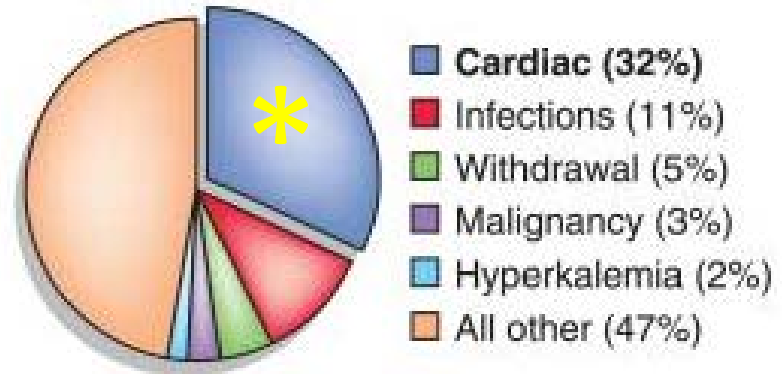


The leading cause of death in pediatric chronic kidney disease is cardiovascular disease.

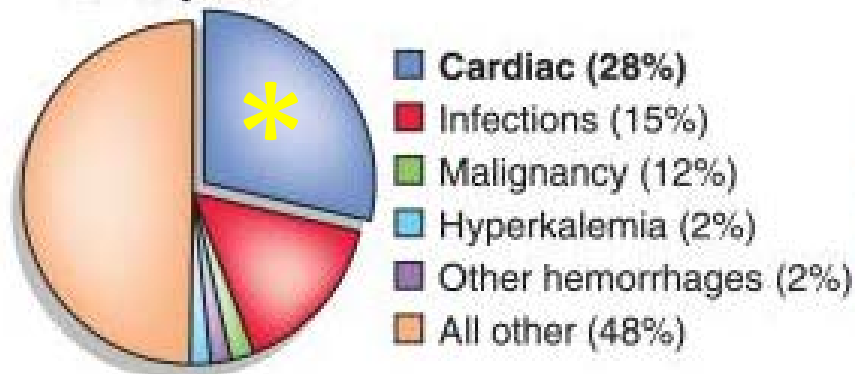
General population
1–24 years



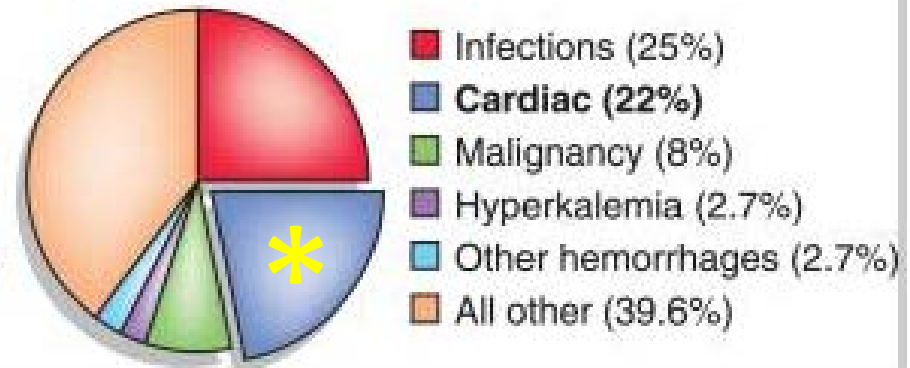
Hemodialysis
0–19 years



Peritoneal dialysis
0–19 years

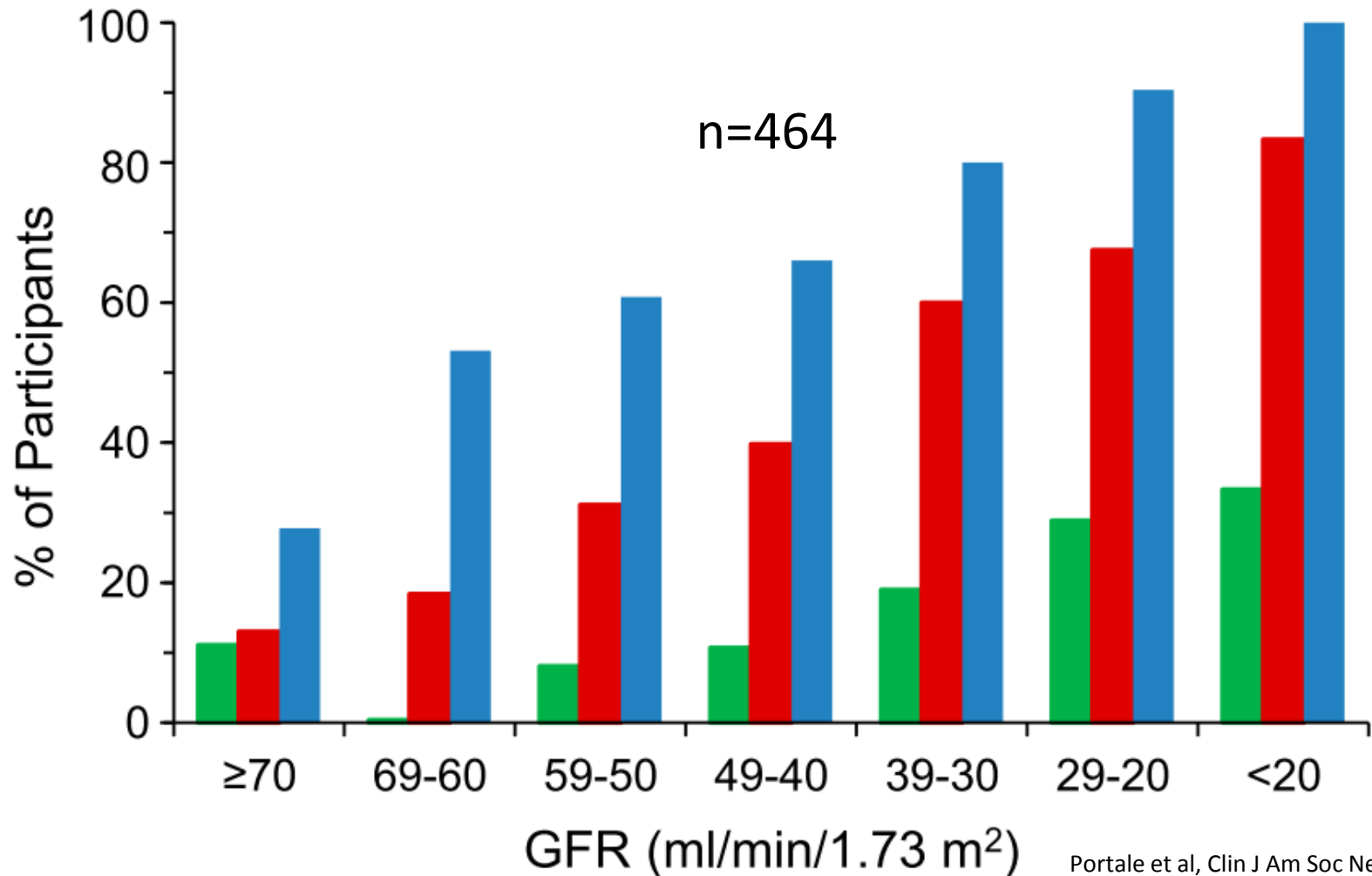


Transplant
0–19 years

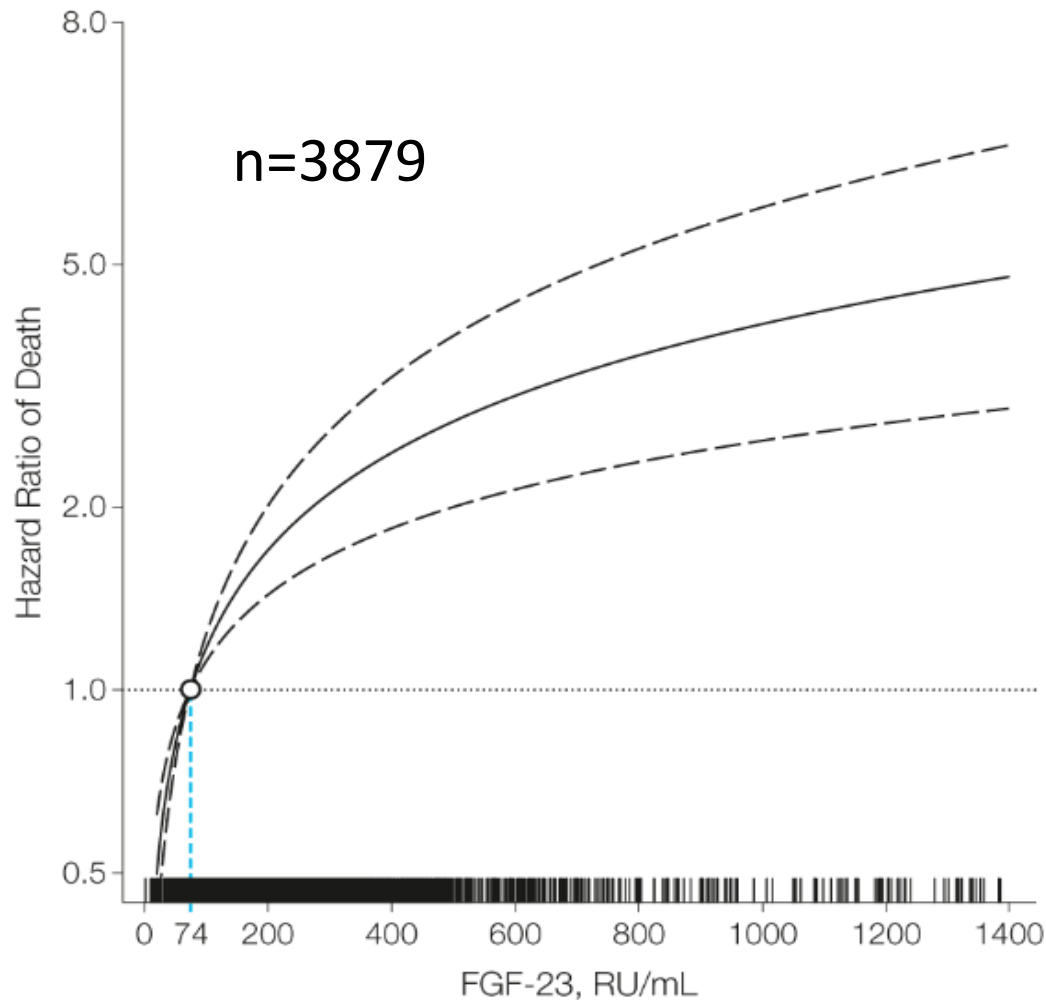


FGF23 levels increase very early in pediatric CKD.

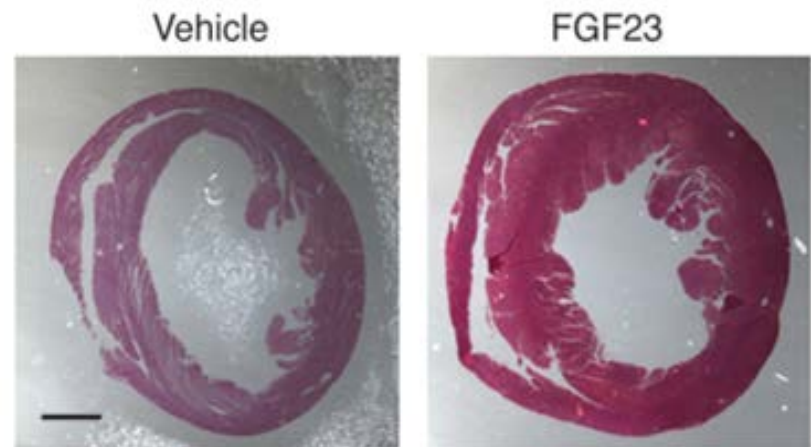
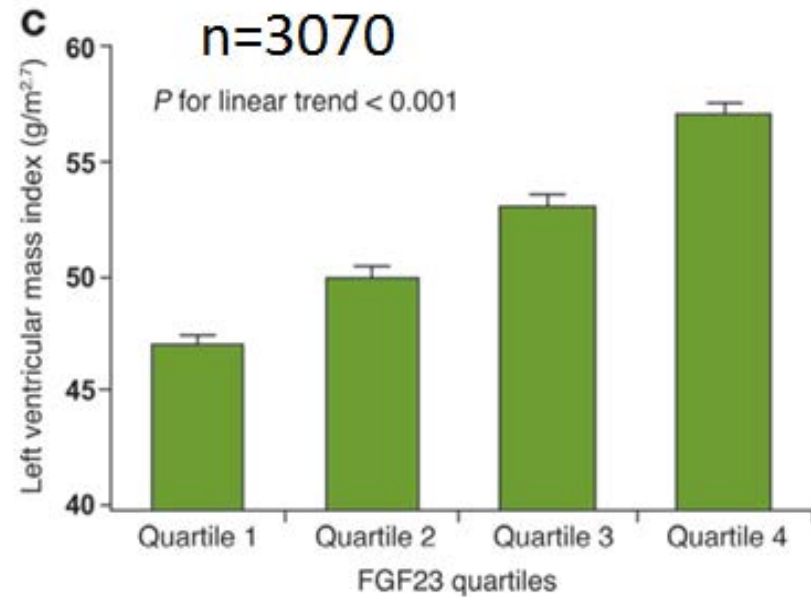
■ Phos >1.96 SD ■ iPTH >65 pg/ml ■ FGF23 >101 RU/ml



In CKD, higher FGF23 levels are associated with increased cardiovascular morbidity and mortality.



Isakova et al, JAMA 2011.



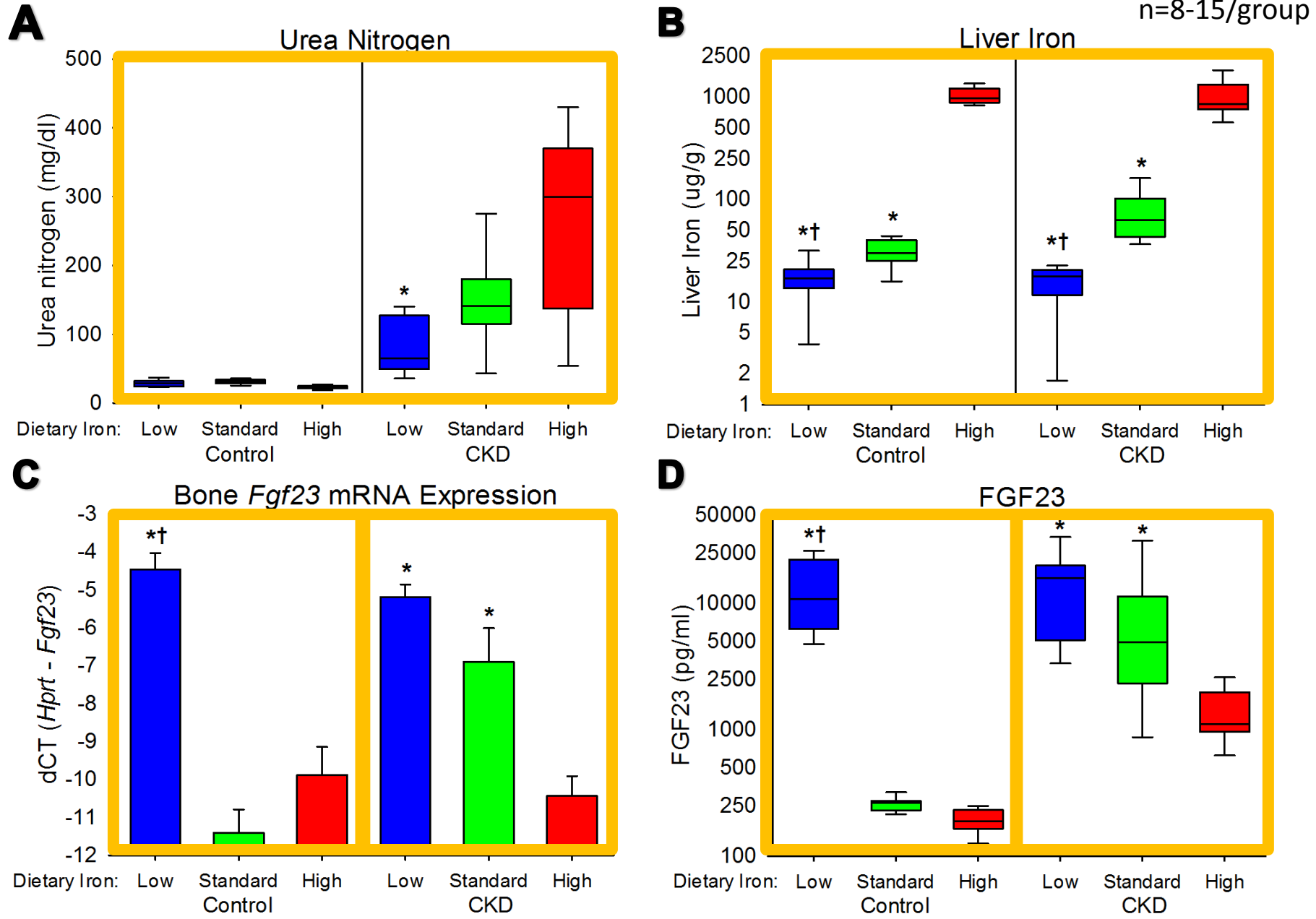
Faul et al, J Clin Invest 2011.

Iron may affect FGF23 production.

C57BL/6 Mouse Groups and Diets

Genotype	Dietary Adenine	Dietary Iron	n
Wild type	No	Low (4 ppm)	12
Wild type	No	Standard (335 ppm)	12
Wild type	No	High (10,000 ppm)	8
Wild type	Yes	Low (4 ppm)	12
Wild type	Yes	Standard (335 ppm)	14
Wild type	Yes	High (10,000 ppm)	15

Iron status affects FGF23 expression.

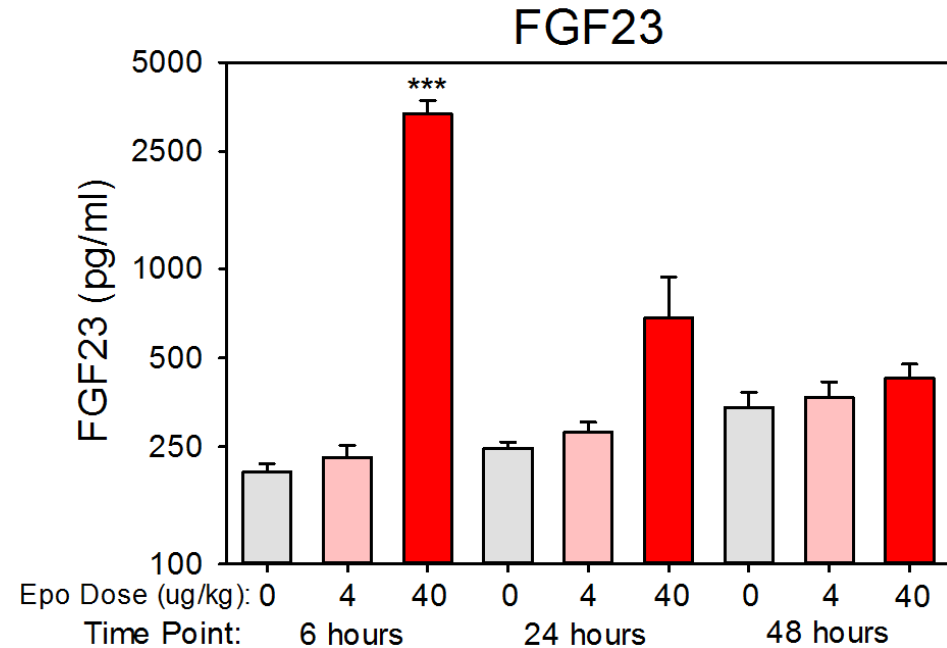
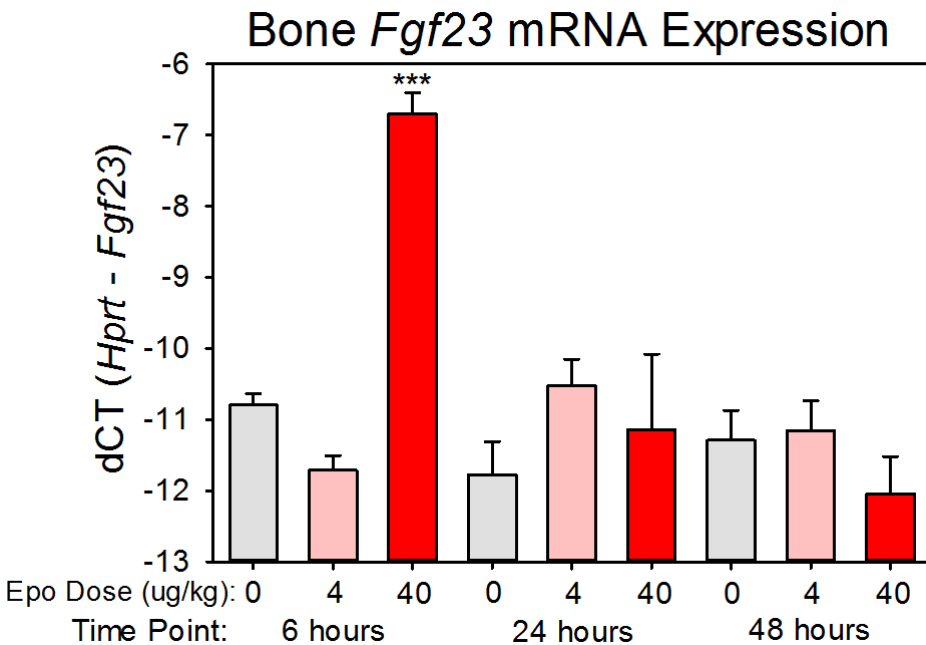


In CKD, independent of serum phosphate, iron deficiency is associated with increased FGF23 levels.

Association of independent variables with FGF23 in CKD mice:

Independent Variable	Coefficient (95% CI)	p-value	n
Standardized Serum Phosphate	0.23 (0.10, 0.36)	0.001	57
Standardized Liver Iron	-0.17 (-0.30, -0.04)	0.013	

Erythropoietin may also be associated with increased FGF23 expression.



Thank You

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