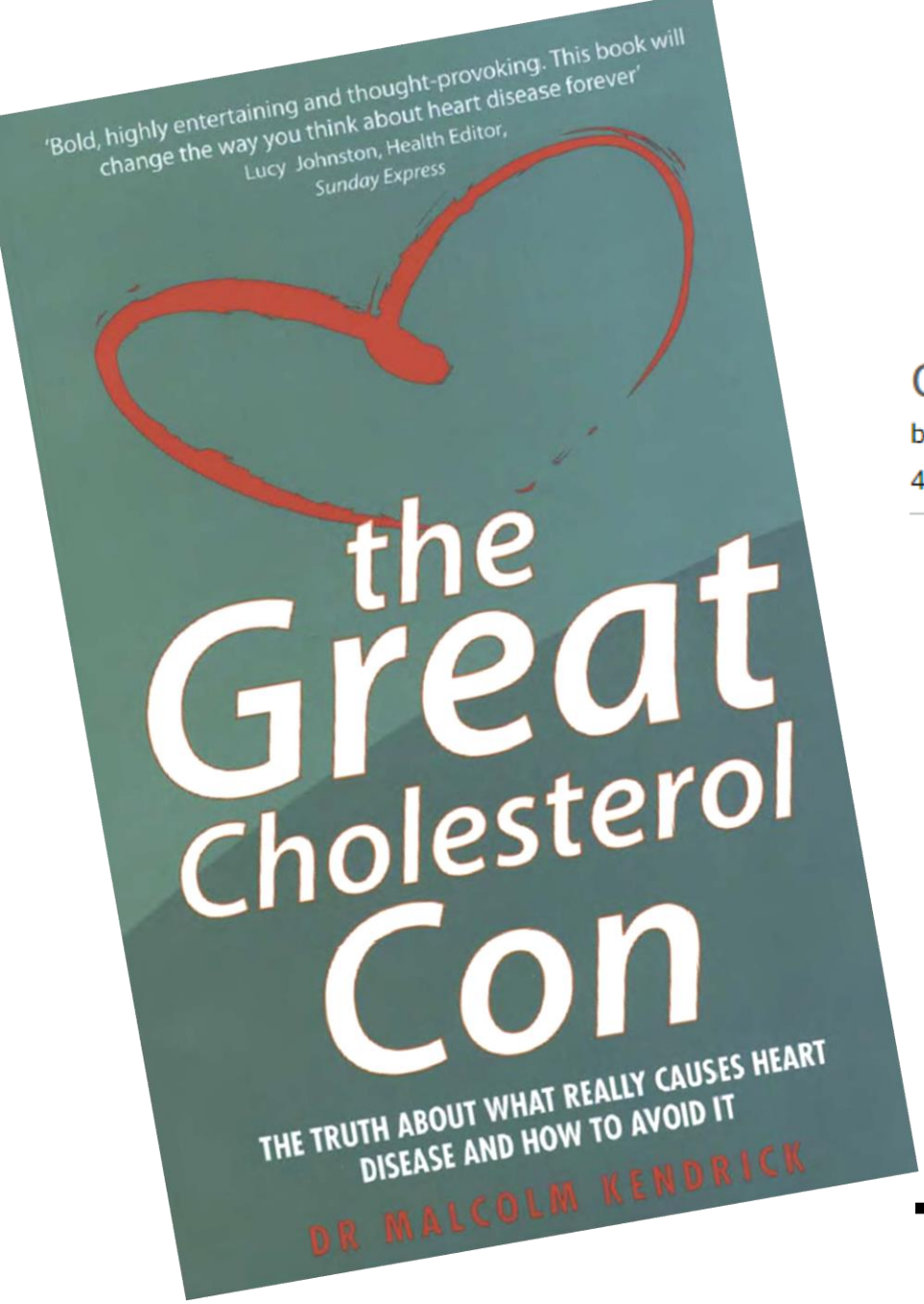

October 1, 2008

by Malcolm Kendrick (Author)

4.6 ★★★★½ 1,481 ratings

The Great Cholesterol Con

The truth about what really causes heart disease and how to avoid it

By Dr Malcolm Kendrick

Book Summary by **Lies are Unbekoming**

unbekoming.substack.com

September 2023 - v1.0

Contents

Cover letter

Hello there

If you are reading this, I suspect that you know that the Cholesterol/Statin story we have been told and sold, is not quite right. In fact according to Dr Paul Marik, it's a fraud:

Karelia - Lies are Unbekoming (substack.com)

> "I have to unlearn everything I've been taught"

As you read through this summary of Kendrick's wonderful book, the magnitude of this lie will start to dawn on you. It is one of the mega, allopathic medicine, industrial constructions. Most cardiologists make most of the income from "managing" statin use for their patients.

We should never forget that:

> "It is difficult to get a man to understand something when his salary depends on his not understanding it"

The "man" in this case is the cardiologist.

The model I have used to summarize each chapter is:

- Executive Summary
- Key takeaways
- Excerpts

Any errors are my own, and I strongly encourage you to buy Kendricks's book, as this summary is but a pale imitation, and also buy a copy for a friend who is on, or on his way towards, statins.

With that said, I hope you enjoy this summary, and that Kendrick's work helps you orient yourself more honestly towards the subjects of cholesterol and statin use.

I hope you can make better decisions because of this work.

Regards

Lies are Unbekoming

September 2023

Introduction

Summary:

This introduction criticizes the prevailing belief in the Diet-Heart Hypothesis, also known as the Cholesterol Hypothesis, which states that consuming foods high in cholesterol and saturated fat leads to increased cholesterol levels in the blood, leading to heart disease. The author argues that this hypothesis is oversimplified and flawed, highlighting the inconsistencies and contradictions in heart disease research. The chapter discusses the history of cholesterol-lowering drugs called statins, their accidental discovery, and the subsequent pharmaceutical industry's focus on developing and promoting these drugs.

Bullet Points:

1. The author challenges the Diet-Heart Hypothesis, which claims that high cholesterol and saturated fat intake cause heart disease.
2. The chapter exposes the flawed research and contradictory studies surrounding heart disease and its causes.
3. It discusses the initial failures of cholesterol-lowering drugs discovered in the 1960s and 1970s, which increased mortality rates.
4. The chapter highlights the commercial interests behind promoting the cholesterol hypothesis and the subsequent development of statin drugs by pharmaceutical companies.
5. The accidental discovery of lovastatin in a Chinese plant led to the development of the first statin drug, Mevacor, by Merck.
6. The pharmaceutical industry capitalized on the success of statins and conducted clinical trials to support their effectiveness in reducing cholesterol and preventing heart disease.
7. The chapter questions the true benefits of statins, suggesting that their protective effects are minimal and exaggerated.
8. The author argues that statins have significant side effects, which are often downplayed, and questions the credibility of experts who promote statin use.

Quotes:

1. "For every complicated problem, there is a solution that is simple, direct, understandable, and wrong." - H.L. Mencken
2. "In a world dominated by PR-controlled spin, critics of the cholesterol hypothesis get very little airtime."

Chapter 1 – What is heart disease anyway

Summary:

This chapter explores the concept of heart disease, focusing on its underlying cause and the complexity of its manifestations. While the term "heart disease" is often used, it lacks specificity because there are numerous diseases that affect the heart, each with its own complexities and medical terminology. The primary culprit responsible for the majority of deaths related to heart disease is atherosclerosis, which refers to the buildup of fatty deposits (atheromas) within the arteries that supply blood to the heart. Plaques, which develop within the arteries, progress from initial fatty streaks and can eventually calcify, causing the arteries to become rigid and less flexible. The most significant danger lies in the "unstable" plaque stage, where the plaque ruptures, triggering blood clot formation and potentially leading to a complete blockage of the artery and subsequent heart attack.

Key Takeaways:

1. Heart disease encompasses various conditions affecting the arteries supplying blood to the heart.
2. Atherosclerosis is the primary cause of heart disease, characterized by the formation of plaques within the arterial walls.
3. Plaques can develop in arteries throughout the body, not just the coronary arteries.
4. Unstable plaques pose the greatest risk, as they can rupture, leading to the formation of blood clots and potentially causing heart attacks.
5. Heart attacks occur when the blood supply to the heart muscle is blocked, resulting in localized cell death.
6. Various medical interventions, such as clot-busting drugs and angioplasty with stenting, are employed to treat heart attacks.
7. Different types of strokes can result from plaques forming in arteries supplying blood to the brain.
8. The understanding of heart disease is complex, and there are still many unknowns and unanswered questions in the field.

Excerpts:

- The big daddy, the one that kills most people, is not truly a disease of the heart at all. It is a disease of the arteries that supply blood to the heart, and is usually called atherosclerosis. 'Athero', or 'atheroma', describes the build-up of grey-white/fatty gunk in the artery walls. These thickenings are sometimes called atheromatous plaques, or just plaques. 'Sclerosis' means general thickening and hardening.
- Plaques are generally thought to progress from an initial 'fatty streak', as found in the arteries of most ten-year-olds, which gradually becomes bigger and thicker. Eventually, the plaques can reach the point where they actually calcify, turning arteries into stiff, almost bonelike tubes. The process of turning from a fatty streak into a calcified plaque is supposed to take years and years, although no one knows for sure how long things take because no one has ever hung around to watch an individual plaque going through its lifecycle (not in a human being, at least). The general assumption seems to be that it all takes decades.

Chapter 2 - What is cholesterol, anyway? (And what's a fat?)

Summary:

This chapter discusses the misconceptions surrounding cholesterol and its importance in the body. While cholesterol is often portrayed as something harmful, it is actually essential for life and plays various vital roles. Cholesterol is necessary for building brain synapses, producing vitamin D, maintaining cell membranes, synthesizing sex hormones, and aiding in bile production for digestion. The chapter emphasizes that cholesterol is so crucial that our bodies have mechanisms to produce it even if our dietary intake is insufficient. The chapter also delves into the relationship between fats and cholesterol, debunking the belief that consuming saturated fat directly raises cholesterol levels. It explains that the liver, a complex chemical factory, synthesizes cholesterol from different building blocks and that there is no direct conversion of saturated fat into cholesterol.

Key Takeaways:

1. Cholesterol is essential for life and performs vital functions in the body.
2. Many misconceptions surround cholesterol, leading to the belief that it is entirely harmful.
3. Cholesterol is necessary for brain function, vitamin D synthesis, cell membrane integrity, sex hormone production, and bile production.
4. The liver is capable of producing cholesterol even if dietary intake is insufficient.
5. Eating foods rich in cholesterol does not significantly impact blood cholesterol levels.
6. Saturated fats are not directly converted into cholesterol in the body.
7. The liver primarily synthesizes saturated fats when converting excess glucose into fat.
8. The belief that saturated fats are inherently unhealthy may be unfounded, as our bodies naturally produce and utilize them.

Excerpts:

- "I sometimes remark to those who think my ideas on heart disease are entirely batty, 'Why do you think that an egg yolk is full of cholesterol?' Answer: because it takes one hell of a lot of cholesterol to build a healthy chicken. It also takes a hell of a lot of cholesterol to build, and maintain, a healthy human being."
- "The liver is quite capable of turning one type of chemical into almost any other type of chemical. It can turn protein into sugar, sugar into fat, glycerol into glucose, etc. If you eat a great deal of carbohydrate (which is all converted into glucose), the liver will then convert excess glucose into fat. And what sort of fat does the liver choose to make in this situation? Super-healthy unsaturated fats? Ah, that would be a no. When the liver makes fats, it makes saturated fats, and saturated fats alone."

Chapter 3 – You cannot have a cholesterol level

Summary:

This chapter challenges the commonly held belief that individuals have a cholesterol level in their bloodstream. The author explains that cholesterol does not dissolve in water, including blood, and therefore needs to be transported through lipoproteins. The chapter dives into the different types of lipoproteins and their roles in transporting cholesterol and fats. The author critiques the terminology used in the medical field to describe lipoproteins, highlighting the confusion it creates. The chapter concludes by questioning the prevailing cholesterol hypothesis, which states that consuming saturated fat raises LDL (low-density lipoprotein) levels and contributes to heart disease, pointing out the lack of a plausible biological mechanism for this claim.

Key takeaways:

1. There is no cholesterol level in the bloodstream; cholesterol is transported through lipoproteins.
2. Lipoproteins are responsible for transporting both cholesterol and fats in the body.
3. Different types of lipoproteins exist, including chylomicrons, VLDL (very low-density lipoprotein), IDL (intermediate density lipoprotein), LDL (low-density lipoprotein), and HDL (high-density lipoprotein).
4. The terminology used to describe lipoproteins is confusing and inconsistent.
5. Eating saturated fat does not raise LDL levels, and there is no biological mechanism to support this claim.
6. The cholesterol hypothesis has undergone multiple adaptations and lacks a consistent explanation for the relationship between saturated fat and LDL levels.
7. LDL levels remain relatively constant regardless of dietary fat intake or VLDL levels.
8. The prevailing belief that high cholesterol is harmful has led to a continuous lowering of the target cholesterol level, without strong evidence to support this approach.

Excerpts:

- "The fact is that, after all that I have written about cholesterol and related subjects … you do not actually have a cholesterol level in your bloodstream at all."
- "If you eat saturated fat, this will reduce the number of LDL receptors – the things that lock on to LDL and pull it out of the bloodstream – thus causing the LDL level to rise."

Chapter 4 – What are statins and how do they work?

Summary:

This chapter discusses statins, their types, and how they work. The author begins by listing various statins available in the market, highlighting the withdrawal of cerivastatin due to severe side effects. The chapter explains that all statins, including atorvastatin (Lipitor) and simvastatin (Zocor), are HMG-CoA Reductase Inhibitors, meaning they inhibit the enzyme responsible for cholesterol synthesis. Contrary to popular belief, statins do not directly lower LDL cholesterol by reducing VLDL production; instead, they increase the number of LDL receptors, leading to more efficient removal of LDL cholesterol from circulation. The chapter also mentions Familial Hypercholesterolaemia (FH), a condition characterized by extremely high LDL levels due to a lack of LDL receptors.

Key takeaways:

1. There are several types of statins available, but cerivastatin was withdrawn due to severe side effects.
2. Statins, including atorvastatin and simvastatin, inhibit the enzyme HMG-CoA reductase involved in cholesterol synthesis.
3. Statins work by increasing the number of LDL receptors, facilitating the removal of LDL cholesterol from circulation.
4. VLDL levels do not determine LDL levels; it is the number of LDL receptors that controls LDL removal.
5. Familial Hypercholesterolaemia (FH) is a condition characterized by high LDL levels due to a lack of LDL receptors.
6. Statins have multiple actions beyond cholesterol lowering, known as pleiotropic effects.
7. These pleiotropic effects of statins include improving endothelial function, reducing oxidative stress, and inhibiting inflammatory responses.
8. The non-cholesterol-lowering actions of statins may be responsible for their benefits in treating cardiovascular disease.

Excerpts:

- "All statins are also known as HMG-CoA Reductase Inhibitors – because inhibiting the actions of the enzyme known as HMG-CoA reductase is what they actually do."
- "In fact, the LDL level is controlled by the number of LDL receptors in the body. The more LDL receptors you have, the more LDL will be removed from the circulation."

Chapter 5 – The rise and rise of the cholesterol hypothesis

Summary:

This chapter delves into the history and rise of the cholesterol hypothesis, which suggests that high cholesterol levels in the blood lead to heart disease. The chapter begins by highlighting the discoveries of Rudolf Von Virchow and Dr. Nikolai Anitschkov, who found cholesterol plaques in arteries and conducted dietary experiments on rabbits, respectively. It explores how the diet-heart hypothesis gained traction after World War II, when heart disease started to become a major concern. The pivotal role of Ancel Keys and his Seven Countries Study is discussed, along with the emergence of other supporting evidence, such as the Framingham Study and observations of familial hypercholesterolemia. The chapter also addresses the flawed interpretations and biases that shaped the cholesterol hypothesis and contributed to its dominance.

Key takeaways:

1. The cholesterol hypothesis, suggesting that high cholesterol causes heart disease, gained prominence after World War II when heart disease became a significant health issue.
2. Rudolf Von Virchow's discovery of cholesterol plaques in arteries and Nikolai Anitschkov's dietary experiments on rabbits were early influences on the hypothesis.
3. Ancel Keys and his Seven Countries Study played a pivotal role in popularizing the diet-heart hypothesis.
4. The Framingham Study and observations of familial hypercholesterolemia further supported the idea that high cholesterol levels were linked to heart disease.
5. The interpretation of data and selective focus on supporting evidence contributed to the dominance of the cholesterol hypothesis.
6. The diet-heart hypothesis became widely accepted despite flaws in studies and inconsistent findings.
7. The arrival of statins, which lower cholesterol levels and prevent heart disease, solidified the cholesterol hypothesis's stronghold.
8. The chapter challenges the cholesterol hypothesis and sets the stage for further arguments against its validity.

Excerpts:

- "To find out how the cholesterol hypothesis actually started, we have to travel back far into the past, to Berlin in the mid-19th century."
- "Faced with the evidence above, the case seemed open and shut. A few negative studies here and there were easily explained away. For almost everyone, it was clear that the 'totality of the evidence' pointed only one way. The diet-heart/cholesterol hypothesis had to be correct. Only a flat-Earth, creationist lunatic could possibly argue against it."

Chapter 6 - Eat whatever you like (Diet has nothing to do with heart disease)

Summary:

This chapter challenges the prevailing belief that saturated fat in the diet causes heart disease. The author presents contradictory evidence and highlights various paradoxes that question the validity of the diet-heart hypothesis. The chapter discusses studies that demonstrate no significant relationship between saturated fat consumption and heart disease, such as the Malmo study and the Women's Health Intervention in the USA. The author also examines data from the World Health Organization, showing that countries with the lowest saturated fat consumption have higher rates of heart disease compared to countries with higher saturated fat consumption. The chapter concludes with the acknowledgment that certain substances, such as omega-3 fatty acids and moderate alcohol consumption, may have protective effects against heart disease.

Key takeaways:

1. Introduction of quotes from authoritative sources criticizing the diet-heart hypothesis.
2. Examination of the Masai villagers of Kenya, who had high cholesterol and saturated fat intake but low rates of heart disease, contradicting the diet-heart hypothesis.
3. Analysis of the impact of rationing in the UK during and after WWII, which restricted saturated fat consumption but did not lead to a decrease in heart disease rates.
4. Discussion of the French Paradox, where the French consume more saturated fat than the UK but have lower rates of heart disease.
5. Critique of ad-hoc hypotheses used to explain paradoxes and protect the diet-heart hypothesis.
6. Examination of studies contradicting the diet-heart hypothesis, such as the Malmo study and the Women's Health Intervention in the USA.
7. Presentation of the author's 14-country study comparing saturated fat consumption and heart disease rates, showing an inverse relationship.
8. Acknowledgment of the potential benefits of omega-3 fatty acids and moderate alcohol consumption in relation to heart disease.

Excerpts:

- "A total lack of any supportive evidence does not necessarily prove that fat/saturated fat in the diet does not cause heart disease. Absence of evidence is not evidence of absence. Let me now mention a few of the most powerful pieces of evidence that directly contradict the diet-heart hypothesis."
- "Every single one of the seven countries with the lowest saturated-fat consumption has significantly higher rates of heart disease than every single one of the seven countries with the highest saturated-fat consumption."

Chapter 7 - A raised cholesterol/LDL level does not cause heart disease

Summary:

In the comprehensive chapter, the author undertakes a deep dive into the complexities and contradictions surrounding the cholesterol hypothesis, particularly its relationship with heart disease in both men and women. The chapter begins by challenging the widely accepted notion that raised cholesterol levels are a primary cause of heart disease. It presents evidence that contradicts this hypothesis, such as the fact that high cholesterol levels are not a risk factor for strokes. The chapter also explores the "Japanese paradox," where an increase in cholesterol levels has been associated with a decline in both stroke and heart disease rates.

In the context of men, the author acknowledges that raised cholesterol levels in men under the age of 50 are associated with an increased risk of heart disease. However, they argue that the evidence is contradictory and insufficient to establish a definitive causal relationship. The chapter also discusses familial hypercholesterolaemia (FH), a condition characterized by extremely high LDL cholesterol levels. While FH is often cited as strong evidence supporting the cholesterol hypothesis, the author challenges this notion and explores alternative explanations.

The chapter further questions the LDL hypothesis, which posits that high levels of LDL cholesterol cause atherosclerosis. The author criticizes the lack of a clear biological mechanism linking LDL to heart disease and highlights the inconclusive theories surrounding oxidized LDL and atherosclerosis. The chapter also points out the inconsistency in the development of atherosclerosis, questioning why only specific areas of arteries are affected if LDL is the main cause. The author explores the possibility that flow turbulence in certain arterial areas leads to damage and plaque formation.

For women, the chapter scrutinizes the idea that female sex hormones offer protection against high cholesterol levels. It cites studies like the Heart and Estrogen/Progestin Study (HERS), which found that hormone replacement therapy (HRT) actually increased the risk of heart disease in women.

The chapter concludes by examining conflicts of interest and industry influence in cholesterol research, suggesting that these factors may have skewed our understanding of cholesterol's role in heart disease. Overall, the chapter argues that the conventional wisdom linking high cholesterol levels to heart disease is flawed and calls for a more nuanced understanding of the various risk factors involved.

Key takeaways:

Challenging the Cholesterol Hypothesis

1. The chapter critically examines the mainstream belief that raised cholesterol levels cause heart disease, presenting paradoxical data such as the Japanese paradox where higher cholesterol levels coincided with lower rates of heart disease and strokes.
2. The cholesterol hypothesis has evolved over time, initially focusing on dietary cholesterol and later shifting to LDL cholesterol as the primary culprit. Despite this, the exact mechanism by which LDL contributes to heart disease remains unclear.

Mortality and Cholesterol Levels

1. Both low and high cholesterol levels are associated with increased overall mortality risk. For men, a U-shaped curve exists between cholesterol levels and mortality, while women with cholesterol levels around 5.5mmol/l have the healthiest mortality profile.
2. Several studies across different countries support the association between low cholesterol levels and higher all-cause mortality rates.

Gender Differences

1. Women generally have higher cholesterol levels but lower rates of heart disease compared to men. The hypothesis that female hormones protect against heart disease has been debunked.
2. For men under 50, higher cholesterol levels are associated with increased heart disease risk, but this association diminishes with age.

Familial Hypercholesterolaemia (FH)

1. FH is often cited as strong evidence for the cholesterol hypothesis. However, the chapter argues that FH may increase heart disease risk through mechanisms other than just high LDL levels.

LDL and Atherosclerosis

1. The chapter questions the role of LDL in atherosclerosis, highlighting that the disease develops in discrete plaques and that people with low LDL levels can still develop heart disease.
2. Various competing theories exist regarding LDL's role in heart disease, including the oxidized LDL hypothesis and the response to injury hypothesis.

Confounding Factors and Limitations

1. The chapter discusses the influence of other factors like flow turbulence in arteries, blood clot formation, and lipoprotein(a) [Lp(a)] levels in heart disease risk.
2. It also addresses conflicts of interest and industry influence in cholesterol research, suggesting a need for a more nuanced understanding of heart disease risk factors.

Excerpts:

- "A stroke happens when blood supply to a part of the brain is cut off. The brain tissue downstream dies, and the victim will lose some brain function. A small stroke is sometimes known as a transient ischaemic attack (TIA); a big stroke can be fatal or leave the victim with severe disability."
- "The Japanese paradox reveals that in Japan, as cholesterol levels went up, death rates from two of the main cardiovascular diseases fell dramatically. These data strongly suggest a causal connection between raised cholesterol levels and cardiovascular disease is unlikely."
- "The healthiest cholesterol level is somewhere around about 5.5mmol/l... In study after study, total cholesterol was as good a predictor of death as LDL alone – if not better."
- "Under the age of 50, your cholesterol level doesn’t really make much difference to your risk of dying. However, if your cholesterol level starts falling, watch out. You are at a terrible risk – a 429 per cent increased risk of death per 1mmol/l cholesterol drop, according to the Framingham Study."

- "Women, therefore, present a problem for the cholesterol hypothesis. Higher cholesterol levels than men, but much lower rates of heart disease. This must mean that… Eager schoolboy: 'Sir, sir… it must mean that raised cholesterol levels don't cause heart disease.' Teacher: 'You stupid boy. We know that raised cholesterol levels cause heart disease. Anybody else?' Teacher's pet: 'It means that women must be protected against a high cholesterol level, sir.' (Smug grin.) Teacher: 'Well done, Snodgrass, that is the correct answer.'"
- "In fact, there has never been a study – ever – showing that female sex hormones protect against heart disease in humans... It came into existence for one reason, and one reason only. To provide an explanation for the alleged female 'protection' against raised cholesterol levels. It was based on no evidence whatsoever. In fact, every time it was studied it was disproved, yet it still failed to die. It was only a very large, controlled clinical study that finally killed it."

Chapter 8 - Statins and heart disease

Summary:

In the chapter, the author provides a comprehensive analysis of statins, commonly prescribed cholesterol-lowering drugs, and their impact on heart disease. The chapter questions the prevailing belief that statins work primarily by lowering LDL cholesterol levels to protect against heart disease. It points out that even with reduced LDL levels, the relative risk of dying from heart disease only decreases by about 30%, suggesting other contributing factors.

The chapter distinguishes between two types of men: those with diagnosed heart disease (Type A) and those without (Type B). While statins offer cardiovascular protection and reduced overall mortality for Type A men, they only reduce the rate of cardiovascular disease for Type B men without affecting overall mortality. The author criticizes the pharmaceutical industry for creating a hype around statins, especially when primary prevention trials show no overall health benefit.

The financial burden of statins is also discussed, with costs exceeding £1 billion per year in the UK alone. This is in addition to other associated costs like cholesterol tests and regular check-ups. The chapter also delves into the potential harms of statins, drawing parallels with the Vioxx controversy and emphasizing the lack of comprehensive monitoring systems for adverse drug reactions.

One significant side effect explored is the potential for statins to cause heart failure by blocking the production of coenzyme Q10 (Q10), essential for ATP production in heart muscle cells. The author speculates that pharmaceutical companies avoided combining statins with Q10 to sidestep admitting potential side effects.

The chapter concludes by challenging the idea that statins work solely by lowering LDL levels. It presents evidence that statins can be beneficial even without high LDL levels and that the degree of LDL lowering doesn't necessarily correlate with protection against heart disease. The author emphasizes the need for careful monitoring and scrutiny of statins' efficacy and potential side effects.

Key takeaways:

1. Statins lower LDL cholesterol but don't fully mitigate heart disease risk, and their effectiveness varies among different age groups and genders.
2. The Heart Protection Study (HPS) suggests statins benefit a broad spectrum of high-risk individuals, even those with normal or low cholesterol, but it omits total mortality data for women, raising questions about the drug's true benefits.
3. Despite the lack of mortality benefits for women, GPs are still encouraged to prescribe statins to them, and the drug can cause severe birth defects during pregnancy.
4. Statins may induce heart failure by inhibiting the production of coenzyme Q10 (Q10), essential for ATP production in heart muscle cells. Merck considered but did not proceed with combining statins with Q10, possibly to avoid acknowledging side effects.
5. Statins have a range of potential side effects, including muscle pains, weakness, memory loss, and increased cancer risk. Their impact on life expectancy is limited for men without heart disease and non-existent for women.

6. The financial burden of statins is considerable, including the costs of the drug itself, cholesterol tests, GP appointments, and screenings, especially given their debatable efficacy in primary prevention.
7. Statins represent a significant financial burden, costing the healthcare system over £1 billion annually, with additional expenses like yearly cholesterol tests and regular check-ups.
8. Statins carry risks of both severe and subtle side effects, ranging from rhabdomyolysis, which can lead to kidney failure, to more insidious issues like fatigue, muscle pains, and cognitive impairments.
9. Specific statins like cerivastatin and simvastatin have been linked to fatalities, underscoring the need for better monitoring systems, as exemplified by the Vioxx controversy.
10. Statins may also cause polyneuropathy, characterized by facial weakness and sensory changes, and have been associated with an increased risk of cancer-related deaths, particularly in hyper-responders to the drug.

Excerpts:

- "Statins do not save lives in women... Statins do not save lives in women... Statins do not save lives in women... Is it possible to highlight how important this fact actually is?"
- "However, if you give statins to men who do not have heart disease, while you do reduce the rate of cardiovascular disease, there is no benefit on overall mortality. None at all."
- "Rosuvastatin (Crestor) was launched a couple of years ago, or so. In the first year of its launch, $1 billion was spent on sales and marketing. Positive findings can then be hyped relentlessly, and the health editors of newspapers wined and dined."
- "This sorry saga highlights the fact that a drug could potentially kill hundreds of thousands of people without anyone actually noticing. You may think that this must be impossible. There have to be agencies out there monitoring this sort of thing on a day-to-day basis, combing through the statistics with a fine-tooth comb? Not so – and anyway, how could they?"
- "The major problem with statins though, is not that they kill a few hundred people here and there, it is that they create a huge burden of insidious side effects, most of which go unnoticed, or are dismissed."
- "Currently, the combined might of the pharmaceutical industry plus opinion leaders are pressing hard for ever-greater LDL lowering and they are deliberately blurring the distinction between primary and secondary prevention. I think that this must be resisted, as it will lead to more and more people being put on very high doses of very potent statins, which would be a complete disaster."

Chapter 9 - What causes heart disease?

Summary:

The chapter investigates the role of stress in heart disease, starting with the French paradox, where the French have low heart disease rates despite conventional risk factors. The author dismisses common explanations like garlic and red wine and focuses on cultural differences in eating habits. The chapter delves into the complexities of defining and measuring stress, introducing the Hypothalamic-Pituitary-Adrenal (HPA) axis, a neurohormonal system that regulates stress and relaxation responses. It discusses how cortisol, the primary stress hormone, affects metabolism and how a dysfunctional HPA-axis can lead to metabolic abnormalities and increased heart disease risk.

The chapter further explores the relationship between HPA-axis dysfunction, cortisol levels, and heart disease by examining three initiators: depression, smoking, and spinal cord injury. Depression and HPA-axis abnormalities are closely linked, and both contribute to heart disease risk. Smoking, although seemingly unrelated, affects the HPA-axis in ways similar to depression and Cushing's disease. Spinal cord injuries also significantly impact the HPA-axis, leading to various abnormalities that increase heart disease risk.

Key takeaways:

Stress and Heart Disease:

1. The French paradox highlights low heart disease rates in France despite conventional risk factors, pointing to stress as a key factor.
2. Stress, both physical and psychological, can trigger either healthy or unhealthy responses, with the latter characterized by high cortisol levels leading to metabolic abnormalities.

Cortisol and Metabolism:

3. High cortisol levels, as seen in conditions like Cushing's disease and long-term steroid use, negatively affect metabolism and increase heart disease risk.

Neurohormonal System:

4. The HPA-axis, part of the neurohormonal system, plays a crucial role in stress responses. Dysfunctional HPA-axis and elevated cortisol levels contribute to metabolic syndrome, increasing heart disease risk.

Risk Factors and Conditions:

5. Conditions like depression, smoking, and spinal cord injury are associated with HPA-axis dysfunction and elevated cortisol levels, thereby increasing heart disease risk.
6. Psychological stressors and lifestyle factors such as high blood pressure and abdominal obesity are directly linked to HPA-axis dysfunction and abnormal cortisol levels.

Mechanisms and Studies:

7. The INTERHEART study and the response to injury hypothesis identify multiple risk factors and mechanisms, including unhealthy stressors and high blood sugar levels, that can be traced back to HPA-axis dysfunction and elevated cortisol levels, contributing to heart disease.

Excerpts:

- "Could this attitude to food and eating somehow be the reason for the difference in heart-disease rates between the two countries? And if so, how? Was it something to do with being relaxed while trying to digest food, rather than shovelling it down as fast as possible?"
- "Visceral fat doesn't build up all by itself, just for the hell of it, before going on to create Syndrome X. Something has to cause the build-up of visceral fat in the first place. To argue otherwise is to end up in the mad genetics/magic argument again: 'Visceral fat accumulation just, sort of, happens. We don't know why, so it must be due to genetic susceptibility.'"
- "Depression first. It has long been known that people with depression are at a greatly increased risk of heart disease, but no one seems to be entirely certain why. However, when it has been studied, it is clear that in depression you always find HPA-axis abnormalities."
- "Two pieces of evidence. The first is taken from a study that looked at the effect of smoking a cigarette on cortisol and DHEA (dehydroepiandrosterone) levels. Cortisol and DHEA increased significantly within 20 minutes and reached peak levels... Thus, cigarette smoking produced nicotine dose-related effects on HPA hormones and subjective and cardiovascular measures."

Chapter 10 - The stress hypothesis – does it fit the facts?

Summary:

This chapter explores the stress hypothesis as an explanation for the variations in heart disease between populations and the fluctuations within populations over time. It examines the concept of social dislocation as the most deadly long-term stressor that can affect entire populations and discusses various forms of social dislocation, including forced relocation, migration, and societal upheaval. The chapter presents evidence from different populations, such as Finnish Karelians, Scottish emigrants, Japanese migrants, Australian Aboriginals, Asian Indian emigrants, and Eastern Europeans, to support the hypothesis that social dislocation contributes to heart disease.

Key takeaways:

1. Heart disease rates have varied significantly between different populations and within populations over time.
2. Social dislocation, defined as the disruption of social and family networks, can be a major stressor affecting entire populations.
3. Forced relocations, such as the case of Finnish Karelians and Scottish emigrants, have been associated with increased heart disease rates.
4. Migration to an alien culture, accompanied by factors like cultural incompatibility, racism, and job insecurity, can lead to social dislocation and higher heart disease rates.
5. Retaining cultural identity and social support can protect against heart disease, as observed in the case of Japanese migrants who maintained their traditional lifestyle.
6. Australian Aboriginals, Asian Indian emigrants, and Eastern Europeans demonstrate metabolic abnormalities associated with HPA-axis dysfunction, including obesity, diabetes, dyslipidemia, and hypertension.
7. Social dislocation is linked to poor health outcomes, depression, and high rates of suicide in Australian Aboriginal communities.
8. Eastern European countries experienced a rise in heart disease rates following social and economic instability, with factors like poor nutrition, alcohol consumption, and depressed healthcare systems contributing to increased mortality.

Excerpts:

- "The most deadly long-term stressor that can affect entire populations is something that I define as 'social dislocation' – something that as a concept, needs some further explanation."
- "Personally, I don’t think that there can be any doubt that the main cause of heart disease in Australian Aboriginals is an extreme form of social dislocation. They demonstrate every single step from unhealthy stressor, through HPA-axis dysfunction to heart disease."

Chapter 11 - Other forms of stress

Summary:

This chapter explores the various forms of stress that contribute to heart disease. The author emphasizes that stressors, beyond social dislocation, play a significant role in the development of heart disease. The chapter highlights the impact of stressors on the HPA-axis, which is responsible for the stress response. The author discusses the importance of social hierarchy and its correlation with heart disease risk, showing that individuals in lower social positions are more vulnerable to stress-related health issues. Furthermore, the chapter examines the effects of cocaine use, the influence of football game results on mortality rates, and the increased risk of heart disease on Monday mornings.

Key takeaways:

1. Stressors, beyond social dislocation, are significant contributors to heart disease.
2. Psychological stressors that make individuals feel trapped and lacking control have a detrimental effect on health.
3. Individuals in higher social positions have better protection against heart disease.
4. Gender differences exist in the vulnerability to heart disease, with women generally experiencing a lower risk than men.
5. Women exhibit better coping mechanisms and social support networks, which contribute to their reduced risk of heart disease.
6. Cocaine use has a profound impact on the heart and can lead to sudden cardiac death and other cardiovascular issues.
7. Football game results have been associated with variations in mortality rates, particularly in men.
8. Certain periods, such as Monday mornings, are associated with increased risk of heart disease and sudden cardiac death.

Excerpts:

- "Those low down on the ladder, be it rats, monkeys, or humans, are at far greater risk of dying of heart disease. It seems that social inequality leads, inevitably, to health inequality."
- "Women are better at recognizing that they are stressed and have better coping mechanisms. Their HPA-axes are not provoked into such violent reactions by stress, and if they are, they have a better network of social support than men to cope with it."

GLOSSARY

Acromegaly: a chronic disease, characterised by enlargement of the bones of the head, hands and feet and the swelling of soft tissue. This condition is caused by excessive secretion of growth hormone by the pituitary gland.

Adipose: of, relating to or containing fat.

Aneurysm: a sac formed by the extreme dilation of the wall of a blood vessel.

Angioplasty: a surgical technique for restoring normal blood flow through a blocked artery, either by inserting and inflating a balloon into the affected section or by using a laser beam.

Arrhythmia: any variation in the normal rhythm of the heartbeat.

Atheroma: a fatty deposit on or within the inner lining of an artery, which can often obstruct blood flow.

Atherosclerosis: a degenerative disease of the arteries, caused by build-up of fatty deposits on the inner lining of arterial walls.

CABG: coronary artery bypass graft.

Cerebral haemorrhage: a form of stroke caused by bleeding in the brain due to a burst artery.

CHD: coronary heart disease.

Chyle: a milky fluid consisting of lymph and emulsified fat globules. It is formed in the small intestine during digestion.

Chylomicron: a large lipoprotein that enables fatty substances to be transported in the blood and chyle.

Cis bond: part of a molecular structure featuring a double bond with hydrogen atoms on the same side.

Cohort: a group of people with a statistic in common.

Cyanosis: a bluish-purple discolouration of skin and mucous membranes, usually caused by a deficiency of oxygen in the blood.

Endocrine glands: glands that secrete hormones directly into the bloodstream. These include the pituitary, adrenal, thyroid, testes and ovaries.

Endothelium: a tissue, comprising a single layer of cells, that lines the blood and lymph vessels, the heart and other cavities.

Epidemiology: the branch of medicine concerned with the study of epidemic diseases.

Ester: any one of a class of compounds produced by reaction between acids and alcohols, with the elimination of water.

Externa: connective tissue that surrounds a blood vessel and holds it together.

Familial hypercholesterolaemia (FH): a hereditary condition of having high levels of cholesterol in the blood.

Glia: a delicate web of connective tissue surrounding and supporting nerve cells.

HDL: high density lipoprotein.

Heterozygous FH: a form of FH in which a person inherits the FH gene from one parent.

Homozygous FH: a form of FH in which a person inherits the FH gene from both parents.

HRT: hormone replacement therapy.

Hyperlipidaemia: raised cholesterol levels in the blood.

Hypertension: raised blood pressure levels

Hyponatremia: an abnormally low concentration of sodium in the blood.

Hypothalamus: a control centre at the base of the brain that is triggered by states such as hunger, thirst and fear.

IDL: intermediate density lipoprotein.

Infarction: the formation of an infarct (a localised area of dead tissue that is caused by restriction of blood flow to that area).

LCAT: lecithin cholesterol acyltransferase, an enzyme.

LDL: low density lipoprotein.

Lipid: any one of a large group of organic compounds that are esters of fatty acids.

Lipoprotein: a protein-based capsule that enables substances such as cholesterol and fats to travel within the body.

Macrophage: any large phagocytic cell in the blood, lymph and connective tissue of vertebrates.

Media: the middle layer of the wall of a blood or lymph vessel.

MI: Myocardial Infarction – a localised necrosis resulting from obstruction to the blood supply.

Necrosis: the death of body cells – usually in a localised area – often due to interruption of blood supply.

Ophthalmology: the branch of medicine relating to the eye and its diseases.

Phagocyte: an amoeboid cell or protozoan that engulfs particles such as food substances of invading microorganisms.

Phenotype: the physical constitution of an organism as determined by the interaction of its genetic constitution and the environment.

Pituitary gland: the major endocrine gland, attached to the base of the brain by a stalk. It comprises two lobes, which secrete hormones that affect development of the sex glands, skeletal growth and the functioning of the other endocrine glands.

Placebo: an inactive substance or form of therapy given to a patient, usually to compare its effects with those of a real treatment or drug.

Plaque: a thickened area in the artery walls, formed by the build-up of fatty substances.

Pleitropism: the condition of a gene of affecting more than one characteristic of the phenotype.

Smith-Lemli-Opitz Syndrome (SLOS): a medical condition characterised by extremely low cholesterol levels.

Synapse: the point at which a nerve impulse transfers from the terminal portion of an axon – a long extension of a nerve cell that conducts nerve impulses from the cell body – to an adjacent neuron.

Thrombosis: the formation of blood clots within a blood vessel or the heart, often resulting in restricted blood flow.

Trans bond: part of a molecular structure in which a hydrogen atom sits either side of a double carbon bond.