

## **Four clinical cases using GH-Method: math-physical medicine to control type 2 diabetes via both lifestyle management and effective medications**

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### **Introduction:**

This report is based on four patients residing in three different countries. Their genetic backgrounds, personal data, lifestyles, type 2 diabetes (T2D) conditions, and medication treatment plans are unrelated. However, these four cases share the same common ground by applying the same lifestyle management and effective medication treatment together to control their T2D conditions.

### **Method:**

The four patients have been following the guidelines outlined from published findings, conclusions, and recommendations of the GH-Method: math-physical medicine approach (MPM) and its developed AI Glucometer tool to predict and control their T2D conditions.

### **Results:**

These four T2D patients are named by their country of residence or US city. Myanmar Case: female, age 46, takes 1,000mg metformin, health data period from 9/11/2018-3/7/2019; Fremont Case: male, age 73, takes 1,000mg metformin, health data period from 5/1/2018-3/7/2019 - did not use AI tool, health data is obtained through phone interview and hospital testing results; Taiwan Case: male, age 74, takes 1,000mg metformin, health data period from 4/21/2018-3/7/2019. Stanford Case: male, age 72, has not taken any diabetes medication since 2015. As shown in Figure 1, all of their weights, glucose values, and HbA1C have been improved via disciplined lifestyle management and effective medication treatment plan. As shown in Figure 2, all cases are adopting "low carbs diet", i.e. carbs/sugar intake per meal is <20 grams (ranging from 13g to 19g). However, their post-meal walking has a wider spread, ranging from 1,300 to 4,300 steps. These two factors are the major influential factors of PPG formation which contributes ~80% of HbA1C. Utilizing a "linearized" glucose prediction equation to simulate this complicated nonlinear, dynamic, and organic glucose, these four cases have achieved prediction accuracy between 95% to 99%. While utilizing the AI Glucometer has achieved prediction accuracy between 93% to 100%. The larger the data size will result in a higher accuracy rate. The Fremont Case did not use the AI Glucometer as a prediction tool, instead he followed the GH-Method's guidelines closely.

### **Conclusion:**

By using the GH-Method: math-physical medicine and its developed AI tool along with following the physician's methodical medication treatment plan, the four T2D patients have achieved significant health improvements on controlling their diabetes conditions.

### **Biography**

The author received an honorable 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 modeling, 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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