

28th International Conference on

Nursing Care

May 23-24, 2019 | Vienna, Austria

Type 2 Diabetes Nursing Management

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Introduction: This paper was written in a “cookbook” format based on ~1.5M data containing medical and lifestyle conditions for one patient with type 2 diabetes (2012-2018).

Background: Four main challenges in T2D nursing management:

- Awareness and Knowledge
- Glucose Measurement
- Will Power and Persistence
- Technology and Tool

Results: Highlights of Figure 1: Flow Diagram:

1) Weight, BMI, Waistline (food portion control & daily exercise):

Weight from 220 lbs. to 171 lbs.

BMI from 32.1 to 25.0

Waistline from 44” to 32”

Controlling factors are meal portion (85% of a normal portion) and daily walk (18,000 steps, 7 miles/day).

2) FPG (~ 20-25% of A1C):

FPG from 189 to 117 mg/dL

Weight contributes 80-85% of FPG.

1.0 lbs. weight = ~1.5 mg/dL FPG.

3) PPG (~ 75-80% of A1C):

PPG from 380 to 116 mg/dL

Carbs/Sugar intake (~14.3 gram/meal) contributes 38% and post-meal walking (~4,300 steps) contribute 41% of PPG.

1.0 gram carbs/sugar = ~1.8 mg/dL PPG. 1,000 steps post-meal walk = ~10 mg/dL PPG.

4) Daily Glucose and A1C:

Daily glucose from 280 to 117 mg/dL

A1C from 10.0% to 6.5%

5) Blood Pressure and Lipids:

SBP/DBP from 127/85 to 96/64

Hyperlipidemia and hypertension are under control.

6) Risk of heart attack or stroke:

Risk from 74% in 2000 to 27.4% in 2017. Suffered three cardiac episodes 2001-2006.

Figure 2 - AI tool provides FPG & PPG predictions.

Figure 3 - provides practical guidance on food and exercise.

Conclusion: The paper provides guidance on nursing management for T2D. By using the AI Glucometer, it may help patients overcome some obstacles for this disease.

Speaker Biography

Gerald C Hsu 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 2010-2013, then conducted research during 2014-2018. His approach is “math-physics and quantitative medicine” based on mathematics, physics, engineering modeling, signal processing, computer science, big data analytics, statistics, machine learning, and AI. 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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