

Window on the Science - Precision Medicine and Proteomics

What is precision medicine?

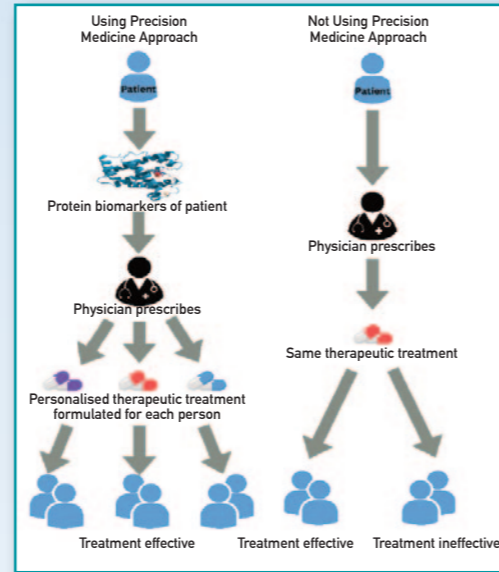
Most medical treatments use the one-size-fits-all approach, meaning these treatments may not be effective for everyone - precision medicine offers an alternative approach.

The Federal Drug Administration (FDA) defines it as a healthcare approach that tailors disease prevention and treatment by considering differences in genes, environments and lifestyles. The goal of precision medicine is to personalise patient care, ensuring that the treatment chosen is optimal for each patient's unique circumstances.

Precision medicine and proteomics

Proteomics is improving precision medicine. Proteomics can be used to find protein biomarkers - 'fingerprints' in the body indicating disease presence. Scientists can identify biomarkers with diagnostic potential and develop new disease-specific tests.

Proteomics also allows scientists to identify if protein biomarker concentrations change during drug treatments. By understanding these biomarkers, researchers can understand the effectiveness of drugs and develop therapies that are targeted to individual patients, enhancing treatment outcomes and minimising adverse effects. This personalised approach, which matches therapies to each patient's unique biological protein fingerprint, represents a significant advancement in both drug discovery and precision medicine.



Proteomics International's role in precision medicine

There is a diabetic kidney disease (DKD) health crisis as rates rise across Australia, with 1 in 20 hospitalisations being a type 2 diabetes patient undergoing dialysis - worse, kidney failure rates are expected to rise by 45% by 2040. Similar consequences are being seen worldwide.

Existing standard-of-care tests cannot predict DKD onset until it is already present, resulting in less effective therapeutic treatments and additional complications. The most effective strategy to reduce DKD's burden is to delay or prevent it.



Source:
 FDA Medical Devices: Precision Medicine 2018
 Diabetes Australia 2023: Change the Future: Saving Lives By Better Detecting Diabetes-related kidney disease
 International Diabetes Federation (IDF) Atlas 10th Edition 2021.
 Centres for Disease Control and Prevention. *Chronic Kidney Disease in the United States, 2019*. Atlanta, GA: US Department of Health and Human Services. Centres for Disease Control and Prevention; 2019.

Diabetes affects 1 in 10 adults globally. Of these, 1 in 3 adults currently have DKD

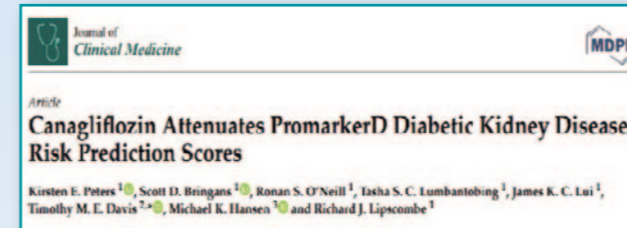
Chronic Kidney disease is typically asymptomatic. Kidney function can fall below 15-20% before symptoms appear and kidney damage is already present

PromarkerD

PROACTIVELY CHANGING RENAL HEALTHCARE
 A simple blood test for predicting diabetic kidney disease

Proteomics International has a solution - PromarkerD: a protein-based diagnostic blood test to predict DKD onset up to 4 years before clinical symptoms appear, by categorising patients into 'risk profiles.' This allows for earlier detection and clinical intervention.

PromarkerD was used in a clinical study - 'Canagliflozin Attenuates PromarkerD Diabetic Kidney Disease Prediction Scores' - to determine the effect of this SGLT2-inhibitor class drug on PromarkerD risk scores as a DKD treatment.



The study found that early treatment intervention resulted in a reduction in PromarkerD scores in high-risk patients - hence demonstrating Canagliflozin's clinical utility in reducing the risk of kidney function decline in patients classified as high-risk of developing chronic kidney disease.

With the PromarkerD prognostic test and effective treatment options, doctors now have the tools necessary to improve disease outcomes and tailor a treatment strategy to find one that works for each diabetes patient.

High-risk patients can be prescribed renal-protective medications

Low-risk patients can avoid aggressive treatment options

Monitor treatment response to identify need to change drug dosage or type

Similarly, Proteomics International is developing diagnostic blood tests for endometriosis (PromarkerEndo) and esophageal cancer (PromarkerEso). These novel tests can allow for earlier intervention such as enabling earlier treatment, lifestyle changes, and risk factor avoidance. Combined with personalised treatment, more effective interventions can be used to improve patient outcomes.

As more therapeutic drugs become available, proteomic tests can act as companion diagnostic tests to provide essential information to doctors for making informed treatment decisions and initiating appropriate actions even before the onset of disease.

This proactive approach not only enhances the efficacy of treatments but also potentially reduces the adverse effects, thereby optimising patient outcomes and contributing to the evolution of precision medicine.

