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Risk Probability of Kidney Complications Resulting from Chronic Diseases (Math-Physical Medicine)

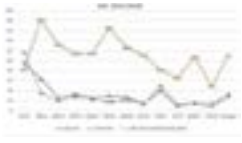
Introduction: The author, who has type2 diabetes (T2D) for 25 years, is a research scientist on chronic diseases. He has endured many complications from T2D involving kidney, bladder, foot ulcer, and five separate cardiac episodes. In this paper, he focuses on investigating the risk probability of having kidney complications.

Methods: Instead of using traditional biology and chemistry, he utilized mathematics, physics, engineering modelling, and computer science to conduct his research. He has spent 20,000 hours and collected and processed~1.5M data during 2010-2018. He built up a baseline model, including genetic (unchangeable conditions) and semi-permanent factors such as weight, waistline, bad habits (hard to change conditions). He then applied his collected ~80,000 data of chronic disease conditions, during the past eight years, to calculate their contributions to kidney complications, including glucose, blood pressure, kidneys, glomeruli, bladder, urinary tract, etc. Finally, to make his last but most important part of the calculation, he used lab-tested data of albumin, creatinine, and ACR during the past seven years. After combining these three parts, he obtained an annual percentage of having kidney complications resulting from chronic diseases.

Results: Key data in 2010:
Glucose- 280mg/dL
AIC- 10%
ACR- 116.4
Kidney Risk Probability 57%
Key data in 2018:
Glucose- 115mg/dL
AIC- 6.5%
ACR- 14.6%
Kidney Risk Probability 34%

As shown in Table 1, Figures 1 and 2, detailed data and graphics illustrate the reduction of his kidney complications.

Conclusion: his investigation does not focus on kidney data alone. His main purpose is to study the relationship between chronic diseases, especially T2D, and kidney complications from a larger pool of associated data.



Year	Yr 2012	Yr 2013	Yr 2014	Yr 2015	Yr 2016	Yr 2017	Yr 2018
Probability of Kidney Complications	57%	40%	40%	38%	34%	35%	34%
Averaged ACR	116.4	26.9	25.4	19.6	12.6	25.4	14.6

Biography

The author received an honourable PhD in mathematics and majored in engineering at MIT. He attended different universities over 17 years and studied seven academic disciplines. He has spent 20,000 hours in T2D research. First, he studied six metabolic diseases and food nutrition during 2010 to 2013, then conducted his own diabetes research during 2014 to 2018. His approach is “quantitative medicine” based on mathematics, physics, optical and electronics physics, engineering modelling, signal processing, computer science, big data analytics, statistics, machine learning, and artificial intelligence. His main focus is on preventive medicine using prediction tools. He believes that the better the prediction, the more control you have.

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