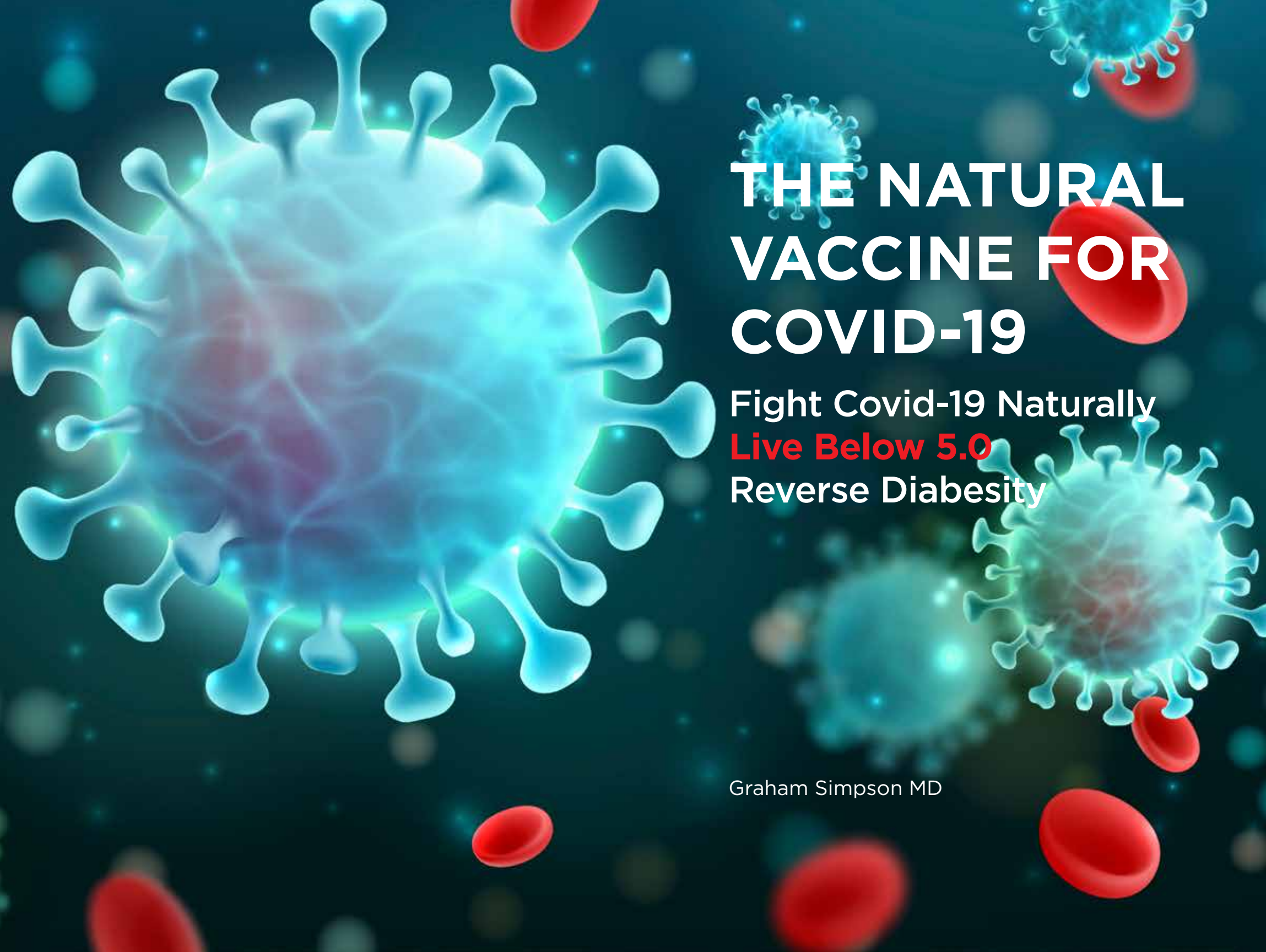


THE NATURAL VACCINE FOR COVID 19

Fight Covid-19 Naturally
Reverse Diabetes



GRAHAM SIMPSON MD



THE NATURAL VACCINE FOR COVID-19

Fight Covid-19 Naturally
Live Below 5.0
Reverse Diabetes

Graham Simpson MD

Copyright © 2020 Dr. Graham Simpson ALL RIGHTS RESERVED

Published by Eternity Medicine LLC
USA Global Headquarters
866 Seven Hills Dr #104
Henderson, NV 89052 USA

Dr. Graham Simpson MD asserts the moral right to be identified as the author of this work. All rights reserved. No part of this publication may be adapted or reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or otherwise, without prior permission of the author or publisher.

Disclaimer

All information (including diabetes, insulin resistance, inflammation and Covid-19) is believed accurate at the time of going to press but is not so warranted. The publisher shall not be responsible for errors or omissions.

All content within this report is commentary or opinion and is protected under Free Speech laws in all the civilized world. The information herein is provided for educational and entertainment purposes only. It is not intended as a substitute for professional medical advice of any kind.

In no event shall Dr. Graham Simpson be liable for any consequential injury, damages or death arising out of any use of, or reliance in any content or materials contained herein, neither shall Dr. Graham Simpson be liable for any content of any external internet sites referenced and services listed.

Always consult your own licensed medical practitioner if you are in any way concerned about your health. You must satisfy yourself of the validity of the professional qualifications of any health care provider you contact as a result of this book.

TABLE OF CONTENTS

INTRODUCTION

PART ONE

Insulin Resistance Loads the Gun, Covid-19 Pulls the Trigger

Chapter 1: Half the World is Fat, Diabetic and Sick	12-19
Chapter 2: Who Dies from Covid-19?	20-33
Chapter 3: Endothelial Dysfunction and Death	34-41

PART TWO

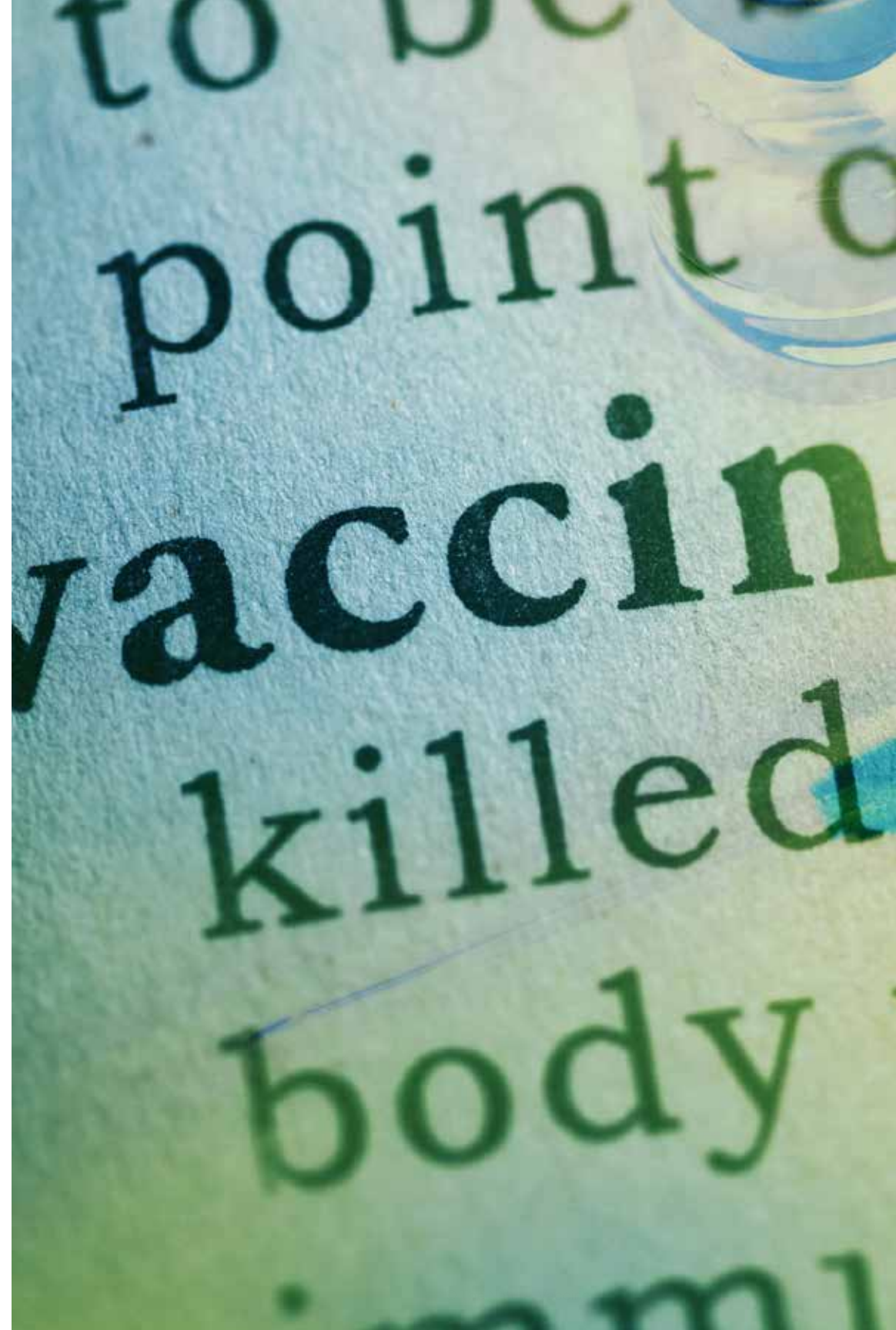
The Natural Vaccine Against Covid-19

Chapter 4: The Soil is More Important Than the Seed	42-49
Chapter 5: Are You Insulin Resistant?	50-65
Chapter 6: The 'Live Below 5.0' Solution	66-81

AFTERWORD

TAKE THE LIVE BELOW 5.0 TEST

REFERENCES



Introduction

Graham Simpson MD

The word “virus” has its roots in the Latin term for “poison” – but as we will see this is not the whole story.



Viruses are microscopic parasites responsible for a host of familiar and sometimes fatal diseases, including the flu, measles, HIV and Ebola. They are made up of DNA or RNA encapsulated in a protein shell and can only survive and replicate inside a living host, which could be any organism on earth. Only in this way can a virus replicate. Viruses resemble “seeds” more than they do living cells. ¹

Since viruses were first discovered in 1892 by Dmitri Ivanovsky we have learnt a lot but still don't know how they came to exist. There are a host of different viruses that are constantly evolving exchanging genetic information with all types of life. Most of us don't realize that the majority of known viruses are persistent, are innocuous and not pathogenic. Nobel Laureate Salvador Luria mused about the viral influence on evolution when he wrote “may we not feel that in the virus, in there merging with the cellular genome and reemerging from them, we observe the units and process which, in the course of evolution, have created the successful genetic patterns that underlie all living cells.”

The huge population of viruses, combined with their rapid rate of replication and mutation, makes them the world's leading source of genetic innovation: they constantly “invent” new genes. From single-celled organisms to human populations, viruses affect all life on earth, often determining what will or will not survive.

In the last days of December 2019, the Wuhan Center of Disease Control detected a novel coronavirus in two hospital patients with atypical pneumonia. Samples were sent to the Wuhan Institute since, if the finding was confirmed, it could present a serious public health threat since it belonged to the same family of viruses that caused severe acute respiratory syndrome (SARS) a disease that infected over 8,000 people and killed 774 people. SARS in fact was the first major epidemic of the 21st Century.

Viruses are constantly mutating. Those that trigger pandemics have enough novelty that the human immune system does not recognize them as dangerous. The famous example of this was the H1N1 influenza pandemic of 1918-1919 that killed between 50-100 million people.

Interestingly it took another pandemic, the H2N2 in 1957, to extinguish most of the 1918 strain. Nature appears able to do this while we cannot.

Before SARS, most health professionals were not concerned with corona viruses (named for their spiky surface that looks like a crown under a microscope). Four of the six known corona viruses cause mild-cold symptoms. In addition, to SARS the sixth coronavirus MERS (Middle-East Respiratory Syndrome) occurred in 2012. Here the virus jumped from camels to humans.

Two previous events are worth noticing. The first in Australia in 1994 the Hendra virus jumped from horses to humans and in Malaysia in 1998 the Nipah virus moved from pigs to people. Researchers found that the pathogens in both cases originated from bats. We now know that there are hundreds of bat-borne corona viruses - dozens belong to the same group as SARS.

All these infections came from these ancestral bats – they serve as the ‘reservoir’ and different mammals serve as the intermediate host. Researchers believe bats have been around for over 50 million years and are ecologically important mammals constituting at least one quarter of all mammalian diversity living in every continent except Antarctica.

By January 7th the Wuhan team had determined the new RNA virus had indeed caused the pneumonia that these patients suffered – this was based on results from PCR, full genome sequencing, antibody tests of blood samples and the viruses ability to infect human lung tissue in a petri dish. (China did not admit till Jan 20th that there was human-to-human transmission!) ²

Dr. Anthony Fauci reported in the NEJM on March 26, 2020 that the case fatality rate for Covid-19 appeared to be 0.1% similar to the influenza pandemics seen in 1957 and 1968. This is in contrast to the case fatality rate in SARS (10%) and MERS (36%). In this same study the estimated reproduction number (Ro) was 2.2, which means on average, each infected person spreads the infection to two additional persons. Until this number falls below 1 the outbreak will continue to spread.

Before moving on it is interesting to decide if this 7th Coronavirus might have jumped from an intermediate host to humans from the ‘wet’ market near the Wuhan Institute or perhaps there was accidental transmission to a lab worker that then transmitted it to other people in Wuhan.

Recently, Nobel Laureate Luc Antoine Montagnier, who was awarded the Nobel Prize for discovering the HIV virus said on French Media on April 17th 2020 that the Covid-19 virus is “man-made” and that elements of HIV and Plasmodium Falciparum, a parasite that causes malaria, were found in the corona viruses genome.

He believes this was from an industrial accident while Wuhan Institute researchers were developing an HIV vaccine. Interestingly, Norwegian scientist Birgen Sorensen and British oncologist Angus Dalgleish also believe Covid-19 is man-made. This is most likely why it is so transmittable which would not have happened in nature. Montagnier said: “we were not the first since a group of Indian researches tried to publish a study which showed that the complete genome of Covid-19

had sequences of another virus, which is HIV.” The finding of 4 unique inserts in the 2019-Covid-19, all of which have similarities to amino acid residues in key structural proteins of HIV is unlikely to be fortuitous in nature. In order to insert HIV sequences into the genome molecular tools are needed that can only be done in a lab. ³

The HIV and SIV elements that Montagnier and mathematician Jean-Claude Perez detected, called Exogenous Informative Elements (EIE’s) provide the basis for their theory that Covid-19 is not a simple derivative of a SARS related virus. Their research enabled them to demonstrate how and why a new region including HIV/SIV EIE’s radically distinguishes all Covid-19 strains from other SARS viruses. The presence of Plasmodium yoelii in the genome, a parasite used in studies of mice vaccine strategies, is another EIE not originally in the SARS and bat related viruses. ⁴

The world’s closest known relative to Covid-19 virus was found in 2013 by Shi Zhanghi in an abandoned mine in South China where it was linked to deaths caused by a coronavirus –type respiratory illness. The death of three of these 6 men who died of pneumonia were covered up by Chinese authorities. Shi Zhanghi, the head of the Wuhan Institute (known as “bat woman”) makes no mention in a research paper in Nature why the study was carried out, the miners, their pneumonia and deaths.

Shi claimed the men died from a fungus under the bat guano even though the sample that killed the men was housed at the Wuhan Institute and was described in a scientific paper written by Shi that it is a 98% match to the Covid-19 virus (called RatTG13). This virus had been named in the earlier scientific paper RaBtCoV/4991. Why this was done is unknown. (Interestingly certain fungi have been shown to increase the virulence of corona viruses). Shi downplays the significance of the miners deaths by claiming they succumbed to a fungus despite the fact that the virus she isolated in the mine is a 98% match to Covid-19. I believe we will hear more on this in the months ahead.

As I write this the count of infected people in the USA has passed 6 million and the total number of deaths in the US is approaching 200 thousand.

Remember AIDS alone has killed more than 30 million people and continues to kill 700,000 every year.

In this book I will outline the problem in Part One and explain why people really die from Covid-19. Part Two will show you how you can protect yourself from Covid-19 with a simple ‘natural vaccine’ – the Live Below 5.0 Solution. I encourage you to implement this for yourself and loved ones to maximize not only your healthspan but your lifespan!

Graham Simpson MD

PART ONE**INSULIN RESISTANCE LOADS THE GUN
COVID-19 PULLS THE TRIGGER****Chapter One****Half the World is Fat,
Diabetic and Sick**

“If we are looking for a dietary cause of some of the ills of civilization, we should look at the most significant changes in man’s diet”

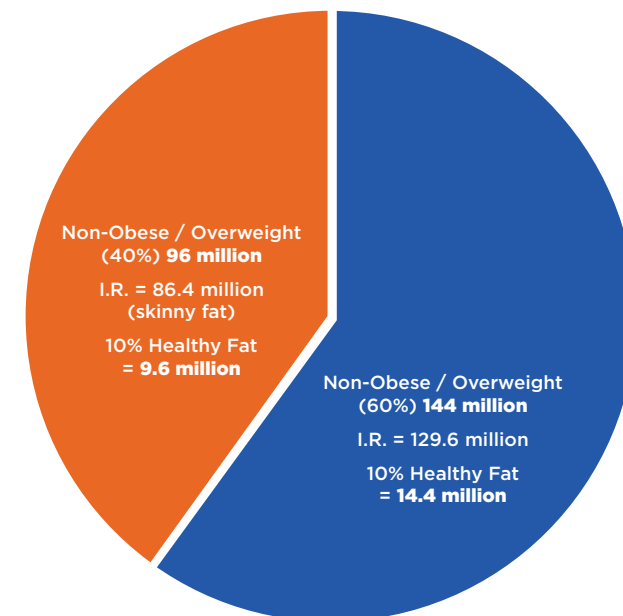
John Yudkin, MD

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is a simple index used to classify overweight and obesity. It is defined as a person’s weight in kilograms divided by the square of the height in meters (kg/m²).

The WHO defines overweight as a BMI >25 and obesity as a BMI >30. BMI is somewhat useful for population studies but in my experience is not useful for individuals and often misses the ‘skinny fat.’ As you can see from the example in the USA there are many ‘skinny fat’ who also have insulin resistance. This is the reason that it is important to use percent body fat and certain blood markers to make the diagnosis of insulin resistance as is outlined in Chapter 5.

Although it is true that most people who are overweight and obese (90%) have insulin resistance there are about 10% of these people who are “healthy fat” and don’t have IR.

In a similar fashion most of the ‘skinny fat’ have some degree of insulin resistance. Only 10-12% of all USA adults over the age of 20 years have a healthy metabolism free of insulin resistance.

USA Population +330 Million (Population older 20 years=240 million)

Of 240 million adult population = 216 million have Insulin Resistance

I am always amazed when I see a young slightly built woman in her twenties step on a body fat analyzer and see a reading of 38% body fat.

A normal female body fat is less than 30%.

A normal male body fat is less than 20%.

As body fat often is present with insulin resistance and this is the prime driver of most co-morbidities seen with deaths from Covid-19 it is no surprise that the countries with the highest deaths are countries who have the most obese and overweight like the UK, America, Mexico, Brazil, Chile, India etc.

Peter Cleave and John Yudkin, two of the most famous British Researchers, in the early 1960's suggested that sugar caused not just diabetes and heart disease but the entire cluster of chronic diseases we see today.

Cleave argued that white sugar and refined grains were equally responsible for these common chronic diseases. George Campbell, a South African physician, made a similar series of observations (that I, looking back, also witnessed personally during my internship at Baragwanath Hospital in South Africa) -that the relatively affluent whites suffered from a spectrum of chronic disease - including obesity, diabetes, heart disease, high blood pressure, frequent cancer of the bowel etc - that was absent in rural blacks living their traditional lifestyles. Cleave who collaborated with Campbell had called these the "saccharine diseases" in the 1950's. Yudkin in the 1960's called these the "diseases of civilization". In 1981, Hugh Trowell MD and Dennis Burkitt MD published their book *Western Disease: Their Emergence and Prevention* - they preferred the term Western Disease as they wrote "It proved obnoxious to teach African and Asian medical students that their communities had a low incidence of these diseases because they were uncivilized".¹

In the diagram on the following page I have expanded on the list of Western Disease listed by Trowell and Burkitt. The prime cause of these diseases is "insulin resistance" from too much sugar and grains and adulterated vegetable oils. In fact, more than half - the world's population now has diabetes or pre-diabetes due to "insulin resistance". The majority of individuals have a high body fat.

DISEASE OF CIVILIZATION

(Western Disease)

CARDIO	METABOLIC	DISEASE
1. Cardiovascular Disease	1. Obesity	1. Autoimmune Disease
2. Cerebral Vascular Disease	2. Diabetes	2. Osteoporosis
3. Nephropathy	3. Mitochondrial Disease	3. Appendicitis
4. Retinopathy	4. Dyslipidemia	4. Hormone Dysfunction
5. Neuropathy	5. Gestational Diabetes	5. Constipation
6. Peripheral Arterial Disease	6. GERD	6. Mood Disorders
7. Erectile Dysfunction	7. Gallstones	7. Skin Disorders
8. Hypertension	8. Renal Stones	8. Sarcopenia
9. Peyronie's Disease	9. Wrinkles (AGES)	9. Irritable Bowel Syndrome
10. Hemorrhoids	10. Cancer	10. Dental Caries
11. Parkinson's	11. Metabolic Syndrome	11. Pernicious Anemia
12. Varicose Veins	12. PCOS	12. Sleep Apnea
13. Deep Vein Thrombosis	13. Fatty Liver (NAFLD)	13. Asthma
14. Pulmonary Embolism	14. Diverticular Disease	14. Restless Leg Syndrome
15. Migraine	15. Alzheimer's	15. Aging
	16. Parkinson's	

GREAT PANDEMICS OF HISTORY				
Origin	Asia	USA	Africa	England
Duration	Days	Weeks	Years	Decades
Source	Bacteria	Virus	Virus	Diet
Cause of Death Deaths (millions)	Sepsis	Pneumonia	Infection	Cardio-Metabolic Disease
	45	40	28	>1000

Most of you have heard the story of putting a frog in a pot of hot water. If you put a frog into a boiling pot of hot water the frog jumps out but if you put the frog in water and slowly turn up the heat the hot water will ultimately kill the frog.

Obesity has taken more lives than all previous epidemics. Unlike epidemics that kill in days (Black Death), weeks (Influenza), or years (AIDs), Obesity kills over decades very similar to that poor frog.

Diabesity will increase your chances of dying from Covid-19 10x fold.

If you are overweight you should be considered insulin resistance with diabetes or pre-diabetes until proven otherwise.

There is no more important factor for weight loss, diabetes reversal and longevity than your insulin score. The single unifying factor among people who live to over one hundred years of age is a low insulin.

The standard lab tests for diabetes focus on blood glucose, you can be diabetic while your glucose scores are normal if you have elevated insulin levels that are keeping your glucose levels in a normal range.

This means that 88% of Americans (not 53% as reported in JAMA Sept 2015) are diabetic or prediabetic.

“Hyperinsulinemia (high insulin) adversely affects almost all degenerative diseases. That includes coronary artery disease, hypertension, cancer, stroke, diabetes of course, obesity, autoimmune disorders and mental disease and decline.” Dr. Ron Rosedale

Obesity, diabetes and angina were first described in India, as it was in India sugar was first introduced however it was in England where the epidemic really began.

Obesity and other Cardio-Metabolic Disease had its origins in England. This is due largely to the fact that England was initially the largest consumer of sugar in the world – America followed somewhat later as did other countries.

UK SUGAR CONSUMPTION PER CAPITA LBS/YEAR

1700	4-5 POUNDS
1770	15 POUNDS
1870	25 POUNDS
1970	100 POUNDS
2000	155 POUNDS
2020	150 POUNDS

Increased production eventually made sugar affordable to the common man. Once this happened, obesity and diabetes transitioned from being a disease of the wealthy to being a disease of humankind. (The rise in sugar intake per capita increased almost 5x between 1770-1970 in England but remained flat in France.)

Through the mid-nineteenth century diabetes remained a rare disease. As the father of modern medicine, Sir William Osler, reported in 1892 of 35,000 outpatients seen at John Hopkins Hospital in Baltimore only 10 had been diagnosed with diabetes.

Identification of the pre-diabetic state among obese and non-obese individuals was not known until the 20th Century.

However, as George Campbell MD noted, in his practice Indians in Durban, working in the sugar plantations, who consumed more than 80lbs of sugar per year like the urban Zulus who consumed 90lbs sugar/year - both these groups suffered from obesity, diabetes, hypertension and heart disease.

Rural Zulus ate less than 40lbs sugar/year and were free of the Western diseases (as did those in India who often consumed less than 20lbs sugar/year). Campbell noted a remarkable constant period in years of exposure to “town life” – 18 to 20 honeymoon years - before diabetes and other Western diseases appeared.

William Osler MD, Professor of Medicine at John Hopkins, in his classic text, *The Principles and Practice of Medicine* (1892) recognized that longevity was a vascular problem - well expressed by his axiom- A MAN IS ONLY AS OLD AS HIS ARTERIES.

Most diabetics die of cardiovascular disease. Cardiac deaths are the leading cause of death, not only in the USA but in most developed countries, of which diabetes is the number one cause. As Dr. Joseph Kraft said, “those with cardiovascular disease not identified with diabetes are simply undiagnosed.”

Dr. Stout, in 1977, identified the origin of the pathology of type II diabetes as vascular (arterial), directly related to hyperinsulinemia and not to hyperglycemia. The pathology of type II diabetes as outlined is mainly the following:

1. Cardiovascular disease

- Coronary artery disease
- Congestive heart failure
- Idiopathic cardiomyopathy
- Coronary microvascular dysfunction

2. Cerebral vascular disease

- Stroke – kills over 160,000 a year in the US and often without warning
- Transient ischemic attack (TIA)

3. Nephropathy

- Hypertension
- Nephrosclerosis – arterial and arteriolar

- Retinopathy** – major cause of blindness among adults aged 20-74 years

5. Neuropathy

- Autonomic – cardiovascular
- Peripheral – distal symmetric polyneuritis
- Central – neurotological (tinnitus)

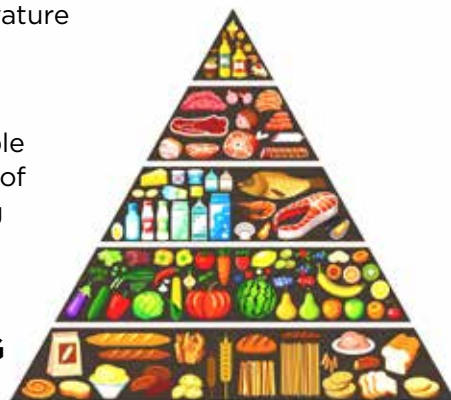
6. Peripheral arterial disease

7. Penile erectile dysfunction

8. Gestational Diabetes

- Peyronie's Disease**, penile arteriosclerosis of the corpora cavernosa with erectile curvature

As you will see Covid-19 is primarily a vascular disease caused by 'insulin resistance.' About half the people with diabetes have a diminished sense of both smell and taste a common finding in Covid-19 patients.



U.S. Food Pyramid

THE DIETARY GUIDELINES FOR AMERICANS ARE WRONG

Diabesity, the Global Pandemic of the 21st Century is the result of two misguided ideas: the Diet-Heart Hypothesis formulated by Ancel Keys in 1977 and the 1980 US Nutritional Guidelines. We were told to avoid foods like meat, eggs, dairy and coconut oil as the theory was that saturated fats raise LDL-cholesterol that lodges in our arteries causing heart disease.

A report released in 1977 called Dietary Goals for the United States led to the 1980 Dietary Guidelines for Americans. These guidelines were to increase carbohydrate consumption to 55-60% of the diet and decrease fat consumption from approximately 40 percent of calories to 30 percent. The 1980 Guidelines lead to the infamous food pyramid which unbelievably is still being used today.

The American Heart Association, as recently as 2000, preached that low carb diets were a dangerous fad, even though this is how we lived for millions of years. Typical advice was "Eat six or more servings of breads, cereals, pasta and starchy vegetables that are low in fat and cholesterol." To drink... "choose fruit punches and carbonated soft drinks."

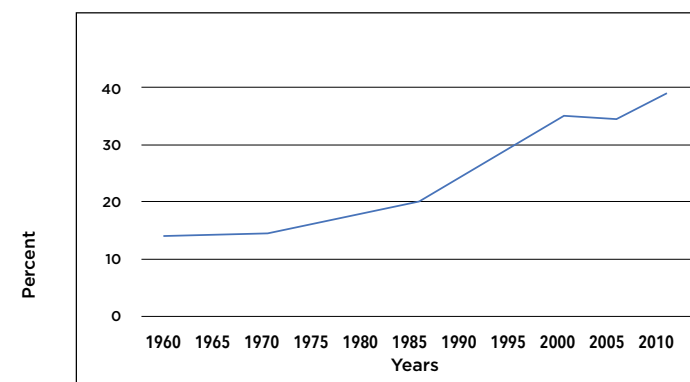
This, I believe, is the single biggest reason we find that half the world now has Diabesity!

We owe this all to the faulty science of Ancel Keys who was the reason that 'fat' became so vilified as the assumed cause of cardiac disease. How wrong we were! Most of the cardio-metabolic disease that kills more than 80% of us is due to 'insulin resistance' due to excess sugar, grains and toxic plant oils.

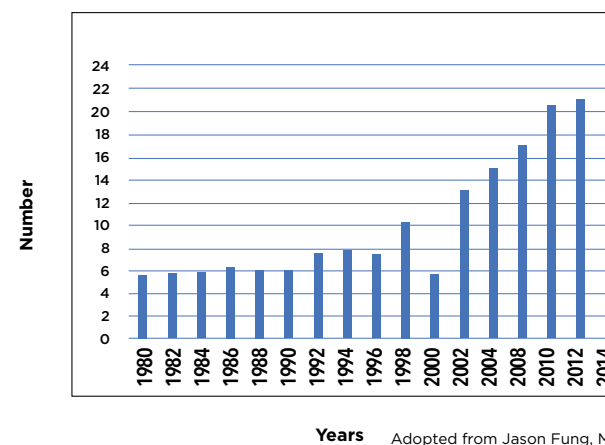
THE PANDEMIC OF DIABETES AND OBESITY (DIABESITY)

The US 1980 dietary guidelines sealed the fate for many, not only Americans, but people worldwide who followed these faulty guidelines. In 2020, these figures have reached an all-time high!

Obesity trends in the U.S. after introduction of the "food pyramid"



The rising tide of diabetes in the United States



Prime Cause of Insulin Resistance:

- Increase in Sugar (150lbs/person/year)
- Increase in Grains (200lbs/person/year)
- Adulterated Plant Oils (5,000tsp/person/year)

Chapter Two

Who dies from Covid-19?



Insulin Resistance

Firstly, we know that Age is a key factor for example the average age of persons in Italy dying from Covid-19 was 78years old. Aging is associated with an increase in body fat and fat mass. We know that the elderly are also more glucose intolerant and insulin resistant and that many have less robust immune systems.

Italy's National Institute of Health published (on March 24, 2020) the ten most common co-morbidities that people had dying from the virus. 99% of people who died had 1 or more of these cardio-metabolic diseases due to insulin resistance and these co-morbidities are the major reason people die from Covid-19.

- **Hypertension** - 76%
- **Diabetes Mellitus** - 35.5%
- **Cardiovascular Disease** - 34%
- **Atrial Fibrillation** - 25%
- **Cancer in the last 5 years** - 20.3%
- **Chronic Kidney Disease** - 18%
- **COPD** - 13.2% *most have insulin resistance
- **Stroke** - 9.6%
- **Dementia** - 6.8%
- **Chronic Liver Disease** - 3.1%

Diabetes and Prediabetes now affects 53% of adult Americans with similar stats in other developed countries. ¹

In fact, 88% of adult Americans now have "insulin resistance." I believe that this is the real cause of who lives and who dies in the current pandemic of Covid-19.

Only 12% of American adults over the age of 20 years have a healthy metabolism with normal insulin sensitivity.

As the US outbreak surges, a new government study shows that more than 40% of people who have died from Covid-19 have diabetes. Even in those under the age of 65, half had diabetes. The US study analyzed more than 10,000 deaths in 15 states and NY City from February to May 2020.

A CDC epidemiologist Jonathan Wright called the finding "extremely striking" with serious implications for those with diabetes.

A separate Reuters survey of states found a similar high rate of diabetes among those dying of Covid-19 in 12 states and the District of Columbia.

Ten states including California, Arizona and Michigan said they were not yet reporting diabetes and other co-morbidities so the % dying from diabetes could be much larger.

Blacks and Latinos suffer from Diabetes at much higher rates than whites which is probably why we see these groups making up a large percent of those dying from Covid-19.

In chapter three, I will explain the relationship between “insulin resistance” and Covid-19 deaths.

The pandemic has devastated several southern states which have the highest number of people with Diabetes (the Diabetes Belt). More than 40% of Covid-19 deaths occurred in diabetics in Alabama, Louisiana, Mississippi, North Carolina, South Carolina and West Virginia. Most lie in the diabetes belt. Most people under the age of 40 who die from Covid-19 have insulin resistance.

I believe the number of those who die from “insulin resistance” and not diagnosed with “diabetes” is much higher. Obviously, most people with type 2 diabetes are obese. NYU scientists showed that the largest US study on Covid-19 finds obesity the single biggest ‘chronic’ factor in NY cities hospitalization. Remember obesity and diabetes (diabetes) are both caused by “insulin resistance.” And Diabetes is known to cause inflammation which is at the center of Covid-19 deaths.

Why has there been no discussion on how to reverse and cure your diabetes rather than the usual mantra of masks, distancing and hand washing?? The Live Below 5.0 Solution in Chapter Six will cure your diabetes in weeks and greatly reduce your risk of dying.

Nine of the ten co-morbidities listed previously are easily explained by insulin resistance but even COPD patients are found to be insulin resistant.

Patients with COPD over the past several decades show that this group had decreased consumption of whole grains, fruits and vegetables and fish and have an increased consumption of processed and refined foods mainly in developing countries. That is most patients with COPD also have insulin resistance.

The UK in April began distributing one and a half million home meals to Britain’s most medically vulnerable people, who most needed to be shielded from the virus. The week supply of food is not the nutrient diet a sick person needs and is akin to the Standard American Diet (SAD).

The cardiologist Dr Aseem Malhotra says, despairingly, that diets high in glucose like this cause chronic inflammation which makes it harder to fight acute infections when they arrive.

A few days ago Dr. Steven Smith reported on Fox News that the Seattle Group reported in the NEJM that 50% of ICU admissions with Covid-19 had a BMI average of 33 which is obese. His study of 72 Covid-19 findings are shown below:

DR. SMITH'S COVID-19 FINDINGS

72 Covid-19 patients

21 were pre-diabetic (29.2%)

34 were Diabetic (47.2%)

Average BMI of severely ill patients: 30.7

He went on to say that of 20 of his own patients that needed to be intubated 18 had diabetes and 2 pre-diabetes. What does the current science say about Diabetes (insulin resistance) and death from Covid-19?

In one of the largest systemic reviews on the association between diabetes and incident infections there was a clear positive association between diabetes and respiratory infections. ²

The association between death from a viral pandemic and diabetes was first noticed in the 2009 H1N1 pandemic. Many countries for example Canada noticed that patients with diabetes tripled the risk of hospitalization and quadrupled the risk of admission to the ICU. Germany noticed that patients with diabetes doubled the risk of fatal outcomes. Stephanie Eschenbacher reported in March that out of 475 first cases of Covid-19 reported in Mexico, five of the initial seven deaths were in people who were obese (and probably insulin resistant). ³

A NYU Study of 4,103 patients at the Langone Health Center found that obesity was the single most frequent finding for hospital admission. BMI >30 - 4.3x higher hospital admission. BMI >40 - 6.2x higher hospital admission.

A study looking at 5,700 NY City patients found 88% had more than one co-morbidity - only 6% had none. The most common were hypertension (53%), obesity (42%) and diabetes (32%) - all of these co-morbidities are due to insulin resistance.

A study done in Hubei Province in China on 7,336 Covid-19 patients had increased interventions and an increased mortality in those with type 2 diabetes. (Good blood sugar control provided better outcomes).⁴

A study of 393 Covid-19 patients admitted to NY Presbyterian Hospital identified obesity as the #1 risk factor for admission. (They also found that in adults under age 50 half lived with obesity)

Another study in the UK showed 64% of patients admitted to the ICU (including 1/3 under age 60) were obese. Most prevalent condition for adults 18-44 was obesity.⁵

A study in Shenzhen in China patients with Covid-19 who had high body mass index had more than double the risk of severe pneumonia. In another study in China 15 of 17 patients who died from Covid-19 were obese.

A study showed that diabetics patients had a 6x greater risk of hospital admission and a 12x higher risk of dying.

A recent study from Diabetologia, 10 July 2020, by Sufei Wong showed that a blood sugar >126 on admission is an independent predictor for 28-day mortality in patients with Covid-19 without previous diagnosis of diabetes.

A report from England's Public Health Department in July showed that 40% were overweight and 28% were obese – these people were at higher risk from Covid than any other European Country.⁶

Diabetes and Intubation

- French study (Lille) BMI >35 – 7.4x risk of intubation
- In a Louisiana study of 85 patients who were intubated 90% had BMI >35
- Latinos and African Americans have much higher risks of being intubated.

Note: Although African-Americans are only 13.4% of the population of Chicago they have 60% of all deaths from Covid-19 (most have Diabetes). This higher risk of death has been identified in many cities in the USA.

In an article in the N.Y. times in April entitled, “Americans are already too diseased to go back to work right now”⁷, Dr. David Ludwig and Dr. Richard Malley point out that the huge burden of obesity and other chronic conditions among the people in the USA puts most of us at direct risk. In fact, this is one reason that the United States is much



more affected than countries like South Korea and China, our outcomes – economic and health wise – could be much worse.

Today more than 2 of 3 adults have high body weight and 42% are obese, among the highest rates in the world. Excessive weight and a poor-quality diet that causes it, is strongly associated with insulin resistance, chronic inflammation and other co-morbidities that can lower immunity to viral respiratory conditions. In a California study in the 2009 influenza pandemic, people with obesity were twice as likely to be hospitalized. A similar study conducted in 2013 with the Middle East Respiratory Syndrome (MERS) caused by another Corona Virus reported similar findings.

Although my strong personal belief is that “insulin resistance”, co-morbidities and advanced age are the prime cause of who dies from Covid-19. I would be negligent if I did not include the following factors that may also influence Covid-19 mortality.

The Hygiene Hypothesis

I believe this is important to explain the lower number of deaths from Covid-19 found in less developed countries. As mentioned in Chapter One those rural Africans typically ate less than 40lbs of sugar per year and Indians who often ate less than 20lbs of sugar per year were essentially free of the diseases of civilization compared to those eating a typical Western diet. In addition, the microbiome of these groups are far more diverse than those in developed countries and will help improve insulin sensitivity.⁸

Health Care Spend

Again, those developed countries that spend many more dollars to keep aged people alive (often with increased co-morbidities) and frailty residing in nursing homes die in large numbers as evidenced by the high mortality not only in the USA and Europe but elsewhere.⁹

Vitamin D Deficiency

Severe Covid-19 infections show a striking latitude relationship above the 30°N latitude line. Global reports of deaths and recoveries reveal that transmission rates and fatality rates from January to March 2020 were significantly determined by latitude. In fact, more than 40% of the USA population are also deficient in Vit. D.

Severe Vitamin D deficiency has been found in the institutionalized elderly. This is believed to be due to their limited exposure to sunlight with a reduced capacity of the aged skin for biosynthesis of Vitamin D3. African-Americans and other dark-skinned people have lower Vit. D levels due to the fact that pigmentation reduces Vit. D production in the skin.

Many viruses live longer outside the body when sunlight, temperature and humidity are low as they are in the winter.

The former CDC chief Dr. Tom Frieden believes that the likelihood of infection with Covid-19 can be reduced with supplements of Vit.D3.

Vitamin D has been shown to reduce respiratory infections, regulate cytokine production and can limit other viruses like influenza.

Low Vit. D levels also increase insulin resistance. In short, Vitamin D is a known modulator of inflammation and has a potent effect on protecting the endothelial cells.

In a study in 2008 the Virology Journal. The article was called “On the Epidemiology of Influenza.”

It set out to answer seven questions:

1. Why is influenza both seasonal and ubiquitous and where is the virus between epidemics?
2. Why are the epidemics so explosive?
3. Why do epidemics end so abruptly?
4. What explains the frequent coincidental timing of epidemics in countries of similar latitudes?
5. Why is the serial interval obscure?

6. Why is the secondary attack rate so low?
7. Why did epidemics in previous ages spread so rapidly, despite the lack of modern transport?

The authors conclude that the reason most people have flu in the winter was due to lower levels of Vitamin D. Covid-19 is close to influenza and most likely we can conclude that it is worth supplementing 5,000IU (gel cap) of Vitamin D3 each day. This has been supported by the fact that dark skin people are more likely to get Covid-19 and die from it.

So, Vitamin D not only helps to prevent Covid-19 infection but also will help mitigate the infections once you have it.

Genetics and ABO Blood Types

There is evidence that genetics do play a role not only by increasing your susceptibility to diabetes as shown by your blood type but also with certain genetic polymorphisms that can increase certain cytokines like TNF-alpha and IL6.

- Diabetes is lowest in blood group **O**.
- **B+** are 35% more likely to get diabetes.
- **AB+** are 26% more likely to get diabetes.
- **A+** are 22% more likely to get diabetes.

As I have pointed out your chances of getting Covid-19 increases 10x if you are “insulin resistant.” There is also evidence that certain blood groups might have a healthier microbiome that may protect you. I believe that genetics is <15% while your lifestyle is 85% and offers you the most protection against Covid-19.

Socio-Economic Factors

I do not believe that you are more likely to survive if you buy more healthcare. The socio-economic effects are more likely related to the type of food you purchase. For example, in South Africa the consumption of more expensive protein meals is at the highest after getting a paycheck and then gradually more inexpensive carbohydrates predominate in the diet for the rest of the month increasing the risk of diabetes and infection.

The Viral Spread of Fear

You only have to watch the media and you can understand the level of fear in the country. Not only have 50 million in the USA lost their jobs

with all the uncertainty that goes with it. The economic, social and personal stress are at an all-time high.

Lockdowns have increased social isolation, a critical problem especially for the elderly who rely on social support for their health. There has been a noticeable increase in poor health both mental and physical e.g. broken heart syndrome, suicides, domestic violence, depression etc.

Previous Coronavirus Infections

It has been reported that previous corona infections appear to offer some protection through innate immunity. There is even research that shows some protection for those who had 'corona viruses' from their cats.

Also, those countries like South Africa where I received BCG vaccine against TB seems to offer some immunity against Covid-19.

Wrong Numbers

The first issue I have here in the USA is that if any person who tests positive for Covid-19 and dies is counted as a Covid-19 death even if he jumped off a building or was killed in a car crash. This greatly skews the numbers. Second given the lack of comprehensiveness and accurate testing and the fact that many patients are asymptomatic or have minor symptoms there is a much larger population of infected people that are being reported (For example, Dr. John Iodines in Santa Clara showed that there were probably 50-85x more people 'infected' than tested positive. So, for example if Italy's "infected population" was 10x bigger then mortality rate would go from 5% to .5%. This lower number is probably the real mortality number).

Sex

As reported in JAMA on April 22,2020, over 60% of hospitalized patients with Covid-19 were men, what's more the mortality rate in men were higher than females and 66.5% of patients that ended up in the ICU were men. 70% of all worldwide deaths are male. No one is sure why. Women tend to have stronger immune systems and men tend to ignore symptoms. Similar results were found in the SARS and 1918 flu pandemic. Some believe that the male sex hormones upregulate ACE2 receptors that enable the virus to enter cells more easily.

Metabolic-Associated Fatty Liver Disease (MAFLD)

Research shows that patients less than 60 years of age with Covid-19, metabolic associated fatty liver disease (MAFLD) is associated with a fourfold increase in the probability for severe disease. Remember obesity is defined as a BMI >25 in Asians. Compared with non-MAFLD, MAFLD patients have a higher CRP-hs, lactic dehydrogenase, ALT, AST, GGT, fasting blood sugar and triglycerides. In China 80% of deaths occurred in patients 60 years or older. This study was done on patients less than 60 years of age to better define the role of MAFLD.

Studies have shown that the ACE2 plays a regulatory role in insulin resistance and hepatic steatosis and ACE2 gene expression is increased in people with liver disease compared to those without. The spike glycoprotein of Covid-19 binds to human ACE2 with high affinity. This mechanism might explain the association between MAFLD and Covid-19 disease severity. This increased risk is associated with increased morbidity and mortality from Covid-19.

It is estimated by 2030 more than half of all adult Americans will be obese. Currently more than 35% of adults are obese.

Again 'insulin resistance' and fatty liver disease are the real culprits in this pandemic.

Polycystic Ovarian Syndrome (PCOS)

In women in the reproductive age PCOS constitutes the most frequent endocrine disorder. Emerging data link the risk of severe Covid-19 with certain factors such as insulin resistance, hyperinflammation, ethnicity predisposition, low Vitamin D, hyperandrogenism, all of which have known associations with PCOS. There is also a markedly high prevalence of obesity, diabetes and hypertension that may significantly increase the risk of adverse Covid-19 related outcome. There is a 4x higher incidence of diabetes in PCOS and 75% of people are obese.¹⁰

Factors Increasing the Risk of Severe Covid-19

Obesity
Hypertension
Metabolic Syndrome
High Androgen Level

Low Vitamin D
Type II Diabetes
High Cytokine Level
Ethnic Minority Groups

Men exhibit a higher predisposition to develop severe Covid-19 independent of age. Male sex hormones and male pattern baldness and the fact that androgens seem to act on ACE2 receptors to enhance virus cell entry into cells.

Of note, a male PCOS equivalent syndrome has been proposed characterized by early onset androgenic alopecia in combination with enhanced gonadal steroidogenesis, decreased SHBG and increased DHEA as well as insulin resistance, type II diabetes and hypertension – both these men and women with PCOS are predisposed to Covid-19.

Women in addition, who have PCOS, seem to frequently have polymorphisms in genes encoding for proinflammatory cytokines like TNF alpha and IL6. Thus, it is plausible that chronic inflammation may be another factor in PCOS which may be relevant for Covid-19 hyperinflammation. Recent research shows that Black, Asians, and Latino groups have increased risk of death from Covid-19. 63% of 106 healthcare workers who died were from these minority groups.

In PCOS metformin, SGLT2, DPP4 inhibitors are all used as are ACE inhibitors and ARBs. Many PCOS women have Obstructive Sleep Apnea (OSA) and routine CPAP is used at home.

TB fueled the 1918 Flu Pandemic and Perhaps the Covid-19 Pandemic

The 1918 flu pandemic infected about 1/3 of the global population (500 million people at that time) and claimed at least 50 million lives. In the USA alone about 650,000 died within the first year.

Andrew Noymer¹¹, an associate professor of Public Health at the University of California, Berkley has outlined several key factors between the 1918 flu and TB: As Shin Jie Young writes: -

- The 500,000 deaths of the 1918 flu is nearly identical to the number of people that would have died from TB if the pandemic never appeared.
- Just after the 1918 flu, TB death rates plummeted. This decline was more in males who were disproportionately killed with the flu.
- The flu usually targets older adults. But the 1918 flu was most lethal to the 25-34 years old. (TB is a disease of adulthood not old age).
- The life expectancy of males increased by six years after the 1918 flu. Before the pandemic TB was the major cause of a shortened lifespan.

Noymer doesn't think this is a coincidence as it explains why younger people, especially men died in such greater numbers. The spread was extremely rapid as was the development of the infection. Almost everyone who died was gone in two weeks. It is probable that people who died of the 1918 flu already had damaged lungs from TB.

Prof. Nishiura examined data of the 1918 flu in the Netherlands, Japan and Switzerland. All results were in line with Noymer. TB was shown to be associated with influenza deaths and there were no influenza deaths among non-TB controls.

In short, history's deadliest 1918 pandemic was not the workings of the flu alone but with a TB co-infection as well. It also explained why one of the most communicable diseases could not be transferred under experimental conditions.

A consensus document admits the role of TB in viral infections from SARS, MERS, HIV, H1N1, and Covid-19. A South African population study of 3,460,932 patients of whom 353,269 had TB and 22,308 had Covid-19. They found in this study that active TB increased the risk of Covid-19 by 170% whereas this number was increased by 51% for latent TB. Many patients also had HIV but no evidence suggests that HIV worsens the Covid-19 severity and mortality.

TB Vaccine (BCG) and Covid-19

Seven of eight countries with very low numbers of total deaths had adopted a mandatory BCG vaccination campaign. In contrast Covid-19 mortality was markedly higher in countries where BCG was not widely given.

Regions with a high TB prevalence also seem to suffer from Covid-19. New York City, for example, had the highest Covid-19 deaths per capita than any other states and its TB cases are more than twice as high as the national rate.

Summary

- Globally TB is one of the top 10 causes of death.
- About one quarter of the global population has latent TB.
- Approximately 13 million have latent TB in the USA.
- Latent TB is not contagious and can be treated with Antibiotics.
- Latent TB reactivates 10-15% of the time due to: -
- Diabetes
- HIV
- Malnutrition
- Frequent Smoking
- Vit. D deficiency
- Alcohol and Cigarettes

Might undetected TB that fueled the 1918 flu pandemic also account for deaths in the Covid-19 pandemic?

Questionable Factors influencing Death from Covid-19

“Throughout history no human intervention has managed to stop a pandemic once it starts.”

Dr. Margaret Chan

I am a little skeptical that the usual party line we are given will make a big difference to the number of people dying from Covid-19. Let us look at the Science.

Social Distancing

Knut Wittkowski former head of biostatistics, epidemiology and research design at Rockefeller University opposes a lock down and believes it only prolongs the virus's existence and believes that the pandemic will only end after the virus has sufficiently spread throughout the population (Herd immunity).¹²

A large number of people need to have contact with the virus (the majority won't even know they were infected) to accomplish this. (A number of people may be immune who have antibodies from other Coronaviruses). From a recent publication in Lancet (June 1, 2020) Carl Heneghan and Tom Jefferson reviewed 13 of 15 papers and could not replicate the results and concluded there was no scientific evidence to support the disastrous two-meter (6 feet) rule. Poor quality research is being used to justify a policy with enormous consequences for us all.

Face Masks

A newly released meta-analysis (a total of 11 randomized controlled studies and 10 observational studies) on the use of face masks for reducing the transmission of viral respiratory infections within community settings shows that the evidence for their effectiveness is equivocal at best.¹³

“... this may even increase transmission if they act as fomites (objects or materials which are likely to carry infection) or prompt other behaviors that transmit the virus such as face touching. For example, a face mask that has been worn for several hours becomes moist and acts as a potential source of contamination. Studies show that people touch their faces 15-23 times per hour on average and this may mean that eyes and contaminated face masks are touched, spreading the virus.” Wear-

ing masks can also drop the O2 saturation in the blood and harm those with cardio-pulmonary disease. A more recent article from the NEJM May 20, 2020 stated, “We know that wearing a mask outside healthcare facilities offers little, if any, protection from infection.” The authors conclude that the advice of mask wearing may simply help lower the ‘anxiety’ of people.

Johan Giesecke, Sweden's state epidemiologist between 1995 and 2005 a key person behind Sweden's herd immunity plan said it in an email.

“I believe the virus is going to sweep like a storm over Sweden and infect basically everyone in one or two months. I believe that thousands are already infected in Sweden. It will all come to an end when so many have been infected and become therefore immune that the virus has nowhere else to go. (So-called ‘herd immunity’). Johan Giesecke

Hand Washing

First, I would like to point out that studies have shown that there is no added health benefits for consumers using soaps containing anti-bacterial ingredients compared to using plain soap. Most studies have not shown that removing microbes from your hands is linked to better health. Germs can be transferred more easily to and from wet hands so hands should be dried well after washing. I am still waiting to see the studies that show washing your hands twenty times a day compared to the usual couple of times of day protects you from Covid-19.

(I am not disputing Ignar Semmelweis, et al initial discoveries of antiseptic procedures that saved many lives especially in hospital conditions with more virulent microbes).

Lock Down

I would like to recommend PANDA (Pandemics-Data and Analytics) website (www.pandata.org.za) for an excellent review of this troubling intervention. The bottom line is that there is no specific evidence that lock-downs save lives. In fact, lockdowns most likely increase the death rate. Interestingly PANDA also show that the hygiene hypothesis in less developed countries have a protective effect and a lower death rate while more developed countries like the USA that have increased health expenditure especially in the elderly who show an increased death rate in those who are “already dead.” Sweden is an example that had great results by avoiding lockdown.¹⁴

Other factors alcohol, smoking, pollution, altitude, exercise, work, public transport, mobility, lipid levels, may all have an influence regarding the morbidity and mortality of Covid-19.

Chapter Three

Endothelial Dysfunction – the major mediator of diabetes, vascular disease and death in Covid-19.

The endothelium is a specific kind of epithelium, one of four basic types of tissues in the body (along with muscles, connective tissue and nerves). The endothelium lines the 50,000 miles of blood vessels that each of us have. Our endothelium would cover eight tennis courts in an area if it were stretched out. Some of the key factors of a healthy endothelium are: -

- Prevention of inappropriate blood clotting
- Prevention of inflammation through control of cytokines
- Relaxation of arteries, promoting normal blood pressure
- Helps glucose uptake and healthy blood sugar levels
- Smooth blood flow to deliver nutrients for cell metabolism
- Generous production of nitrous oxide (NO) for health

The endothelium although very thin is very active and is now understood to be the key to living a long and healthy life. It is also the key in protecting you from Covid-19.

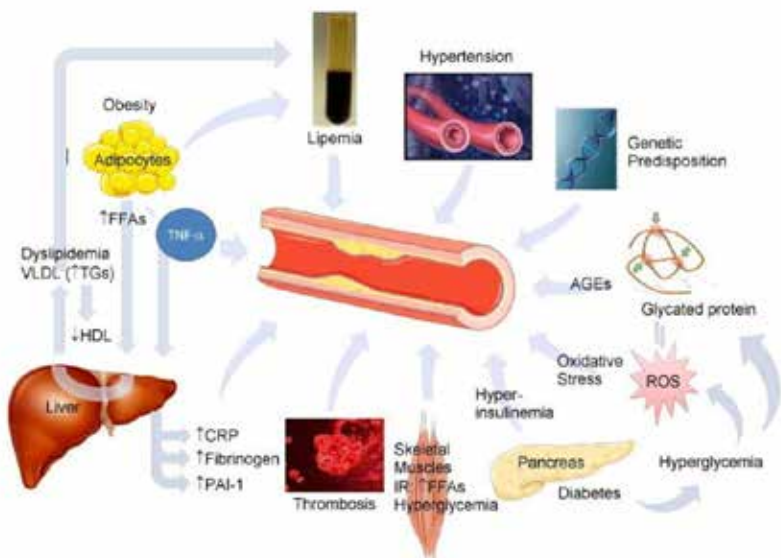
If you are older, overweight, diabetic, hypertensive, high triglyceride, high cholesterol, smoke or have autoimmune disease or erectile dysfunction you most likely have endothelial dysfunction. Diabetes is not only a metabolic disease but also a vascular disease because of its effect on both the macro and micro-circulation of many vascular beds. ¹ This chapter is a little more medical but provides important information about how insulin resistance (diabetes) causes the morbidity and mortality from Covid-19 at a molecular level. ²

Endothelial Dysfunction and Diabetes

Endothelial dysfunction is one manifestation of the many changes induced in the arterial wall by the metabolic abnormalities that accompany diabetes and insulin resistance. Sustained high blood sugar causes increased concentration inside the endothelial cells. This causes mitochondrial dysfunction, increased oxidative stress and low Nitric Oxide (NO), inflammation, vasoconstriction and increased risk of clotting. In the earliest stage, the principal endothelial dysfunction is merely functional. This is found in people who are obese, diabetic, have insulin resistance and cardio-metabolic disease.

Recent evidence suggests that most people who have cardiovascular disease have insulin resistance (diabetes) which induces a vicious cycle of events in the vessel wall, including increased endothelial dysfunction, oxidative stress, low grade inflammation and platelet activation with increased inflammation, vasoconstriction that promotes blood clotting

(See Diagram).



The diagram shows several mechanisms that foster endothelial damage and vascular damage in type II diabetes. Note that adipocytes can also release pro-inflammatory cytokines like TNF-alpha which can increase inflammation.³

Prolonged hyperglycemia causes vascular damage leading to death (apoptosis) – causing damage to the intima.⁴

Gut microbiota composition and lipopolysaccharides (LPS) that constitute the outer membrane of most gram-negative bacteria are linked with obesity, diabetes and metabolic disorders (high carbohydrate diets). LPS is responsible for a continual low grade inflammation throughout the body.

Ultimately, type II diabetes and insulin resistance are associated with inflammation which is shown by increased blood levels of TNF-alpha, interleukin-6 (IL6), PAI-1, ET-1, CRP-hs – all markers of inflammation and endothelial dysfunction.

This endothelial dysfunction as we will see sets the stage for the lung and cardiovascular damage we see from Covid-19.

Due to recent changes in human lifestyle especially the Sad American Diet (SAD) half the world is now fat-diabetic and sick and is vulnerable to Covid-19 and future viral infections.

Another factor that is important for the risk of Covid-19 is chronic stress. Due to the many changes that Covid-19 has brought, stress itself can damage the endothelium due to excessive glucocorticoid and catecholamines (stress hormones).

Angiotensin Converting Enzymes (ACE2)

Covid-19, binds initially to the throat and lungs primarily attaching to the ACE2 receptors. Covid-19 infection and severity can be explained by the concentration of glycosylated (read sugar coated) viral particles and the concentration of glycosylated ACE2 receptors and a dysregulated immune response.⁵

ACE2 receptors have been found in at least 15 organ tissues beside the lungs. They are found in the small intestines, colon, skin, lymph nodes, thymus, bone marrow, spleen, kidney, brain and other tissues. The concentration of viral particles in each tissue may correlate with the severity of the disease of that organ.

The endothelium is one of the largest organs in the body and is the primary target for infection of most human viruses, enhancing immune response, inducing increased tissue permeability, inflammation and contributing to the severity of Covid-19.

Covid-19 induced “endotheliitis” explains the wide systemic impaired micro-circulatory function in different organs in Covid-19 patients. Electron-microscopy has shown viral elements in endothelial cells in many organs.

The pro-inflammatory cytokine storm, with elevated levels of interleukin-6 (IL6), IL2 and TNF-alpha also participants in endothelial dysfunction and leukocyte recruitment in the microvasculature. In Covid-19 patients the level of IL-6 seems to be directly related to the severity of the disease and mortality.

A colleague of mine Dr. Jaco Laubscher (a physician specializing in vascular biology) believes that the vascular (endothelial) damage is the major cause of deaths in Covid-19. This is what he communicated to me.

It appears from experience that many Covid-19 patients have normal lung function yet their blood is not adequately oxygenated. If he is correct that Covid-19 is primarily a vascular disease it may explain why the use of ventilators fails to save many patients.

In essence Dr. Laubscher believes that “Covid-19 effects a vulnerable endothelium which leads to hypercoagulability and impaired fibrinolysis.” He goes on to point out that what the elderly, obese, diabetic, hypertensive, those with ischemic heart diseases all have in common is an abnormal inner lining of the blood vessels that is responsible for the cytokine storm and the clotting factors that initiates the clotting cascade.

Ideally you need a specialized coagulation lab and clinicians that are knowledgeable about hypercoagulable states. Attention must be focused on the enzymatic clotting pathway (PT-INR and the aPTT) as well as the platelet pathway (TEG and PFA 200).

Dr. Laubscher initiates anticoagulation treatment (provided there are no contraindications) if there is: -

- Dyspnea (GR 11)
- O2 Saturation <95% on room air
- CXR/CT-scan lungs suggestive of Covid-19 “pneumonitis”

He has treated many severe cases and has had very few deaths when therapy is focused on anticoagulation. Most of the patients do not need to be ventilated.

How Diabesity Triggers the Deadly “Cytokine Storm”

Cytokine storm has no true definition. Broadly speaking, it denotes a hyperactive immune response characterized by the release of interferons, interleukins, TNF-alpha, chemokines and other mediators. These mediators are part of a well conserved innate immune response necessary for efficient clearance of infectious pathogens.

Why has the ‘cytokine storm’ been so closely associated with Covid-19? I believe this is related to the fact that most people who get severe Covid-19 infections and most who die have Diabesity. ⁶

Before we explore the molecular basis for the cytokine storm it is important to note that insulin resistance and endothelial dysfunction constitute the key therapeutic target to prevent Covid-19 morbidity and mortality.

Recent research has shown that insulin resistance and other risk factors for cardiovascular disease like diabetes, obesity, hypertension, oxidized LDL, LDL-Particle # promote endothelial dysfunction and lead to the metabolic syndrome which constitute an introduction to cardiovascular disease.

Insulin plays an important role in maintenance of vascular homeostasis. On one hand insulin stimulates endothelial production of nitric oxide (NO), but on the other hand it mediates the release of endothelin ET-1, known to act as a strong vasoconstrictor. This dual action of insulin is mediated by two major signaling pathways.

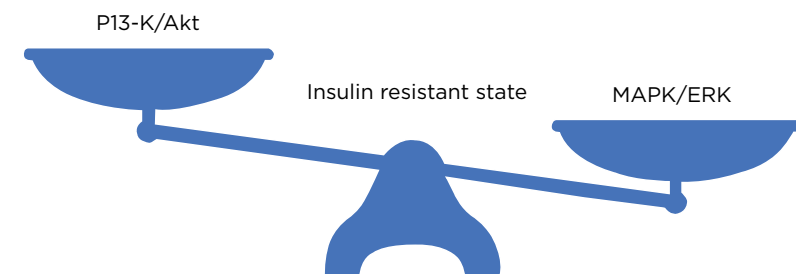
Under physiological conditions, a vasoprotective phosphoinositide 3-kinase (P13K)/Akt pathway predominates and is responsible for expression and activation of endothelial nitric oxide synthase (eNOS).

When insulin resistance appears, the balance is shifted towards nitrogen-activated protein kinase/extracellular signal regulated kinase (MAPK/ERK), which mediates inflammation, vasoconstriction and vascular smooth muscle cell proliferation.

Endothelial and insulin signaling pathways crosstalk with each other and therefore the relationship between endothelial function and insulin metabolism is very important in disorders, such as hypertension, obesity or diabetes. Insulin resistance, a hallmark of metabolic syndrome, impairs vascular response and increases cardiovascular risk.

Involvement of insulin resistance and endothelial dysfunction in pathological disorders contribute to impairment in the NO-dependent vasodilation, cellular glucose uptake, enhancement in oxidative stress, and inflammation, leading finally to atherosclerosis. Strong association of insulin and endothelial signaling disturbances contributes to glucotoxicity, lipotoxicity and inflammation, disrupting the balance between vasodilating-vasoconstrictive endothelial mechanisms as well as between the insulin dependent P13/Akt-MAPK/ERK pathways.

Diagram of Mediators of Inflammation



Conceptual definition of insulin resistance at molecular level

As you can see glucose metabolism plays a key role in the “cytokine storm” seen in Covid-19. Many people dying of Covid-19 appear to be harmed more by their own immune system than by the virus itself.

Research shows that high sugar and insulin levels, activated by infection, leads to an out-of-control immune response. The resultant “cytokine storm” releases VEGF, MCP1, IL8, IL6 and many other inflammatory molecules – diabetes causes low grade inflammation and immune suppression and this cytokine storm is the “straw that breaks the camel’s back.”

This hyper-inflammatory syndrome leads to pulmonary and vascular dysfunction, coagulation abnormalities, and ultimately multi organ failure. Scientists have long known that viral infections can affect human cellular metabolism needed to provide energy for everything cells do. When Covid-19 infects us it sets off a chain of cellular events that boosts the metabolism of glucose. The virus steals resources in order to make copies of itself. Infected cells have to boost their metabolism to replenish their resources as do healthy cells to maintain an effective immune response.

In a recent study, researchers identified a signaling protein called interferon regulator factor 5 (IRF5) in which the viral infection can lead to a cytokine storm. During such an infection, high levels of glucose cause an enzyme O-linked Beta-N-acetylglucosamine transferase (OGT) to bind to and chemically modify IRF5 in a process called glycosylation.

This step enables another chemical modification, called ubiquitination, that leads to the cytokine inflammatory response.

Scientists in Wuhan, China between 2018-2019 found that flu infected patients had higher glucose levels and correspondingly higher levels of immune system signaling and more morbidity and mortality than healthy people.

Data from Italy with Covid-19 showed data that in 2/3 of Covid-19 deaths two-thirds of the patients had diabetes and many had hypertension.

The intersection of overfat/diabetes (Diabesity) and Covid-19 are the primary reason we have the major pandemic of the 21st Century.

In summary Covid-19 is emerging as a thrombotic and vascular disease targeting endothelial cells throughout the body and is particularly evident in patients with cardio-metabolic co-morbidities, in particular diabesity and hypertension.

The hallmark of endothelial dysfunction and thrombotic events is suppressed endothelial nitric oxide synthetase (eNOS) with resultant nitric oxide (NO) deficiency.⁷

Restoring NO independent of eNOS counteracts the endotheliitis and assists pulmonary vasodilation, antithrombotic and has direct antiviral activity.

Based on a report of improved lung function during the 2003 SARS outbreak the FDA’s emerging use of nitric oxide gas is now underway against Covid-19.

An alternative approach is to use dietary inorganic nitrate that has also been shown to be effective in restoring endothelial function reducing both pulmonary and arterial hypertension and also promoting antimicrobial activity.

It is well known that dietary inorganic nitrates are bio-converted to NO beginning with oral microflora that reduces the nitrate to nitrite which is subsequently reduced to nitric oxide in the gut, blood stream and various organs including the lungs.

Reportedly, consumption of inorganic nitrates for 8 days in COPD patients increased NO levels 200% and reduced pulmonary symptoms. Restoring NO through dietary means would carry a one-two punch – first reversing the platelet-endothelial dysfunction and beyond it will lower the viral burden.

I believe Covid-19 is just one of several pathogens that will affect us in the decades ahead and my urgent plea is to not worry about the “seed” but to improve the soil which is the subject of the next chapter.

PART TWO**THE NATURAL VACCINE AGAINST COVID-19****Chapter Four****The Soil is More Important Than the Seed**

“More than 60 years of research on living systems have convinced me that our body is much more nearly perfect than the endless list of ailments suggests its short-comings are due less to inborn perfections than to abusing it”.

Nobel Laureate Albert Szent - Gyorgi

Our Soil (Interior Environment)

Hans Selye MD, the father of modern-day research on stress (he coined the term) pointed out in his book, *The Stress of Life 1*, why, when children become ill from a virus at school, only 20% of the children become ill? This is very similar to the Covid-19 pandemic today. If 60-70% of the American population get the virus why do 90% have little illness or nothing at all?

Less than 10% of people go to hospital and only some of these folks are admitted – a few go to the ICU and less than 1% of people die. Perhaps as Selye and others (for example Claude Bernard the French physiologist) claim the “soil” (the individual) is far more important than the “seed” (Covid-19 in this case).

I would like to expand on this work by Selye and others and my clinical experience over the last 40 years and suggest that the true cause of the deaths in the current epidemic are due to Diabetes. From insulin resistance due to a self-induced dietary condition.

In summary the real pandemic is “endothelial dysfunction” which is the result of processed food loaded with sugar, grains and processed Omega-6 vegetable oils.

In the current Covid-19 pandemic governments and health bodies have advocated masks, social distancing and hand washing, all the effort and concern is focused on the seed. I aim to provide an alternative narrative on how to fortify the soil!

In this chapter I would like to explore what the father of physiology, Claude Bernard, wrote about the ‘milieu interne’ or internal environment of the individual. Claude Bernard pointed out that the blood and the lymph, which bathe all the cells of the body, constitute the ‘milieu interne.’ Although initially concerned only with the role of the blood he later expanded his thinking to include that of the whole body in ensuring this internal stability. He summed up his idea as follows: -

“The fixity of milieu supposes a perfection of the organism such that the external variations are at each instant compensated for and equilibrated. All of the vital mechanisms, however varied they may be, have always one goal, to maintain the uniformity of the conditions of life in the internal environment. The stability of the internal environment is the condition for a free and independent life.”

Bernard's idea was initially ignored in the 19th Century and only became central to the understating of physiology due to people like Walter Cannon and his ideas of "homeostasis" – the tendency of the body to maintain a stable state, a relatively constant internal environment for many factors like temperature, pH, electrolytes, oxygen and glucose levels etc.



Alfred Pischinger's work on the "ground substance", Norbert Wiener's work on 'cybernetics' and Albert Szent-Gyorgyi's work on how proteins are semiconductors capable of rapid transfer of free electrons within an organism all were a consequence of Bernard's initial work. It was Szent-Gyorgyi who wrote in 1988, "Molecules do not have to touch each other to interact. Energy can flow through – the electromagnetic field which along with water forms the Matrix of life."

It is said that when Louis Pasteur, the French microbiologist renowned for his discoveries for vaccination and microbial fermentation who had a life-long debate with Claude Bernard, on his death bed proclaimed that Bernard was right, the soil is everything, the microbe is nothing.

What Can We Learn from Our Ancestral Diet?

"It is simply no longer possible to believe much of the clinical research that is published, or to rely on the judgement of physicians or authoritative medical guidelines. I take no pleasure in this conclusion, which I reached slowly and reluctantly over my two decades as editor of the New England Journal of Medicine."

Marcia Angell, MD (Longtime Editor in Chief of NEJM)

If we are to go forward we need to look at the past. Our genetic makeup, shaped through millions of years of evolution, determines our nutritional and activity needs.

Although our human genome has remained largely unchanged since the agricultural revolution 10,000 years ago, our diet and lifestyle have become progressively more divergent from those of our ancient ancestors. ²

Accumulating evidence, shown in Part One, suggests that this mismatch between our modern diet and lifestyle and our Paleolithic genome is playing the major role in the ongoing epidemics of obesity, diabetes, hypertension and cardio-metabolic disease that now kills 80% of us.

As James O'Keefe, MD and Loren Cordain, PhD point out, until 500 generations ago humans consumed only wild and unprocessed food foraged and hunted from their environment. This is in stark contrast to the USA where 72% of food eaten is highly processed (fake food). ³

Our ancestral diet provided plenty of healthy fat, protein, fiber, vitamins, minerals, antioxidants, and beneficial phytochemicals

Historical and anthropological data show hunter-gatherers generally to be healthy, fit and largely free of cardio-metabolic disease which is pandemic in our modern world.

As we have recently discovered, the unremitting high prevalence of obesity, diabetes, and cardio-metabolic disease – all conditions that are best described as carbohydrate intolerance – are due to our modern Western diet.

To understand where we went off the rails, it is important we look back before the agricultural revolution about 10,000 years ago. As humans migrated out of Africa, we depended on periods of fasting and on hunting and gathering, eating mostly meat and fat with very low amounts of carbohydrates. Recent examples of these low carb healthy nomadic cultures include: ⁴

The Inuit of the Arctic

These people eat 80% of their diet as fat, 15% as protein and a few percent as carbs. Vilhjalmur Stefansson, a Harvard trained anthropologist who lived among the Inuit, agreed to replicate this diet inside Bellevue

Hospital in New York where he reproduced the diet of the Inuit for over a year proving that carbohydrates are NOT an essential macronutrient for health.

The Bison People of the North American Great Plains

These Indians maintained their nomadic existence until the Bison were virtually exterminated. They hunted in the fall after the Bison fattened in the summer. The stored pemmican, a mixture of dried meat and fat, supplemented the diet which again was mostly fat and protein with very little carbohydrate.

The Masai of East Africa

Masai would eat approximately 1.2kg of meat, 2 liters of milk and 50ml of blood from their cattle on a daily basis and avoided all carbohydrates.

Indians in the Pacific Northwest of Canada

These nomads lived primarily on 3 types of fish: salmon, eel, and oolichan. The latter came every spring in vast numbers; they are 20% of fat by weight. These fish were most prized and when dried became like a candle that could be lit. This mono-unsaturated oolichan grease was much prized by the Indians and fur traders.

For 2 million years the original human diet was a high fat-low carb diet.

What Can We Learn from the Mid-Victorians?

Analysis of the mid-Victorian period (1850-1875) in the UK reveals that life expectancy at age 5 was as good or better than exists today and the incidence of cardio-metabolic disease was less than 10% of ours.

Their level of physical activity was more than twice ours. They also consumed less alcohol and tobacco. Their diet consisted of little processed food but rather of good amounts of fruits, whole grains, oily fish, vegetables and micro and phytonutrients at approximately 10x the levels today.

Research shows the exceptional health of these mid-Victorian was entirely due to their superior diet.

Thanks to trains, producers were now supplying the urban markets with more fresh and cheaper food than previously. Large quantities of fresh

fruits and vegetables became easily available. In many ways the urban socio-economic conditions were getting better by mid-century. In fact, Britain was the first modern consumer society.

What did these mid-Victorians Eat?

- **Vegetables:** onions, leeks, watercress, artichokes, carrots, turnips, cabbage, fresh peas and beans among others.
- **Fruit:** apples, gooseberries, cherries, plums etc. All fruits and vegetables were organically grown high in phytonutrients.
- **Legumes and Nuts:** dried legumes, chestnuts, hazelnuts, walnuts, almonds, Brazil nuts (coconuts were imported).
- **Fish and Seafood:** herring, white fish, sprats, eels, shellfish, oysters, muscles etc.
- **Meats:** Pork was the most common meat consumed. A large variety was available. All meats were free range with lots of organ meats.
- **Eggs and Dairy:** egg, milk, hard rather than soft cheeses.
- **Alcohol:** Most beers had a much lower alcohol content (1-2%).
- **Tobacco:** Pipe and Cigar smoking primarily. Industrial cigarettes for mass consumption only happened after 1883.

In summary, the mid-Victorian diet most closely resembled the Mediterranean or Paleolithic Diet. Their primary causes of death mostly resembled the developing countries. There was very little cardio-metabolic disease including obesity and diabetes.

It is worthwhile to note how this brief “golden age” not only came about but also why and how it was lost. Paul Clayton and Judith Rowbotham write that negative changes that would undermine these nutritional gains were already taking shape: -

“Thanks to her global position, and developments in shipping technology, Britain had created a global market drawing in the products of colonial and US agriculture, to provide ever-cheaper food for the growing urban masses. From 1875 on and especially after 1885, rising imports of cheap food basics were increasingly affecting the food chain at home. Imported North American wheat and new milling techniques reduced the prices of white flour and bread. Tinned meat arrived from the Argentine, Australia and New Zealand, which was cheaper than either home-produced or refrigerated fresh meat also arriving from these sources. Canned fruit and condensed milk became widely available.

This expansion in the range of foods was advertised by most contemporaries, and by subsequent historians, as representing a significant “improvement” in the working-class diet. The reality was very different. These changes undoubtedly increased the variety and quantity of the working-class diet, but its quality deteriorated markedly.

The imported canned meats were usually ‘corned’ and salted. Cheaper sugar promoted a huge increase in sugar consumption in confectionery, now mass-produced for the first time, and in the new processed foods such as sugar-laden condensed milk, and canned fruits bathed in heavy syrup. The increased sugar consumption caused such damage to the nation’s teeth that by 1900 it was commonly noted that people could no longer chew tough foods and were unable to eat many vegetables, fruits and nuts. For all these reasons the late-Victorian diet actually damaged the health of the nation, and the health of the working classes in particular.

The decline was astonishingly rapid. The mid-Victorian navvies, who as seasonal workers were towards the bottom end of the economic scale, could routinely shovel up to 20 tons of earth per day from below their feet to above their heads. This was an enormous physical effort that required great strength, stamina and robust good health. Within two generations, however, male health nationally had deteriorated to such an extent that in 1900, five out of 10 young men volunteering for the second Boer War had to be rejected because they were so undernourished.

They were not starved, but had been consuming the wrong foods. This reality is underlined by considering army recruitment earlier. The recruiting sergeants had reported no such problems during previous high-profile campaigns such as the Asante (1873-4) and Zulu (1877-8) Wars.”

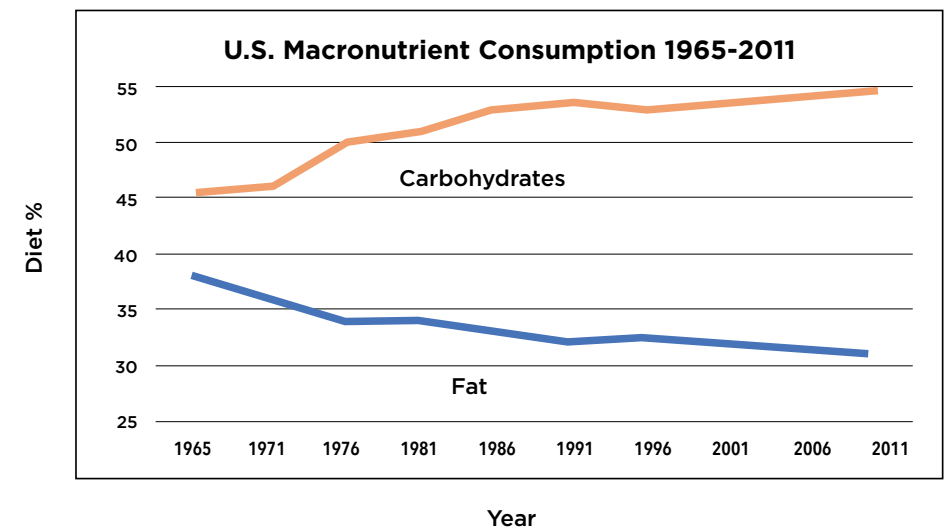
The fall in the nutritional standards between 1880 and 1900 was so marked that the generations were visibly and progressively shrinking. In 1883, the infantry were forced to lower the minimum height for recruits from 5ft 6inches to 5ft 3inches. This was further reduced to 5 feet”.

In summary, although the mid-Victorians lived as long as we do, they were relatively immune to diabetes and cardio-metabolic disease that are the most important cause of illness and death today. In other words, chronic degenerative disease is not driven by old age but it is driven in the main by chronic over-nutrition and inflammation due to insulin resistance.

The vast edifice of healthcare since this time together with Pharma has generated very little except providing drugs to suppress symptoms of cardio-metabolic disease. The only way forward is to recapture the nutrient dense diet and lifestyles of these mid-Victorians. This is the primary method of how we can fortify the “soil” that will not only protect you from Covid-19 but will reverse most cardio-metabolic diseases you may be suffering from.

Let us now look at the USA. We can see how our own experience today is very similar to those mid-Victorians.

Data from the National Health and Nutritional Examination Survey (NHANES) shows that between 1965 and 2011, as the twin epidemics of obesity and type II diabetes unfolded, Americans ate more carbohydrates and less dietary fat, just as the US dietary guidelines had recommended.



These guidelines together with the changes in the macronutrient composition of our diet, the introduction of sodas, processed snack foods, high fructose corn syrup, the low-fat high carb dogma, Big Pharma, artificial sweeteners, fast-food restaurants, trans-fats, vegetable oils, Big Food, Big Agra and Government all laid the foundation for the biggest health crisis the world has ever seen.

You will relearn how to eat a High Fat Low Carb (HFLC) diet.

Chapter Five

Are You Insulin Resistant?



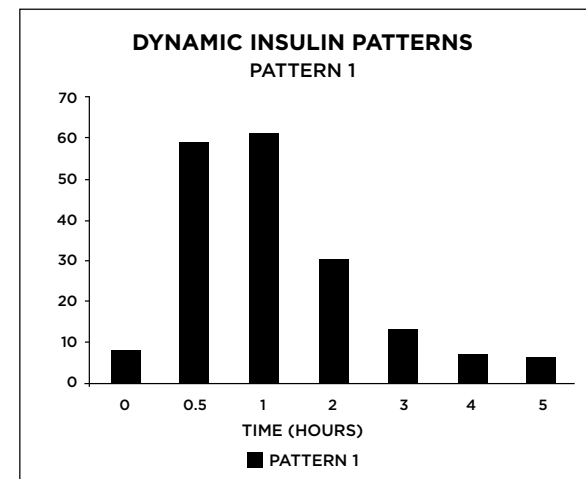
Increased insulin makes us fat and keeps us fat. Increased insulin comes primarily from sugar and grains (and most processed food) that are the cause of high blood sugar levels.

When blood sugar rises, insulin is released from the pancreas, repeated over and over again, the cells of the body fail to respond to the insulin – they become “insulin resistant”. This leads to further rises in blood sugar and insulin and inflammation of your 50,000 miles of blood vessels throughout your body and the growth of visceral deep abdominal fat.

Obesity and most chronic disease seen today throughout the world is due to this “insulin resistance” for example if you do not correct your diet the beta cells of your pancreas become exhausted and burn-out that results in diabetes and other metabolic-diseases. A second major problem is when the high sugar reacts with protein in your body it causes “glycation” and rusts important organs like your blood vessels (heart disease), skin (age spots and wrinkles), eye (cataracts), cartilage (arthritis), kidneys (renal failure), brain (dementia) - all signs of advanced aging reflected in the advanced glycation end-products or AGE theory of aging.

Joseph Kraft MD and other researchers believe that 100% of people having heart disease have “insulin resistance” – cardiologists acknowledge that 75% have diabetes or pre-diabetes – Kraft showed that the other 25% are not properly diagnosed as you need to load the client with 75 gm of glucose and measure 3-5 hr. insulin levels or Insulin Tolerance Test (ITT) not the usual GTT wrong in 50% of cases. Sugar not cholesterol causes heart disease. ¹

THE ONLY NORMAL INSULIN PATTERN



Normal fasting range: 0-30 microunits/ml
 ½-h or 1-h peak above fasting range
 2-h + 3-h sum = less than 60 microunits/ml

Dr. Kraft over a period of 25 years did many glucose/insulin tolerance tests on himself. They would vary between normal sugar with high insulin and normal sugar with normal insulin. The variations were directly related to weight fluctuations of often just 5 or 10 pounds.

Dr. Stout in 1977 identified the pathology of type 2 Diabetes as vascular (arterial), directly related to hyperinsulinemia and not to hyperglycemia. This includes all major arteries, all minor arteries, and all capillaries. All are lined by the endothelium (50,000 miles). By this widespread arterial distribution, every organ has a potential for pathology (insulin causes endothelial dysfunction).

Those with Cardiovascular disease not identified with diabetes are simply undiagnosed.

The same is true for high blood pressure (those with systolic BP 120-139 and diastolic of 80-89 can be considered pre-hypertensive) and means you have hyperinsulinemia and probably type 2 Diabetes until proven otherwise by insulin assays.

In this Chapter we are going to see if you have insulin resistance? This is the first step in protecting yourself from a Covid-19 death and just as important will help you reverse most Cardio-Metabolic disease that will increase both your healthspan and your lifespan.

Some of these tests are easily done at home. Others can be done in the lab. A few require special diagnostics. Even with the home tests you can find out if you are insulin resistant.

Home Tests

Body Mass Index (BMI)

Body Mass Index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. A high BMI can be an indication of high body fatness which is a hallmark of 'insulin resistance.'

Imperial BMI Measurement

BMI = $\frac{\text{weight in pounds} \times 703}{\text{height in inches}^2}$

Metric BMI Measurement

BMI = $\frac{\text{weight in kilograms}}{\text{height in m}^2}$

NB: Asian populations -

observed risk is lower at 22-25.

Normal BMI Ranges

Underweight BMI is less than 18.5

Normal weight BMI is 18.5-24.9

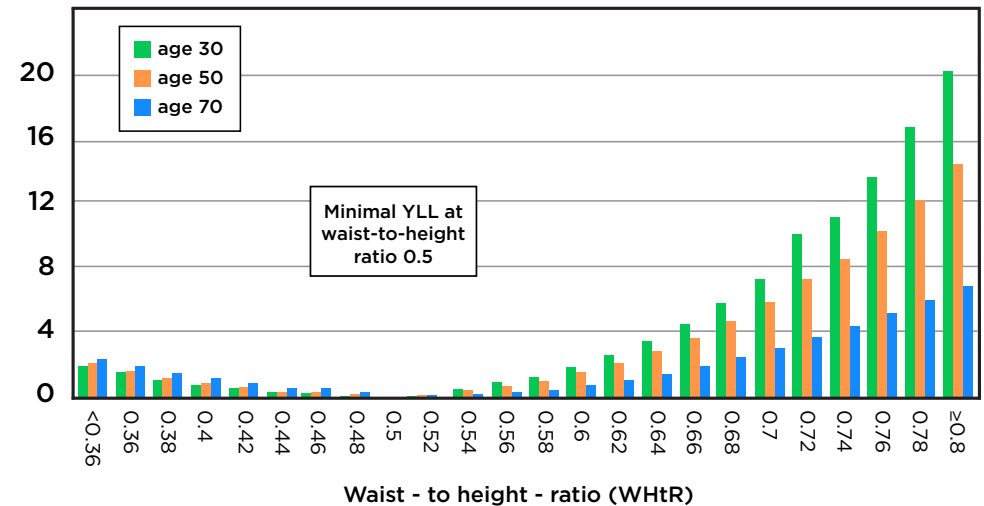
Overweight BMI is 25-29.9

Obese BMI is 30 or more.

Waist-Height Ratio

A person's waist-to-height ratio, also called waist to stature ratio, is defined as their waist circumference (measured at the belly button) divided by their height, both measured in the same units. Compared to just measuring waist circumference, waist to height ratio is equally fair for short and tall persons.

This test is one of the best anthropomorphic measurements to predict risk of cardio-metabolic disease that will shorten your life. As the waist-to-height ratio increases there is progression to obesity, diabetes, metabolic and heart disease etc. and a shorter life as shown below. Central Obesity as compared to subcutaneous fat is highly correlated with metabolic abnormalities and tracks well with intrahepatic fat and insulin resistance. ²



Waist-to-stature ratio and years of life lost (YLL)

Adopted from: Jason Fung, MD

Relative Fat Mass (RFM)

Researchers at the Cedars-Sinai Diabetes and Obesity Research Institute developed the relative fat mass index, a measurement designed to be more accurate than the BMI at predicting health risk. BMI measurements are often wrong and is not my favorite tool as it misclassifies about 60% of women and 13% of men when used to classify people as obese as it doesn't distinguish between fat mass and non-fat

mass. So a bodybuilder who is heavy on the scale would be considered overweight or obese and of course, this is incorrect. A person who appears lean could have a high fat mass (the 'skinny fat') but the BMI fails to detect this. You can just like the waist-height measurement use imperial or metric units.

RFM (men) = $64 - (20 \times \text{height/waist circumference})$

RFM (women) = $76 - (20 \times \text{height/waist circumference})$

You are obese and at increased risk of death if you're:

- RFM is greater than 30% as a male
- RFM is greater than 40% as a female

An average RFM **for men is 18-24%**.

An average RFM **for women is 25-31%**.

Note: Your health depends on the health of your fat tissue not the quantity of it. Some people can have a lot of fat tissue whose cells are in a healthy "insulin sensitive" state. These people are called metabolically healthy obese and have a relatively low risk of disease (the healthy fat). Conversely many can appear slim but whose fat tissue is unhealthy "insulin resistant" and inflamed.

Body Fat Percentage (BFP)

The BFP is the total mass of fat divided by total body mass, multiplied by 100. Body fat includes essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive function. The percentage of essential body fat for women is greater than men due to childbearing and other hormonal functions. Storage body fat consists of fat accumulation in adipose tissue which helps protect organs in the chest and abdomen and as a reservoir for energy.

There are several methods of measuring BFP: -

calipers	underwater weighing
bioelectrical	impedance near infrared interactance
dexa-scan	whole body air displacement plethysmography

My favorite measurement for BFP is to use a 4-quadrant impedance device. My favorite that can be purchased from Amazon for about 70\$ is the Omron (Model # HBF-514C). In my experience this is within a couple

of percentage points of the far costlier methods of measurement. The table from the American Council on exercise shows how the average BFP differ according to specified groups:

Description	Women	Men
Essential Fat	10-13%	2-5%
Athletes	14-20%	6-13%
Fitness	21-24%	14-17%
Average	25-31%	18-24%
Obese	32% +	25% +

Lab Tests

HOMA-IR

This stands for **Homeostatic Model Assessment for Insulin Resistance**. The **HOMA-IR** test is also one of my favorites and is simple and inexpensive. This calculation works for both the presence and extent of any insulin resistance that you might currently have.

HOMA-IR = $\frac{\text{Fasting Blood Sugar X Fasting Insulin}}{405}$

- *Insulin Sensitive <1.2
- Moderate Insulin Resistance 1.2 - 2.9
- Severe Insulin Resistance >2.9

HbA1c

The term HbA1c refers to glycosylated hemoglobin. It develops when hemoglobin, a protein within red blood cells that carries oxygen throughout your body, joins with glucose in the blood, becoming glycated. By measuring HbA1c we are able to get an overall picture of what your average blood sugar levels are over a period of weeks up to 3 months. **The higher your HbA1c the more complications.**

HbA1c (average blood sugar over 3 months).

- *A HbA1c less than 5.7 is Normal (ideally, we should **Live Below 5.0**).
- A HbA1c between 5.7-6.4 = Prediabetes.
- A HbA1c greater than 6.4 = Diabetes

Note: The HbA1c correlates very closely with waist-height ratio

(i.e. diabetes) both driven by insulin resistance. A Norfolk Cancer Study that measured HbA1c levels and risk of cancer revealed very interesting results not just for cancer but the risk of other chronic disease and all-cause mortality as the tables below show: -

Coronary Vascular Disease Rates (per 100 people)						
Women	3.3	3.8	5.4	9.8	13.7	36.8
Men	6.7	9	12.1	15.2	25	34.8
HbA1c	<5.0%	5.0% to 5.4%	5.5% to 5.9%	6.0 to 6.4%	6.5% to 6.9%	>7.0%

As you can see men and women who Live Below 5.0 have the lowest risk of heart disease. While those with a HbA1c of 7 have a 5x risk of dying from CVD. ³

All-cause Death Rates (per 100 people)						
Women	2	2.7	4.4	6.4	6.8	25
Men	3.8	5.5	7.5	9.9	-	-
HbA1c	<5.0%	5.0% to 5.4%	5.5% to 5.9%	6.0 to 6.4%	6.5% to 6.9%	>7.0%

What was even more revealing was that as your HbA1c rose above 7 the mortality from all cardio-metabolic diseases, heart disease, cancer, diabetes, mental disease, infections and respiratory disorders etc. all increased.

If your HbA1c is high you die early!
With the 'Live Below 5.0' solution you can reverse this in a matter of weeks.⁴

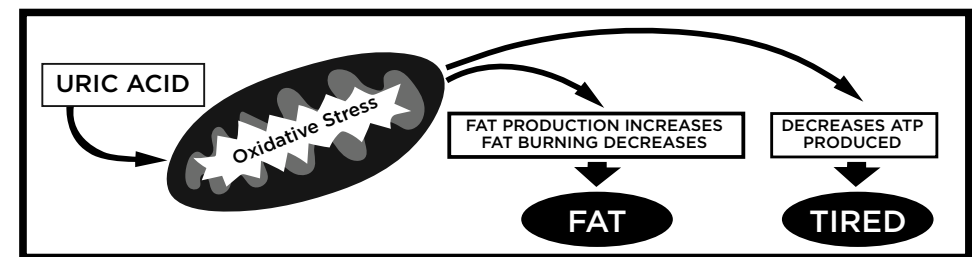
Uric Acid

The first enzyme in fructose metabolism consumes ATP while metabolizing fructose. This generates not only AMP but also activates AMPD and intracellular uric acid accumulates damaging the mitochondria. Uric acid is much more related to sugar than purines and is a powerful biological signaling molecule. Uric acid was a secondary marker for Metabolic Syndrome described by Dr. Gerald Reaven: -

Marker		Male	Female
1	Waist Size	>40"	>35"
2	High Blood Pressure	>130/85	>130/85
3	High Blood Sugar	>100	>100
4	High TG	>150	>150
5	Low HDL Cholesterol	<40	<50

If you have 3 or more of these markers you have Insulin Resistance and Cardio-Metabolic Disease (Metabolic Syndrome).

- Normal Uric Acid in Male < 4.
- Normal Uric Acid in Female < 3.5.
- Fructose Elevates Intracellular Uric Acid
- Uric Acid Stimulates the Accumulation of Fat



Uric acid affects mitochondria, causing oxidative stress. This results in stimulating fat synthesis blocking fatty acid oxidation and reducing ATP production. The net effect is to preferentially shunt the energy from food into fat stores. ⁵

Dr. Reaven already in 2011 conducted a study on 208 apparently healthy middle-aged people. None were obese (BMI <30) and used a research method (SSPG) to accurately measure insulin levels. The group was split into 3 depending if their insulin levels were low, medium or high and all were followed for 6 years or more as shown in the table below: -

	LOW Insulin Resistance	MEDIUM Insulin Resistance	HIGH Insulin Resistance
Disease	0	10	24
Death	0	2	4
Total Tragedy	0	12	28

The lowest group were free of disease, none died; the middle group had 12 diseases (all cardio-metabolic) and 2 deaths while the high insulin group had 28 diseases and 4 deaths at the end of the six years. These results remember were in 208 apparently “healthy” middle aged people. This study shows the critical importance of knowing your insulin score. The risk multiplier for insulin resistance here was 40x. Compare this to a high LDL-C of 1.001x – of NO statistical significance.

Lipid Tests

Cholesterol – A Weapon of Mass Distraction

The cholesterol story has dominated modern medicine for the last 40 years based on faulty science and Big Pharma and is an important cause of our current Diabetes Pandemic and obscures the true cause of cardio-metabolic disease. The cat is now out of the bag. We now know that the higher your cholesterol is the longer you will live. Cholesterol is in fact one of the most important molecules that evolution evolved to keep us healthy. Not only do we now recognize the myriad health effects that cholesterol provides but we now know that saturated fats are also healthy and do not promote cardiovascular disease.

Cholesterol and Triglycerides are carried in the blood on particles called lipoproteins. Both LDL and HDL carry that exact same cholesterol inside so it is more accurate to call LDL – a “bad” lipoprotein and HDL a “good” lipoprotein.

Dr. William Castelli led the Framingham Study and said “Unless LDL levels are very high (300mg/dl) or higher, they have no value, in isolation, in predicting those individuals at risk for coronary heart disease.”

Castelli also recognized that the “ratios” of various lipids were more important than just the isolated number. While the HDL lipoprotein is somewhat unique the LDL belongs to a “family” of LDL lipoproteins.

I am indebted to Ivor Cummings for reminding me that the most important food driving this LDL-family is CARBOHYDRATES.

β-VLDL – is the largest of the LDL’s made up of TG (+++) and cholesterol. This very low-density lipoprotein (VLDL) is the mother of LDL.

β-LDL – is formed from VLDL when it gives up its TG and shrinks. LDL thus is mostly cholesterol with a small amount TG. As people age and eat a SAD diet the VLDL’s turn into smaller and denser LDL’s that carry less cholesterol. With less cholesterol carried per particle you need more particles in circulation and this means more particles exposed to oxidation which damages the endothelium. Insulin resistance is the primary driver of both oxidized LDL and sdLDL.

β-sdLDL – small dense LDL (sdLDL) is what results when LDL becomes distorted in an “inflammatory environment.” The primary way to make your LDL go bad is to become insulin resistant from excess carbs, grains, vegetable oils. These sdLDL’s can’t get taken up by the liver instead the immune system tries to clean this up. These damaged particles are what ends up on the inside of your inflamed arterial walls that ultimately lead to arterial plaque, blockage and heart attacks.

Note: β – the LDL – family of lipoproteins associate with Beta Apolipoprotein (ApoB) while the HDL particles are associated with A1 Apolipoprotein (ApoA1).

Insulin resistance also promotes damage and weakness in the arteries due to high blood pressure, high sugar and other mechanisms.

A study in 2007 looking at the Framingham data showed that both cholesterol and LDL did not predict CHD at all, but the cholesterol ratios predicted CHD events very well.

What Castelli did not know at this time was that these ratios reflected insulin resistance status (as Ivor Cummins mentions in his excellent book Eat Rich Live Long) rather than “cholesterol” issues per se.

TG/HDL Ratio – to calculate your TG/HDL ratio you simply obtain a fasting lipid panel and divide the triglyceride level by the HDL cholesterol. The closer to 1 the better. If your level is above 2 you are at an increased risk for diabetes, heart attack and stroke.

Those people in the top quartile with the highest TG/HDL ratio are 16x at risk for heart attacks compared to those with the lowest ratios.

Not only does the TG/HDL levels correlate with the severity of atherosclerosis but TG/HDL also relates to all-cause mortality. ⁶

Total Cholesterol/HDL Ratio – the total cholesterol/HDL ratio is closely related to the TG/HDL ratio. You should be below 5 – an optimum level is <4. As the following table by Ivor Cummins shows the Total Cholesterol/HDL ratio accounts for most of the increased risk. LDL is irrelevant.

Coronary Heart Disease Hazard Ratios			
LDL <130 (Average LDL = 107)		LDL >130 (Average LDL = 175)	
Total/HDL <5	Total/HDL >5	Total/HDL <5	Total/HDL >5
1.00	2.49	0.97	2.35

Note: Even those with a high LDL had a low risk if their total cholesterol/HDL ratio was low. (Remember a low HDL is a biomarker for a HCLF diet).

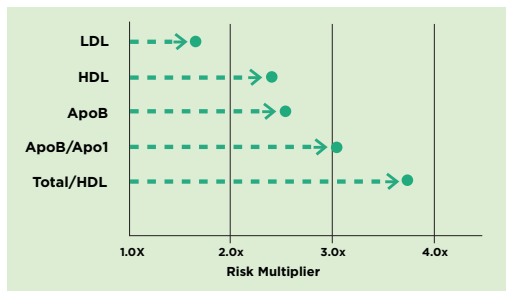
LDL/HDL Ratio – data shows that people with a lower HDL are at very high risk of CAD even if their LDL is nice and low but even more dangerous are those people with a low HDL but also a high LDL. Ideally your LDL/HDL ratio should be <3.5.

Apo B/Apo A1 – The Master Ratio

This is a more sophisticated test but has become increasingly important in the last decade as a risk factor for insulin resistance and cardio-metabolic disease.

Remember LDL particles have B apolipoprotein (Apo B) while HDL particles have A1 apolipoprotein (Apo A1). So, the Apo B/ Apo A1 ratio tells you the ratio of LDL to HDL. People with insulin resistance tend to have fewer HDL particles and more LDL particles.

In addition, if a large percent of your LDL particles are the “small dense” (sdLDL) this is a bad sign. Thus, it is not only the number of LDL particles but their size as well. You have a low risk of disease if you have an LDL-P # less than 750. You have a lower risk of disease if your LDL-particle size is large (beach balls) Pattern A – rather than the smaller (baseballs) sized particles (Pattern B).



CRP-hs

C-reactive protein is a biomarker for inflammation. CRP is produced by the liver.

CRP-hs indicates “high sensitivity” that can measure down to .3mg/L and is used to detect very low levels of inflammation. A level above 2 can indicate cardio-metabolic disease. An optimum level is below 1. (Above 10 usually indicates acute inflammation or injury).

A high CRP-hs can come from diabetes, metabolic syndrome, and a wide variety of cardio-metabolic diseases.

The levels of CRP-hs is positively correlated with HOMA-IR, BMI, WC and lipid ratios. Using a cut off value of 2.5µg/ml CRP-hs can be used for predicting metabolic syndrome (IR) with a sensitivity of 97% and specificity of 96%. CRP-hs can be accepted as a surrogate marker for prediction of metabolic syndrome. ⁷

Imaging

CAC Score

I have been doing Coronary Artery Calcification (CAC) scans for more than a decade and believe those with ‘insulin resistance’ over the age 35 should have a scan. They are inexpensive, not invasive and provide a lot of important information not only about your coronary arteries but your risk of death. ⁸

They are far more accurate than the Framingham Risk Score as you can see below: -

FRAMINGHAM RISK SCORE 10%? Really?	→	CAC CORE (Which reveals the real risk level)				
		CAC: 0	CAC: 1-80	CAC: 81-400	CAC: 401-600	>600
		2.4%	5.4%	16%	25%	36%

Chance of heart attack in the next 10 years

- A score of 0** – Relax
- A score of 1-80** – Re-evaluate your lifestyle
- A score of 81-400** – Take serious action
- A score of >400** – Need to address all root-causes of disease.

Even more important is the rate of increase in the score shown in the following study: -

	INITIAL CAC SCORE			
	30-100	101-400	401-1000	>1000
Heart attacks over 6 years with LESS than 15% annual CAC increase	3%	3%	3%	3%
Heart attacks over 6 years with MORE than 15% annual CAC increase	20%	50%	>50	

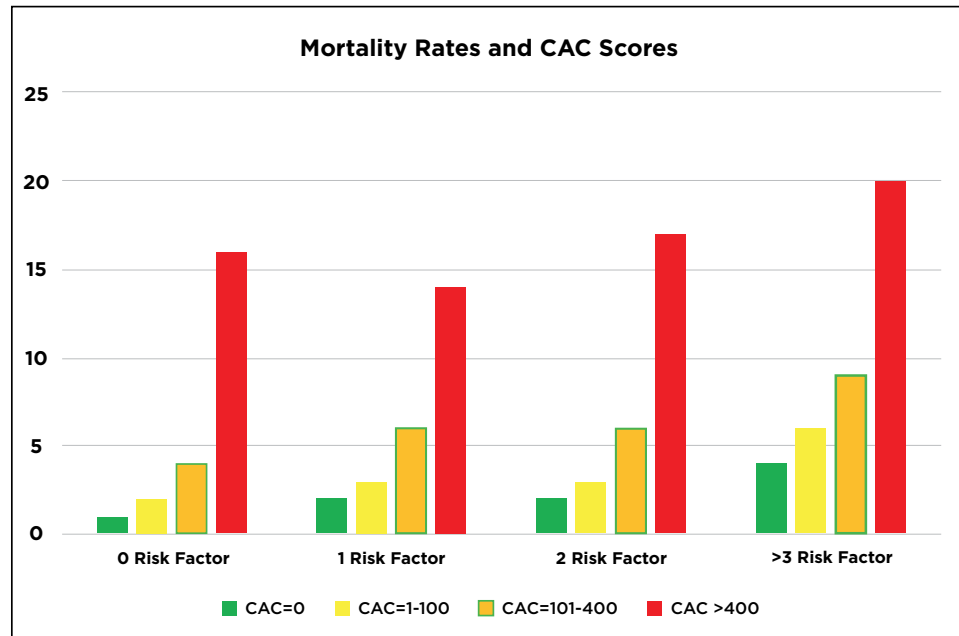
Again, having an annual increase below 15% means only having a 3% chance of a heart attack over the 6 years. Even those with very high scores over 1,000 – shared the same low risk. Their arteries were ‘cool.’⁹

In contrast, those that had a greater than 15% increase in scores each year showed a much higher risk of heart attack i.e. there are arteries that are on “fire.” Thus, the CAC gives an idea of the progression of disease each year.

By adopting the Live Below 5.0 Solution you can put the fire out and even reverse your disease.

Many studies have shown that the CAC score also predicts death from all causes even better than it predicts death from coronary artery disease.

The diagram below gives a snapshot of 44,000 people in their mid-fifties. The height of the bars shows the actual mortality rate per thousand person – years. So, a value of 20 on the Y-axis means that 20% of these middle aged died over a ten-year period – a 1 in 5 chance of death.¹⁰



As you can see mortality rate for a high CAC score is about 15x greater than a low one i.e. a CAC score is the ultimate test to assess your risk of death from most chronic disease.

Ultrasound of the Liver (NAFLD)

Due to the diabetes pandemic more than 50% of people in many countries have Non-Alcoholic Fatty Liver Disease (NAFLD) which is a sure sign of insulin resistance and risk for Covid-19.

I will show you how you can reverse 50% of fatty-liver in just a few months in the next chapter as part of the Live Below 5.0 Solution.

As you can see from the diagram below, the earlier you diagnose “insulin resistance” the earlier you can reverse all endothelial dysfunction and the co-morbidities associated with Covid-19. Initially you can see the result of insulin resistance (IR) as it produces “functional changes” over 15-20 years. This is the ideal time to diagnose IR and reverse it before any “structural changes” develop over the next 20 years until suddenly you get a major “clinical event” like diabetes, cancer, a heart attack, stroke, Alzheimer’s, E.D. etc. You are now also at very high risk from Covid-19.

Cardio-Metabolic Disease takes a relatively long time to develop. Most people however in middle age already have one or more chronic diseases that shortens both their health span and lifespan (2). The good news is with the live below 5.0 Solution you can begin to reverse these diseases often in weeks.

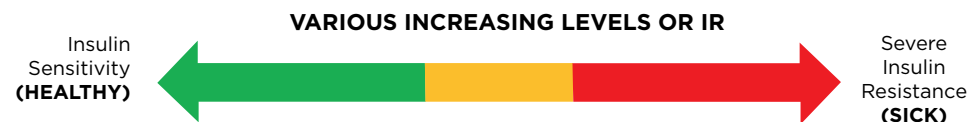
HbA1c	5.5-5.75 (2x CAD)
HbA1c	5.8-6.1 (3.5x CAD)
HbA1c	>6.2 (5x CAD)
HbA1c	>7 (7x CAD)
CAD = Coronary Artery Disease	

CARDIO-METABOLIC DISEASE	
STAGE	TEST
1. Functional Changes 15-20 years	Blood Tests Body Fat % Angioscan SphygmoCor
2. Structural Changes 15-20 years	IMT CAC ABI Angiogram
3. Clinical Event (Western Disease)	Diabetes Heart Attack Stroke Alzheimer’s E.D. Covid-19
REMEMBER SUGAR NOT FAT IS THE PROBLEM	

The good news is you can restore your “insulin sensitivity” in just a few weeks that will not only help stop the progression of the typical chronic diseases that develop with age but also greatly lower your risk of death from Covid-19 by preventing both the early respiratory and later vascular disease from occurring.

What Is Your Insulin Resistance Score (IRS)

The only things in life you can be sure of, as they say, are taxes and death. The insulin spectrum is a continuum that has insulin sensitivity (<12% of adult Americans) on the one end to full blown insulin resistance/diabetes and cardio-metabolic disease on the other. Your IRS will show you your current state of health. We use a simple algorithm inputting multiple data points that produces a very accurate score.



Where you fall on this spectrum determines every aspect of your health and your risk of dying from viral illness including Covid-19. How heavy you are, if you have diabetes, heart disease or other chronic cardio-metabolic disease all depends on where you score.

As stated earlier the total amount of sugar in your bloodstream is just 1.5 teaspoons of sugar. Remember women should only ingest 6 teaspoons sugar/day from all sources and men 9 teaspoons or you begin to develop insulin resistance especially if you consume excess omega-6-polyunsaturated fatty acids (PUFA's) – these PUFAs significantly increase your risk of increased food intake, body weight and body fat. They also increase your risk of heart attack, cancer, and other chronic diseases. This is why an omega-index test is also valuable to help keep your ratio of omega6:3 no more than 3:1 (ideal is 1:1).

Glucose molecules are first sensed in our upper gut where they trigger the release of glucose-dependent-insulin tropic polypeptide (G-IP). This is the master control for insulin release.

By now you know the story – some glucose is ok but the tremendous amounts of sugar, grains, starches and unhealthy PUFAs take their toll over time until the pancreas is exhausted and blood sugar and insulin rise and you become insulin resistant with all its problems (unhealthy fat

→ immune system → macrophages → inflammation → more insulin resistance and round and round).

The Live Below 5.0 program shows you how to get most of your energy (and health) from eating healthy fat instead of carbs so we can re-balance our insulin signaling and regain “insulin sensitivity” and a long life.

The next chapter will give a brief outline of the Live Below 5.0 program where we help you regain your insulin sensitivity in several weeks. We also explore some therapies that can help protect you from Covid-19 as you re-balance your metabolism.

Chapter Six

The 'Live Below 5.0' Solution



x6 teaspoons of sugar



x9 teaspoons of sugar

What Is A Vaccine?

“A product that stimulates the immune system to produce immunity against a specific disease, protecting the person from that disease. Vaccines can be administered through injections but can also be administered by mouth.”

The **Live Below 5.0 Solution** is that vaccine product that stimulates your immune system to protect you from cardio-metabolic disease due to insulin resistance. It is primarily administered through the mouth via a High Fat Low Carb (HFLC) diet and gives you the best protection against Covid-19.

Before I go on I would like to explain the 4 Levels of Prevention:

Primordial Prevention: this involves avoiding and preventing the risk factors for 'insulin resistance' through environmental, economic, social, behavioral conditions and cultural patterns of living.

Primary Prevention: requires modifying existing risk factors to prevent the development of the disease (insulin resistance) in the first place.

Secondary Prevention: here we try to detect the disease early and prevent it from getting worse.

Tertiary Prevention: in this case we try to improve a person's quality of life and reduce the symptoms of the cardio-metabolic disease (co-morbidities) you already have.

I am not going to address Primordial Prevention as that is best done on a population wide basis that should be funded by the Government; even though I feel this is ultimately the best way to democratize and improve health for people in every country around the globe. Covid-19 will help shine a light on why more than half the world are fat, diabetic and sick with cardio-metabolic disease.

Primary Prevention

It is essential that all clients first do the “screening” insulin resistance score (IRS) and in some cases also the “definitive” IRS if your screening test was abnormal.

If clients are insulin sensitive with a HOMA-IR <1.2 you can keep doing what you have been doing regarding your lifestyle. A DIY Live Below 5.0 program can also help keep you on track.

STAGE 1	STAGE 2	STAGE 3
Primary Prevention	Secondary Prevention	Tertiary Prevention
Low Risk	Moderate Risk	High Risk
Functional Changes	Structural Changes	Co-morbidities
Modify Risk Factors	Early Diagnosis of Disease	Improve Quality of Life
Prevent Disease	Prevent Worsening of Disease	Reduce Disease Burden
Metabolic Abnormalities	Obese-Prediabetes	Diabetes-Metabolic Syndrome
Minimum Endothelial Dysfunction	Moderate Endothelial Dysfunction	Severe Endothelial Dysfunction
Mild IR	Moderate IR	Severe IR
Mild Overweight	Moderate Overweight	Obese
HOMA-IR = 1.2-1.8	HOMA-IR = 1.9-2.9	HOMA-IR = > 2.9
± Continuous Glucose Monitoring	Continuous Glucose Monitoring	Continuous Glucose Monitoring
HFLC Diet	HFLC Diet	HFLC Diet
Intermittent Fasting	Intermittent Fasting	Intermittent Fasting
Exogenous Ketones	Exogenous Ketones	Exogenous Ketones
± Metformin/ Berberine	Metformin/ Berberine	Metformin/ Berberine
Diabesity APP	Diabesity APP	Diabesity APP
± Dashboard	Dashboard	Dashboard
Stage 1: Nutraceuticals	Stage 2: Nutraceuticals	Stage 3: Nutraceuticals
Stage 1: Pharmaceuticals	Stage 2: Pharmaceuticals	Stage 3: Pharmaceuticals
e-Books	e-Books	e-Books
Blog Content	Blog Content	Blog Content
± Health Coach	Health Coach	Health Coach
N/A (± Doc)	Doctor Supervision	Doctor Supervision
Keto-stix	Keto-stix	Keto-Stix
R/O any Risk Factors-Covid-19	R/O any Risk Factors-Covid-19	R/O any Risk Factors-Covid-19
DIY Program	Home-Online Program	Office-Based Program

- A calorie is a calorie
- Breakfast is the most important meal of the day
- Best to eat several small meals throughout the day
- Eating fat makes you fat
- You need healthy carbs for energy

Our **Live Below 5.0 solution** provides continuous online Telehealth, which is data driven, provides a proactive approach to clients which is a significant contrast to the episodic, reactive medical model familiar to most people.

There are 8 root causes responsible for most chronic diseases.

The **I.N.T.E.G.R.A.L HEALTH MODEL** is a recognized model for **increasing lifespan and healthspan originally created by our founder Graham Simpson MD.**

Its a “Whole Person” I.N.T.E.G.R.A.L Approach

Implemented using real-time mobile technology, medically supervised, with trained health coaches to guide clients through every step of the way.

Secondary Prevention

Most people, who have eaten a typical Western diet, by the time they reach their forties have already developed endothelial damage and have some structural damage in their body.

It is essential that you make an early diagnosis and begin to reverse the damage at this stage which is often easy to do.

Education is critical for your success. Here for example, are several nutritional myths that must be dispelled in order to reverse your disease.

Here Are Some Nutritional Myths That Many People Believe Are True

- Cholesterol (especially LDL-C) is dangerous
- Saturated Fats clogs your arteries
- Diabetes can be managed but not cured
- Exercise for weight loss
- Calories In = Calories Out

How does it work?



We incorporate a **‘whole-person’ I.N.T.E.G.R.A.L HEALTH** approach addressing all “root-causes” of cardio-metabolic disease as shown in the following diagram on the next page.



INFLAMMATION CONTROL



NUTRITION AND METABOLISM



TOXINS AND CANCER REDUCTION



EXERCISE AND SLEEP



GUT MICROBIOME OPTIMISATION



RESTORATION OF HORMONES



ADEQUATE SUPPLEMENTS



LIFETIME MINDFULNESS AND STRESS REDUCTION

To learn more about how you can access the 'Live Below 5.0' program dashboard solution for health professionals simply visit www.livebelow5.com or email hi@livebelow5.com.

Tertiary Prevention

At this stage most, people have one or more chronic diseases often driven by DIABESITY. It is imperative that action be taken immediately to stop and reverse the disease especially in light of the coming pandemics like Covid-19. The large majority of people who die from Covid-19 are in the 3rd stage as hyperglycemia and insulin resistance damage the endothelium decreasing Nitric Oxide while impairing multiple branches of the immune system which paves the way for the "cytokine storm" and the vascular complications which follow.

One of the most exciting opportunities that has come to light is just how quickly a person can cure their diabetes and regain "insulin sensitivity" often in just several weeks of following the Live Below 5.0 Program. ¹

To prove this, we employ Continuous Glucose Monitoring (CGM) which soon makes clients believers in just how critical it is to choose "real food" rather than the usual fake food they eat (the CGM takes your readings 96x/day).

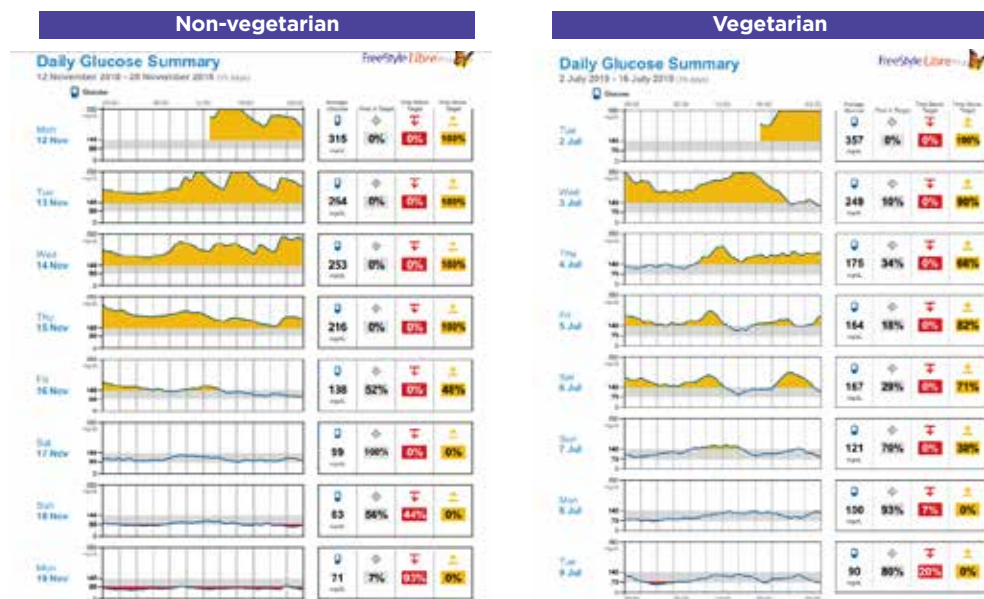
We have just as much success with vegetarians as we do with meat eaters as shown on the following page:-



Continuous Glucose Monitoring (CGM)

It's important to recognize that the **'Live Below 5.0'** program works for non vegetarians and vegetarian clients alike (see graphs).

The primary intervention is a well formulated Keto Diet together with Continuous Glucose Monitoring (CGM) and Intermittent Fasting. CGM is simple, painless and inexpensive. We also add the select nutraceuticals and bioidentical hormones in some clients.



Research to date shows that 80% of clients respond quite dramatically with most type 2 diabetes clients off their insulin in a couple of weeks.

The majority of hypoglycemic drugs can also be discontinued although we keep clients on Metformin for its anti-aging properties as it activates AMPK an important nutrient sensor.

Cardio-Metabolic Disease and Covid-19

As we have seen “endothelial” dysfunction is the major mediator of diabetic vascular disease and is the cornerstone of organ dysfunction in severe SARS-CoV-2 infection. So how can we best protect our endothelial cells from vascular dysfunction, immune-thrombosis and inflammation? ²

The High Fat Low Carb (HFLC) Diet

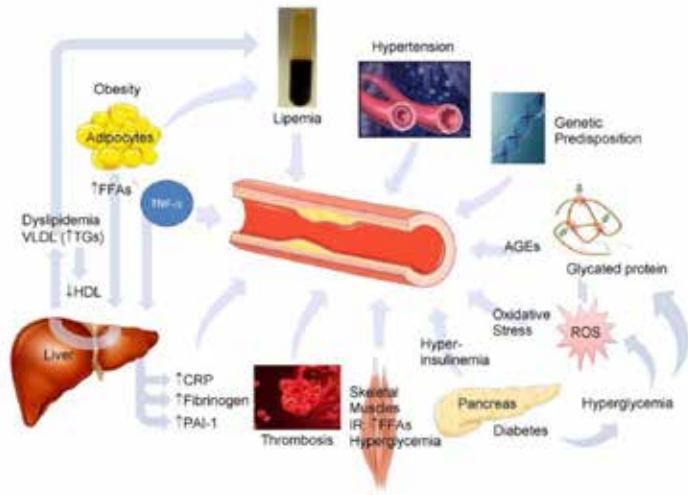
In early July 2020 the Journal of Diabetes Complications published an international consensus statement from the experts from regions hard-hit by the coronavirus. These authors endorse the need to reduce carbohydrate consumption and empower clients to best manage their own blood glucose levels. This is our goal with the Live Below 5.0 Solution. Indeed, rather than going back to the pre-Covid-19 diabetes care model we should take advantage of the new research and innovation during this time to improve strategies to reverse and cure the diabetes pandemic.

We have the data and have mentioned earlier how 99% of Italians who died from Covid-19 had preexisting conditions like obesity, diabetes, hypertension and heart disease. Two-thirds of the people in the UK who fell seriously ill with Covid-19 were overweight or obese and similar stats are found in the USA, Brazil, Mexico and other countries.

The most significant factor that determines endothelial health are the blood glucose levels directly related to the consumption of carbohydrates, that is, refined carbs, starches and simple sugars.

In the earliest stages, the principal endothelial alteration is merely functional. Functional impairment is found in people with obesity, type II diabetes i.e. with insulin resistance. The hallmark of endothelial dysfunction is the impaired Nitric Oxide (NO) bio-availability. Numerous risk factors, I mentioned before, contribute to endothelial dysfunction including oxidized LDL cholesterol, low HDL-cholesterol, high TG, increase in FFA-hypertension, high CRP-hs, hyperglycemia, high LPL-P #, elevated omega-6/omega-3 ratio, hyperinsulinemia, high homocysteine, fibrinogen, smoking, low Vit. D among others.

Diabetes is not only a metabolic disease but is also considered a vascular disease because it affects both the macro and micro-nutrients of most vascular beds. Several of these mechanisms are shown in the following diagram:



Glucotoxicity induces a low-grade inflammatory condition due to the activation of Nuclear factor-KB (NF-KB). Activation leads to an increased production of adhesion molecules, chemokines and cytokines that activate inflammatory cells in the vascular wall. A prothrombotic state is generated that is seen in Covid-19 clients. Insulin resistance and type II diabetes are associated with inflammation and increased levels of TNF-alpha, interleukin-6 (IL6), high CRP-hs, PAI-1 and ET-1 which are all related to endothelial dysfunction. The activation of metabolic sensitive pathways of vascular damage by increased Free Fatty Acids (FFA), from insulin resistant visceral adipocytes may be the metabolic link between insulin resistance and microvascular disease. FFA also induces ROS and oxidative stress.

Ketones in the time of Covid-19 are very helpful. ³

In a more recent article “Investigating Ketone Bodies as Immunometabolic Countermeasures against Respiratory Viral Infections” published on July 15,2020. ⁴, Brianna Stubbs and others show how Ketone bodies (from both – Keto Diet and Exogenous Ketones) are metabolites that maintain cellular energy but also feature drug-like signaling activities that affect immune activity, metabolism and epigenetics.

Beta HydroxyButyrate (BHB) the major ketone in the body helps endothelial function in several ways: -

- BHB protects against oxidative stress
- BHB directly inhibits proinflammatory NLRP3 activation
- BHB has additional anti-inflammatory effects (HCAR2 and NF-KB)
- BHB reduces apoptosis (death of cells)

- BHB interacts with RNA-Binding Ribo Nuclear Protein (hnRNPA1)
- BHB inhibits glycolysis
- BHB improves systemic glucose control
- BHB decrease insulin resistance
- BHB improves tolerance to tissue hypoxia
- BHB preserves cardiac function
- BHB helps immunomodulation in ARDS.
- BHB alters gut microbiome to modulate inflammation
- BHB prevents muscle breakdown
- BHB prevents functional decline in muscle
- BHB improves delirium in Covid-19 patients by probably reducing inflammation

The **Live Below 5.0 Solution** with a well-formulated Keto diet (WFKD) and intermittent fasting will improve your Ketones and is probably the single most important factor for you to improve your endothelial function and decrease your chances of dying from Covid-19.

A. Natural Therapies to Improve Endothelial Function

Role of Polyphenols in Endothelial Health

Many studies confirm the effects of polyphenols beneficial antioxidant effects against insulin resistance.⁵ These include: -

Green Tea	Berberine	Alpha Lipoic Acid	Hesperetin
Cocoa	Curcumin	Quercetin	Alpha Linoleic Acid
Fisetin	EGCG	Resveratrol	Bergamot
Citrus Fruit	Catechin Hydrate	Pomegranate	Gynostemma Extract

Exercise for Endothelial Health

Moderate exercise tends to stimulate NO release that improves endothelial function. Beneficial effects of exercise in type II diabetes have been well established. Regular exercise maintains glucose control, improves mitochondrial health, energy metabolism and insulin sensitivity. Research at UCSD showed that walking briskly on a treadmill for 20 mins reduced TNF, a cytokine that drives inflammation and also boosted an antioxidant (SOD) that both decrease the risk of Acute Respiratory Distress Syndrome (ARDS).

Antioxidants for Endothelial Health

Antioxidants have been shown to improve endothelial function in diabetes by recoupling e-Nos and mitochondrial function, by increasing the activity of O₂ - scavenging enzymes by decreasing vascular NOX activity. An example of these antioxidants include: -

Vitamin C	Vitamin E
Folic Acid	Glutathione
Vitamin D	CoQ10

Other Natural Therapies to Improve Endothelial Function

- Organic Nitrate Foods
- L-arginine
- Taurine
- Magnesium
- NAD
- Omega-3 FA
- Selenium
- Zinc

B. Pharmaceutical Therapies to Improve Endothelial Dysfunction

Anti-Diabetic Medications Improves Endothelial Health

- Metformin
- Glucagon-like peptide (GLP-1)
- Inhibitors of Phosphodiesterase 5 (PDE5)
- Dipeptide Peptidase-4 (DPP4)
- Sodium-glucose co-transporter 2 (SGLT2)
- Hydroxychloroquine
- Thiazolidinediones

All these more conventional therapies for diabetes have shown evidence in supporting improved endothelial function through different modes of action.

Anti-Hypertensive Therapy Improves Endothelial Health

- ACE inhibitors
- Angiotensin Receptive Blockers (ARBs)

Both appear to help decrease vascular disease and decrease sugar improving insulin sensitivity and the risk of dying from Covid-19.

Anti-Inflammatory Drugs Improves the Endothelium

Aspirin	Nebulized Budesonide
Colchicine	Dexamethasone
Indocin	Naproxen

Anti-Coagulants Improves the Endothelium

Anti-Platelet drugs	Eliquis
Enoxaparin	Xarelto
Thrombolytics	Heparin

Anti-Virals

- Eculizumab is a human monoclonal antibody
- Tocilizumab is an anti-IL6 receptor blocker
- Ivermectin
- Lipid Lowering Drugs
- Various Statins
- Fibrates
- Anti-Fibrotics To Reduce Pulmonary Fibrosis
- Metformin
- Thiazolidinediones (TZP's)

Others

- Azithromycin
- Inhaled Nitric Oxide (NO)
- Covid Convalescent Plasma Therapy
- Stem Cells

Note: All Pharmaceutical Therapies should be administered by an experienced Medical Doctor.

How We Deliver the 'Live Below 5.0' Solution?

- Client becomes aware of the **Live Below 5.0** programs.
- Client visits our website www.livebelow5.com to take the FREE test.
- Client reviews **Live Below 5.0** programs.
- Client selects appropriate program based on test results.
- **Live Below 5.0** Health Coach makes contact to develop personalized program/answer questions.

ALL OUR PROGRAMS ARE DELIVERED IN 3 SIMPLE STEPS

STEP
1

MEASURE
QUANTIFY WELLNESS

STEP
2

MENTOR
DEMYSTIFY DISEASE

STEP
3

MONITOR
EMPOWER CLIENTS

© Copyright 2020 Eternity Medicine Centers, LLC. Dr Graham Simpson

STEP ONE - MEASURE

- History
- Examination
- Diagnostics

Our goal in 'Step One' is to quantify wellness using the Insulin Resistance Score.

STEP TWO - MENTOR

We provide a 'whole-person' approach. Here our goal is to demystify disease by attending to all the 'root-causes' of disease specially insulin resistance using the **I.N.T.E.G.R.A.L Health Model**.

STEP THREE - MONITOR

Our goal here is to empower clients. In order to do this, we employ various tools (the APP and Dashboard) together with AI and machine learning. Clients can track their biomarkers in real time to assure how well their personalized program is working and how quickly they can regain "insulin sensitivity."

Our solution is very different from the episodic and reactive disease model delivered over the last 50 years. We seek to deliver proactive health to empower clients by treating the root cause of disease with far more natural (less drug) therapies. **The Live Below 5.0 Diabetes Reversal Kit** contains all you need to begin your journey back to health.



HOW TO DELIVER PROACTIVE HEALTHCARE



Predictive

By measuring thousands of health and biomarkers LAMP can predict outcomes

Preventive

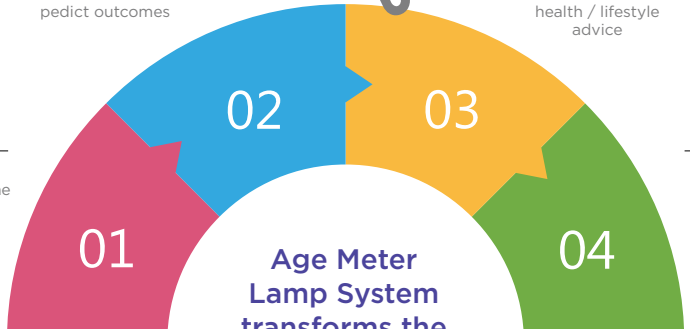
LAMP is preventing disease by early detection and health / lifestyle advice

Personalized

LAMP provides personalized medicine based on individual genomics and biomarkers

Participatory

The LAMP software and APP re-establish the doctor-client relationship



Age Meter Lamp System transforms the current healthcare market to the 4P healthcare solution

Current Health Care Market is predominantly a reactive model

Future healthcare market will be a 4P healthcare solution



LIVE BELOW 5.0 PROGRAM FEATURES



A WHOLE PERSON INTEGRAL APPROACH

That will reverse diabetes the key to Anti-Aging that address the root cause of disease.



SIMPLE 3 STEP METHODOLOGY

STEP 1 - MEASURE Quantify Wellness
STEP 2 - MENTOR Demystify Disease
STEP 3 - MONITOR Empower Yourself



CONTINUOUS MEDICAL SUPERVISION

By Our Certified Eternity Doctors



YOUR OWN PERSONAL HEALTH COACH

Your own personal health coach to guide you through the program.



PERSONALISED NUTRITION

Based on your microbiome and intermittent fasting made easy.



CONTINUOUS GLUCOSE MONITORING

See how quickly a personalised diet and intermittent fasting can restore you to optimal health.



HEALTHCARE IN YOUR POCKET

Track and share your data with your Diabetes APP and your own tool kit.



ETERNITY RESOURCES

Menus' Blogs, Podcasts, Videos, Nutraceuticals, Articles, Keto Meals, Mobile Devices, Private Eternity Support Community.

Conclusion

In conclusion I am hopeful that researchers will develop an effective and safe vaccine that can give lasting immunity for Covid-19 but I have certain reservations due to the rapid mutation of the RNA Covid-19 and the safety and effectiveness of the vaccine.

Due to the encroachment and pollution by humans on the natural habitat of mammals I believe it is a matter of time before new viral Pandemics affects us.

Ultimately “Herd Immunity” will happen when enough people have been infected and then recover making them immune to being re-infected and infecting others in their communities.

Until this happens I am a Claude Bernard proponent and believe in “our soil” – not the seed and know that the best solution for you and your loved ones is to **Live Below 5.0** and recover insulin sensitivity and your endothelial health.

Graham Simpson MD

Afterword

I would like to end 'The Natural Vaccine for Covid-19' with some important observations by Sheena Cruickshank, Professor in Biomedical Sciences, University of Manchester published in UK News on 21st August 2020. Professor Cruickshank is clear that inflammation is the key factor that explains a person's vulnerability to severe Covid-19 ⁽⁵⁾.

We have seen that the virus disproportionately affects men and people who are older and have conditions of obesity and diabetes (Diabesity). Ethnic minorities due to their higher risk of diabesity are also disproportionately affected. It's the response of these people's immune system – inflammation – that explains why they get sick from Covid-19. This is characterized by the creation of lots of inflammatory products in the so-called “cytokine storm.”

Many white blood cells create cytokines, but specialized cells called monocytes and macrophages seem to be the biggest culprits in generating the cytokine storm especially in patients with diabesity.

In Covid macrophages and monocytes respond to the high levels of glucose and insulin. Glucose increases the level of the ACE2 receptors present on macrophages and monocytes helping the virus to infect the very cells that should be helping kill it. The higher the glucose levels the more successful the virus is at replicating inside the cells.

The virus also causes the virally infected immune cells to make products that damage the lung such as reactive oxygen species (ROS) and low Nitric Oxide (NO). The virus also reduces the ability of other immune cells – lymphocytes – to kill it.

As pointed out previously those with “unhealthy fat cells” have increased macrophages present that serve as an additional reservoir for cytokines and inflammation. A recent article shows that COVID-19 patients with obesity have not only a higher viral load but these obese patients remain more infectious longer ².

The same sort of inflammatory profile that diabetes and obesity cause is also seen in patients older than 65 due to ‘inflammaging’ due to obesity, genetics, microbiome, low lymphocyte counts, increased insulin resistance etc.

Men are also more vulnerable due to the ACE2 receptors being more expressed and increase in the enzyme TMPRSS2 that promotes the

ability of the virus to enter the cell. Men also have atypical monocytes more capable of making cytokines.

I have also previously mentioned the endothelial dysfunction (endotheliitis) – inflammation of all the blood vessels throughout the body as a result of the metabolic abnormalities (IR) due to our modern diet. (Review Chapter 3)

You can see all the evidence you need by looking at the following chart that shows that more than half of all Covid-19 deaths in Countries across Europe were in the elderly in long-term care facilities – most who have 1 or more co-morbidities from “insulin resistance”.

Country	Report date (in 2020)	Number of affected facilities ()	COVID-19 cases in LTCG residents	COVID-19-related deaths in LTCG residents	Total COVID-19 deaths	% of all COVID-19 deaths in the country
Belgium	8 June	UNK	_____	_____	_____	50
France	8 June	_____	_____	_____	_____	49
Germany	8 June	UNK	_____	_____	_____	39
Ireland	10 June	_____	_____	_____	1,362	60
Norway	8 June	UNK	UNK	142	239	59
The Netherlands	19 May	UNK	9,474	1,779	_____	31
Spain	10 June	_____	UNK	19,445	27,_____	72
Stockholm	15 April	212	1,711	630	1,400	45
County, Sweden			_____			
Sweden	18 May	UNK	_____	1,777	_____	49
UK-England	29 May	UNK	_____	_____	45,74_	23
UK-Scotland	7 June	_____		1,861	4,000	47

Why have our government leaders and the medical establishment been so silent on these matters until now?

To paraphrase Edmond Burke –

“The only thing necessary for the triumph of Diabesity and Covid-19 is for good doctors to do nothing.”

You now hold in your hands the information you need to protect yourself from Covid-19 and other infections that are sure to come your way in the years ahead.

If you would like to know your Insulin Resistance Score and more importantly how to regain “insulin sensitivity” please visit www.livebelow5.com and learn more about the FREE test and **Live Below 5.0 Solution.**

Find out your insulin resistance score and if you or your loved ones are at greater risk.
Take the FREE and simple online test designed by Dr Graham Simpson MD today.



www.livebelow5.com



REFERENCES

Introduction

1. <https://www.newscientist.com/question/are-viruses-alive/>
2. Scientific American, June 2020, Jane Qiu
3. <http://dx.doi.org/10.1016/j.virol.2015.02.038>
4. <https://www.wionews.com/opinions-blogs/covid-19-virus-has-properties-that-have-never-been-found-in-nature-before-304229>

Chapter 1

1. The Metabolic Miracle, Graham Simpson, MD
2. DiabetesEpidemicandYou, Joseph Kraft, MD
3. The Obesity Code, Jason Fung, MD

Chapter 2

1. Journal American Medical Association (JAMA), September 2015
2. Open Diab Res Care 2017, Waseem Abu-Ashour and Laurie Twells
3. With Obesity and Diabetes epidemic, Mexico braces for CoronaVirus, <https://www.thomsonreuters.com>
4. https://www.medscape.com/viewarticle/934554?src=c..te_200727_mscpedit_&uac=390281AT&impID=2478984&faf=1
5. Intensive Care Research (UK), March 2020
6. [https://www.cell.com/cell-metabolism/fulltext/S15504131\(20\)30238-2](https://www.cell.com/cell-metabolism/fulltext/S15504131(20)30238-2)
7. Americans Are Already Too Diseased To Go Back To Work - NY Times, 3/30/2020
8. www.PanDATA.org.za
9. International Journal of Epidemiology Vol 10 (2) 1999
10. <https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01697-5>
11. <https://medium.com/swlh/how-tuberculosis-fueled-the-1918-flu-and-covid-19-pandemics-caa231e37d6>
12. <https://www.telegraph.co.uk/news/2020/06/15/no-scientific-evidence-support-disastrous-two-meter-rule/>
13. Titled, "Face masks to prevent community transmission of viral respiratory infections. A rapid evidence reviews using Bayesian analysis (<https://www.geios.com/read/15C5L4>)," the study analyzed eleven randomized, controlled trials and 10 observational studies, concluding:
14. <https://andmagazine.com/talk/2020/08/11/sweden-lockdown-facts-fauci-wont-tell-you>

Chapter 3

1. British Heart Foundation - Heart Matters Commentary, July 1, 2020
2. <https://doi.org/10.1186/s13054-020-03062-7>
3. <https://www.sciencedirect.com/science/article/pii/S0925443913002718>
4. Diabetes Care, Vol 34, Suppl 2, May 2011 (pages 285-289)
5. NEJM, March 30, 2020 (pages 1-191)
6. <https://hiitscience.com/the-perfect-storm-is-excess-fat-a-hidden-risk-factor-for-covid-19/>

7. <https://dx.doi.org/10.1155/2016/3634948>
8. <https://doi.org/10.1016/j.micinf.2020.05.006>

Chapter 4

1. The Stress of Life, Hans Selye, MD
2. The 4 Week Diabetes Cure, Graham Simpson, MD
3. Mayo Clinic Proc. Jan 2004 - James O'Keefe et al
4. The Metabolic Miracle, Graham Simpson, MD

Chapter 5

1. The Diabetes Epidemic and You, Joseph Kraft, MD
2. The Diabetes Code, Jason Fung, MD
3. "Association of Hemoglobin A1c with Cardiovascular Disease and Mortality in Adults: The European Prospective Investigation into Cancer in Norfolk." *Annals of Internal Medicine* 141, no. 6 (2004): 413-20.
4. "Insulin Resistance as a Predictor of Age-Related Diseases," *Journal of Clinical Endocrinology & Metabolism*, 86, no.8 (2001): 3574-76.
5. The Metabolic Miracle, Graham Simpson, MD
6. "Efficacy of Cholesterol Levels and Ratios in Predicting Future Coronary Heart Disease in Chinese Population," *American Journal of Cardiology* 88, no.7 (2001): 737-743
7. *Journal of Endocrinological Investigation*, 31 January 2005, 28 (2) 145-50
8. Story Source: Matthew Budoff and Jerold S. Shineds. *Cardiac CT Imaging Diagnosis of Cardiovascular disease* (New York: Springer-2010).
9. CAC progression of more than 15% per year is the killer. Source: P. Raggi, T.Q. Callister, and L.J. Shaw, "Progression of Coronary Artery Calcium and Risk of First Myocardial Infarction in Patients Receiving Cholesterol-Lowering Therapy." *Arteriosclerosis, Thrombosis, and Vascular Biology* 24, no.7 (2004): 1272-77.
10. 10.K.Nasif et al, "Interplay of Coronary Artery Calcification and Traditional Risk Factors for the Prediction of All-Cause Mortality in Asymptomatic Individuals," *Cardiovascular Imaging* 5, no.4 (2012): 467-73.

Chapter 6

1. 4 Week Diabetes Cure, Graham Simpson, MD
2. <https://doi.org/10.1016/j.micinf.2020.05.006>
3. <https://dietdoctor.com/ketones-and-low-carb-in-the-time-of-covid-19-helpful-or-harmful-speculation>
4. [https://www.cell.com/med/fulltext/S2666-6340\(20\)30013-1](https://www.cell.com/med/fulltext/S2666-6340(20)30013-1)
5. <https://www.cambridge.org/core/journals/british-journal-of-nutrition/phenols/BA67B4F3EE73DE56B7147FE614CA8D8B/core-reader-cannot-open-the-link>

Afterword

1. <https://uk.news.yahoo.com/inflammation-key-factor-explains-vulnerability-134314638.html?guccounter=1>
2. Medscape - COVID-19 patients with obesity have higher viral load (Sept 1- 2020).
3. <https://www.ecdc.europa.eu/en/covid-19/latest-evidence/epidemiology>

What makes a person more at-risk of dying from COVID-19?

Finally a book that tells the truth, offers hope and practical solutions to prepare for, and fight COVID-19 naturally. Learn how to protect yourself and your family in the unfortunate event that you are infected with the virus.

COVID-19 is 'profoundly different' from the Spanish Flu Pandemic of a century ago, which was an indiscriminate killer that targeted the young. The experience of the past several months has taught us that the at-risk are the older and vulnerable individuals that can be identified with accuracy. The presence of a 'Chronic Illness' (co-morbidity) is the single most important factor in determining a person COVID-19 risk. You can identify with exceptional accuracy who is at risk compared to any other disease.

Over 100 articles show that vulnerable persons are overweight with many having diabetes or pre-diabetes - 'insulin resistance' is the underlying cause of most chronic disease and COVID-19 deaths. In fact, the excess mortality from COVID-19 is not much different from the mortality observed during the 2018 flu season. Chronological age is just a number; however, biological age is determined mainly by 'insulin resistance'.

This book explains how by knowing your 'Insulin Resistance Score' you can protect yourself with simple lifestyle interventions.



Graham Simpson MD

Passionate doctor, futurist, researcher, scientist, educator, and international best-selling author, founder and Chief Medical Officer of Eternity Medicine and creator of 'THE LIVE BELOW 5.0 DIABESITY REVERSAL PROGRAM'

Dr Graham Simpson, is one of the world's leading experts on Diabetes, reversing 'insulin resistance', anti-aging and sexual dysfunction. He has made it his life's mission to reverse the global epidemic of lifestyle-caused chronic disease. Dr Simpson is a regular keynote speaker on the topics of reversing cardio-metabolic disease, diabetes reversal, anti-aging and longevity and sexual rejuvenation.

Credentials

Dr. Graham Simpson MD graduated from the University of Witwatersrand Medical School in Johannesburg, South Africa. He is American Board Certified in Internal Medicine and Emergency Medicine. He is a founding member of the American Holistic Medical Association (AHMA) and is also a licensed homeopath.

He is the author of WellMan (Live Longer by Controlling Inflammation), the Metabolic Miracle and co-author of Spa Medicine with Dr. Stephen Sinatra. His latest books include The 4 Week Diabetes Cure and Healthy and Happy – A Guide To Immortality. Dr. Simpson taught as an assistant professor of medicine at the University of Nevada, Reno. He is also certified in Age Management Medicine by Cenegenics and A4M and is the founder of Eternity Medicine.