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**Science Internship Program:**  
**Applied Medicine**

# **Chronic Kidney Disease Quality Improvement**

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# Abstract

- The CKD Clinic was created to meet the needs of a population that suffers from chronic kidney disease (CKD).
- This project focuses on certain factors that play a role in CKD to see if the Clinic has actually been effective in any way.

# Background

- The Glomerular Filtration Rate (eGFR) is a number that is obtained through a blood test conducted for the measurement of creatinine in the human blood.
- Creatinine is a waste molecule that is generated from muscle metabolism.

## Background (cont.)

- Creatinine is transported through the bloodstream and to the kidneys to be filtered out of the body with other toxins.
- Kidneys maintain blood creatinine at a normal range. If the range is elevated, kidney function can become impaired, causing creatinine levels to rise in the blood.

## Background (cont.)

- The eGFR is used to calculate how much creatinine is cleared from the body by the kidneys.

# Problem/Purpose

- Check kidney function in terms of eGFR change and identify factors possibly associated with kidney function change.
- Determine the most effective way to improve the overall health and treatment of this population.



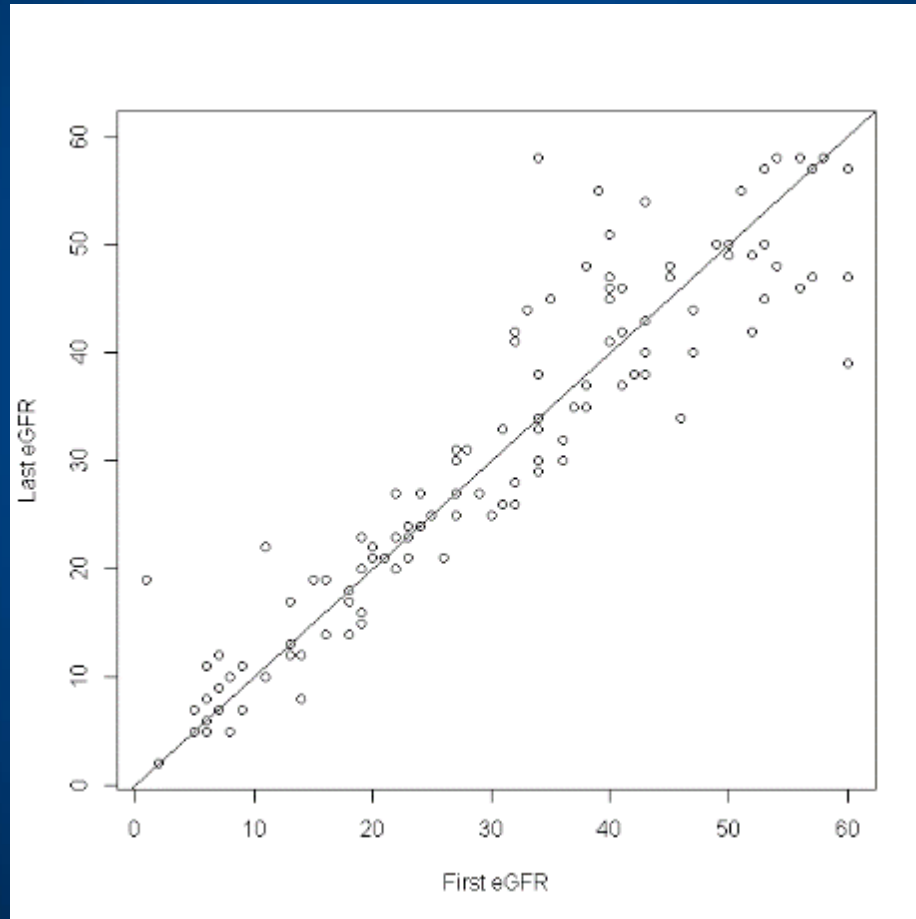
# Hypothesis

- Our hypothesis was that the rate of eGFR would decrease due to certain factors that were focused on in the CKD Clinic since the patient's initial visit and final visit.

# Methodology

- eGFR values from the patient's initial and final visits were recorded.
- Follow-up was coordinated and scheduled with CKD Clinic physicians and subspecialist.
- Annual contact with patient to identify health, concerns, etc. – via MyChart or phone.

# Data



# Data (cont.)

Factor	Estimate	Standard Error	P-value
SBP at first visit	-0.03239	0.02179	0.14
SBP at last visit	-0.006	0.02689	0.824
DBP at first visit	-0.05764	0.04027	0.155
DBP at last visit	0.00461	0.04235	0.913
HB Vacc at first visit	-1.0006	1.9431	0.608
HB Vacc at last visit	0.5911	1.0781	0.585
K at first visit	-0.3072	0.8814	0.728
K at last visit	-0.1655	0.9665	0.864
Na at first visit	-0.1375	0.1638	0.403
Na at last visit	0.00282	0.03034	0.926
UPCR at first visit	-0.00045	0.005686	0.938
UPCR at last visit	0.08675	0.06338	0.176

# Results/Outcomes

- There initially were 245 patients in the dataset. Only 230 of them had their last visit date later than the first visit date.
- Of the 230 patients, 83 had their first eGFRs missing, and 107 had their last eGFRs missing. 119 of them had both their first and last eGFRs available.

# Conclusions

- Table 1 shows that none of the factors from the list was identified as a strong factor that affects the eGFR change rate. The reason for failing to identify factors associated with eGFR change could be small sample sizes, weak effect in the target population (as shown in Figure 1), or a combination of both.

# Recommendations

- Collect data based on other factors that can have an effect on the eGFR rate of change.
- Look at the eGFR value from the visits in between the initial and final visits to the CKD Clinic.
- Have a larger sample size.

# References

- *About eGFR*. N.p., n.d. Web. 19 July 2017.  
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