



**Technology  
Healthcare  
Big Data Analytics**

## **Predicting CKD: THB's Super Simple Tool**

**Use Data from Routine Tests to Calculate CKD Probability in Your Patients**

Chronic Kidney disease is a major problem in India. Once initiated, it is almost impossible to reverse the treat. The life of a kidney failure patient hangs between dialysis schedules and complications in all major organ system. However, **awareness about CKD remains low** and even those at high risk often do not get screened for it regularly. Even risk scores are mostly for Caucasian populations.

By analyzing the data of over 13,000 Indian patients, THB created a mathematical model that could **predict the probability of chronic kidney disease** with commonly used blood tests. Serum creatinine was chosen as the biomarker to represent chronic kidney disease.

We chose one biomarker from each category of **diabetes, lipid and liver** function markers that were the best mathematical fit in the model. Tests whose values may be significantly altered as a consequence of CKD such as uric acid, AST, Hemoglobin, etc. were deliberately excluded from the model.

We found that diabetes increased the risk of chronic kidney disease by 70% and high lipids level increased risk by 56%. One year increase in age contributed to only a 0.58% increase, but may have an impact over time.

**Basis our analysis, Probability of Chronic Kidney Disease:**  

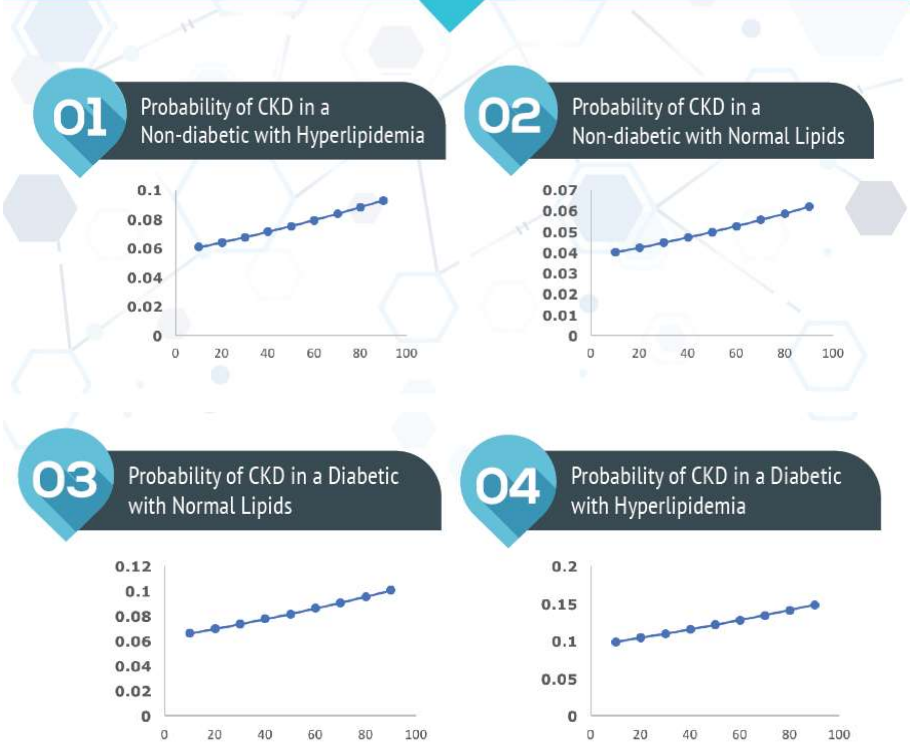
$$= 1 / (1 + e^{-[(0.530 * Diabetes) + (0.438 * High lipids) + (0.006 * Age) - 3.240]})$$

	Odds Ratio	Lower 95% CI	Upper 95% CI	P value
<b>Diabetes<sup>1</sup></b>				
No	1	-	-	-
Yes	1.70	1.33	2.22	<0.0001
<b>High lipid levels<sup>2</sup> (High Triglycerides)</b>				
No	1	-	-	-
Yes	1.56	1.20	2.01	0.000704
<b>Age<sup>3</sup></b>	1.01	0.99	1.02	0.44542

References

- 1: Diabetes : 0 - No Diabetes, 1- Diabetes Present
2. Cut-off for Diabetes taken as 6.5 or more score on Hb1AC test
- 3: High Lipids: 0- Normal Lipid Levels, 1- High Lipid Levels/Hyperlipidemia
4. Cut-off for hyperlipidemia taken as 140 or more score on TG test
- 5: Age: Age in Years (18 years onwards)
6. Time period of risk probability is within ~500 days of last test

Following graphs can be used to find any person's probability of CKD:



Note: X-axis for all charts displays age while Y-axis of all charts displays probability of CKD

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