

DISCOVER YOUR
METABOLIC TYPE AND
RENEW YOUR LIVER FOR LIFE



Regenerative Health

Kristin Kirkpatrick, MS, RDN

Ibrahim Hanounch, MD

*Authors of *Skinny Liver**

Praise for *Skinny Liver*

“*Skinny Liver* sounds a powerful wake-up call that clearly connects dietary and other lifestyle choices to potentially life-threatening liver disease. More importantly, Kirkpatrick deftly empowers the reader with a scientifically validated, comprehensive, user-friendly plan to prevent and even reverse what has become a major health epidemic.”

—David Perlmutter, MD, #1 *New York Times* best-selling author

“Fatty liver disease is a silent epidemic that is affecting 30 percent of all Americans. Grounded in cutting-edge research, Kristin Kirkpatrick’s accessible, practical program will help you prevent liver disease and safeguard your overall health.”

—Mark Hyman, MD, Director, Cleveland Clinic Center for Functional Medicine, #1 *New York Times* best-selling author

“In today’s toxic world, we are bombarded with chemicals in our environment, food supply, water, and personal care products, and our liver takes the brunt of the stress. If your liver becomes overwhelmed, it can lead to fatigue, weight gain, liver disease, autoimmune disease, and even cancer. In *Skinny Liver*, Kristin Kirkpatrick teaches you the secrets on the ideal diet, supplements, and lifestyle to cleanse your liver and take your health to the next level.”

—Dr. Josh Axe, author of *Eat Dirt*, founder of DrAxe.com

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

Regenerative Health

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

Regenerative Health

DISCOVER YOUR
METABOLIC TYPE AND
RENEW YOUR LIVER FOR LIFE

Kristin Kirkpatrick, MS, RD, LD,
and Ibrahim Hanounch, MD



NEW YORK

Note: The information in this book is true and complete to the best of our knowledge. This book is intended only as an informative guide for those wishing to know more about health issues. In no way is this book intended to replace, countermand, or conflict with the advice given to you by your own physician. The ultimate decision concerning care should be made between you and your doctor. We strongly recommend you follow their advice. Information in this book is general and is offered with no guarantees on the part of the authors or Hachette Go. The authors and publisher disclaim all liability in connection with the use of this book.

Copyright © 2024 by Kristin Kirkpatrick and Ibrahim Hanouneh

Illustrations by Tomoko Shibusawa

Cover design by Amanda Kain

Cover copyright © 2024 by Hachette Book Group, Inc.

Hachette Book Group supports the right to free expression and the value of copyright. The purpose of copyright is to encourage writers and artists to produce the creative works that enrich our culture.

The scanning, uploading, and distribution of this book without permission is a theft of the authors' intellectual property. If you would like permission to use material from the book (other than for review purposes), please contact permissions@hbgusa.com. Thank you for your support of the authors' rights.

Hachette Go, an imprint of Hachette Books

Hachette Book Group

1290 Avenue of the Americas

New York, NY 10104

HachetteGo.com

Facebook.com/HachetteGo

Instagram.com/HachetteGo

First Edition: February 2024

Published by Hachette Go, an imprint of Hachette Book Group, Inc. The Hachette Go name and logo is a trademark of the Hachette Book Group.

The Hachette Speakers Bureau provides a wide range of authors for speaking events. To find out more, go to hachettespeakersbureau.com or email HachetteSpeakers@hbgusa.com.

Hachette Go books may be purchased in bulk for business, educational, or promotional use. For information, please contact your local bookseller or Hachette Book Group Special Markets Department at: special.markets@hbgusa.com.

The publisher is not responsible for websites (or their content) that are not owned by the publisher.

Library of Congress Cataloging-in-Publication Data has been applied for.

Library of Congress Control Number: 2023935798

ISBNs: 978-0-306-83015-0 (hardcover); 978-0-306-83017-4 (ebook)

Printed in the United States of America

MRQ

10 9 8 7 6 5 4 3 2 1

To my first and forever best friends,
Dima and Mo–Ibrahim

To my amazing husband, Andy–the cape
actually belongs on you–Kristin

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

contents

Introduction: Your Liver or Your Life 1

PART 1: THE NEW SCIENCE OF LOVING YOUR LIVER

- 1 Healthy Liver, Healthy You 9
- 2 What's Weight Got to Do with It—or Not 27
- 3 The Four Metabolic Types 43

PART 2: REGENERATING YOUR HEALTH

- 4 Reduce Your Risks 55
- 5 Feed Your Liver 96
- 6 Pick Your Plan 128

PART 3: THE RENEW YOUR LIVER PLANS

- 7 The Modified Mediterranean Plan 159
- 8 The Moderate-Carb Plan 167
- 9 The Low-Carb Plan 178
- 10 The Family Plan 193
- 11 Love Your Liver for Life: Moving Between Plans 211
 - Meal Suggestions for the Renew Your Liver Eating Plans 229
 - Recommended Snacks for the Renew Your Liver Plans 245
 - Recipes 249
 - Frequently Asked Questions 313
 - Net Carb Chart of Recommended Foods 318

x CONTENTS

Health Risk Assessment	321
Resources	325
Acknowledgments	329
Notes	333
Index	349

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

Your Liver or Your Life

SPIDER-MAN HAS MANY impressive talents and skills. He can climb walls. Shoot webs. Sense danger. But perhaps his most crucial superpower is his ability to repair himself, as it's what enables him to continue maintaining the peace.

Your liver is a lot like Spider-Man. It has many skills, performing more than three hundred vital roles in the body. These include metabolizing and deriving energy from your food, removing toxins from the blood, and working in synchrony with all the other major organs, including the heart, brain, and kidneys. What truly sets the liver apart from all other organs, however, is that it can regenerate itself—if someone donates a portion of their liver to a loved one in need of a transplant, the donor's and the recipient's livers will have grown back to original size within just a few weeks. It's truly an incredible feat—like something out of a comic book.

And that's a very good thing because, just like a superhero, your liver regularly endures attacks from multiple angles. (You'll learn more about those assaults and other risk factors for fatty liver in the chapters to come, but they include easily accessible, low-nutrient-dense foods that are higher in calories but lower in nutrients; too little sleep overall or poor-quality sleep; insufficient movement; environmental toxins; type 2 diabetes; and poor metabolic health.)

There is one vital way that your liver is different from Spider-Man: in the movies, Spider-Man may take longer to regenerate after a series of intense challenges, but he eventually bounces back. Your liver, on the other hand, can get to a tipping point where its regenerative abilities are lost and the only option is a liver transplant.

This fact is what inspired us to write our first book, *Skinny Liver: A Proven Program to Prevent and Reverse the New Silent Epidemic—Fatty Liver Disease*, in 2017. We wrote *Skinny Liver* to raise awareness of the growing epidemic of non-alcoholic fatty liver disease (NAFLD) and to share the eating and lifestyle strategies we've used to help our combined thousands of patients slow or even reverse the progression of this silent disease. In NAFLD, healthy liver tissue gets replaced by fat cells not because of drinking too much alcohol but because of eating too many of the wrong types of foods. We call NAFLD *silent* because most people who have fatty liver disease don't know it. As you'll learn, its symptoms are generally vague until the disease is very far along; most people only learn they have it after having their blood drawn at their annual physical and being told that their liver enzyme levels are elevated.

And it's so important that your liver stays healthy. While you may not have been thinking of the liver as the target of your health efforts, it is the hinge that decides which way the gates of your health swing, playing a role in chronic inflammation, heart health, mental health, cognitive health, and metabolic health (including type 2 diabetes). Let's get those gates moving in the right direction.

The good news is that, except for the final stages, thanks to the liver's regenerative properties, fatty liver disease is absolutely treatable, even reversible. We see patients with fatty liver restore their liver health every day. We are a medical doctor (MD—that's Ibrahim) with a specialty in liver disease who previously worked at the Cleveland Clinic and at the Mayo Clinic, and who now sees patients and manages research at MNGI Digestive Health in Minneapolis; and a registered dietitian (RD—that's Kristin) in the Cleveland Clinic Department of Wellness and Preventive Medicine. We believe that our combination of medical and nutritional expertise, as well as our experiences treating patients at some of the top medical centers in the United States and coaching them through making behavioral changes that last, is exactly what's needed to treat a medical disease for which there are no pharmacological or surgical solutions. Together, we offer a full-spectrum approach to health that's too often missing from modern medicine.

Why We Need Regenerative Health Now More Than Ever

We urgently need to raise awareness of liver health because the prevalence of fatty liver disease has gotten significantly worse in the years since we wrote our first book—now, one in four people worldwide has been diagnosed with it, while millions more remain unaware that they are somewhere on the liver disease spectrum. Most alarmingly, this worsening trend is also true for children and young people—and since the longer you have the disease the more likely it is to progress past the reversible stage, this is not good news.

There have been good developments in the last few years, too: as cases of fatty liver have grown, so has our understanding of how to treat it.

What's New in Liver Health: The Four Metabolic Types

As you'll learn in this book, in the past few years there has been a fundamental shift in our knowledge of the causes of non-alcoholic fatty liver disease. After all, medical knowledge, just like health, isn't "set it and forget it." We used to think (and some doctors who haven't been following and processing the latest research still maintain) that obesity was the primary driver of fatty liver disease, and therefore, the sweeping advice was simply to lose weight. Now we know that it's not the numbers on the scale that matter—it's other numbers that reflect your overall metabolic health, such as your blood glucose levels, blood pressure, and waist circumference, that do.

The new approach to treating fatty liver disease is much more individualized. We now understand, for example, that you can be overweight but still be metabolically healthy, and that you can be at what's considered a healthy weight but be metabolically at risk.

In this book, we introduce the four metabolic types—the Preventer (healthy and lean), the Fine-Tuner (healthy and non-lean), the Recalibrator (unhealthy and lean), and the Regenerator (unhealthy and non-lean). And we help you identify which quadrant you fall into and guide you on customizing your eating and lifestyle plan to your particular metabolic profile.

We've also customized our advice to the four specific stages of liver disease and outlined how to prevent fatty liver from settling in in the first place—both for you and for your children. You'll be able to find the eating plan that matches your metabolic profile, your stage of liver disease, your lifestyle, and your goals. And if you have kids and want to help them avoid developing NAFLD now or in the future, we've also included a Family plan that can help you eat healthier as a family without having to focus on losing weight (which can be problematic for multiple reasons that we'll delve into in Chapter 10).

All of our plans are based on the Mediterranean diet—consistently shown to be one of the healthiest eating plans around—with more of a focus on reducing overall consumption of carbs and upgrading the carbs that you do eat in order to make them more nutrient-dense. None of our plans are very low carb—also known as ketogenic—because we design them to be something you can follow for life. We also provide guidance on how to take care of your liver by finding ways to move more, counter the effects of stress, and learn how good it feels when you are giving your liver what it needs to function at its best.

Making Changes That Last

We know how tempting it is to jump in with both feet and completely overhaul your diet and lifestyle—particularly if you've recently been told that you have some form of fatty liver disease and you want to get going. The thing is, fatty liver develops slowly, over time. And so any changes you make to address it also need to last for the long term. Throughout this book, we've included checklists and check-ins to help you be thoughtful about the changes you adopt and track your progress along the way. We suggest you pick up a notebook or journal that you can devote to your Regenerative Health journey—you'll also be able to look back and see how many changes you've made, which will be very helpful in motivating you to keep going.

Your Body Has Superpowers, but It Needs Your Help

Remember, diet and lifestyle modifications are not only the best ways to treat and reverse the disease—they are the *only* ways. This means your liver is counting on you to take care of it so that it can continue taking care of you.

Just as Spider-Man's alter ego, Peter Parker, was told by his uncle, "With great power comes great responsibility," you, too, have a great responsibility to take care of your liver so that it can continue to help you take the assaults of our modern world in stride and retain its power to regenerate itself and your health.

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

part one

The New Science of Loving Your Liver

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023

Healthy Liver, Healthy You

IMAGINE THAT YOU are flying above a major metropolitan city. You can see the main highway that feeds the majority of traffic into, through, and out of town. You can also see the cloverleaf exits that shunt traffic onto smaller roads that lead to different neighborhoods. If you were on the ground, you might think that the roads you take every day are the most important for the flow of traffic in and around the city, but from thirty thousand feet up, you can see that the network of roadways is a cohesive whole that keeps life flowing—in other words, they all matter.

Your health is like a greater metropolitan area. Your vascular system is a lot like those roadways, and your health is reliant on each of those roads flowing easily to the major centers of commerce that are your heart, kidneys, digestive system, bones, and liver. If there's a blockage in that flow at any point, the health of the entire system is in peril.

In this analogy, the liver is like the public utilities department, sweeping the streets of trash (or, in your body's case, toxins), running the buses that help people get where they need to go (the macronutrients in your food that need to get to your cells), and dispersing the things the city needs to stay safe, like salting the roads ahead of a snowstorm (in your body's case, distributing vital ingredients like vitamins and minerals). The liver provides the infrastructure that everyone expects to just *work* but nobody gives much thought to until something goes wrong.

You may be thinking, "There's nothing wrong with my liver." But odds are, you're wrong.

The thing is, your liver is the strong and silent type. It doesn't give a lot of clues that it's not doing well. In fact, most people don't discover they have a liver issue until they visit a health care provider who either makes an educated guess that a struggling liver may explain

the person's symptoms or orders routine blood tests that come back with eyebrow-raising results.

Chances are, your liver is involved if you are concerned about:

- Chronic inflammation—this common condition, which is associated with nearly every chronic disease, including type 2 diabetes, insulin resistance, dyslipidemia, and cardiovascular disease, can be exacerbated if excess fat cells in the liver burst, triggering an immune response that can lead to inflammation within the liver itself that ripples out to the rest of the bloodstream
- Your heart health—and since cardiovascular disease (for example, heart attack and stroke) is the number one cause of mortality for men and women, this is an appropriate concern
- Your metabolic health, because your doctor has told you that you are prediabetic or you've been diagnosed with type 2 diabetes, as one in three Americans have been
- Your digestive health, because you have inflammatory bowel disease or celiac disease, or simply because you've been noticing your weight creep up
- Your bone health, because you're one of the 12.6 percent of Americans over age fifty who have been diagnosed with osteoporosis (nearly 20 percent for women), or the 43.1 percent of Americans over the age of fifty who have low bone density¹
- Your reproductive health, particularly if you have been diagnosed with polycystic ovarian syndrome
- Your brain health, because you've noticed some mild forgetfulness, foggy thinking, or changes in cognitive ability
- Your mental health, as fatty liver is significantly correlated with depression and anxiety, particularly in women²

Let's take a look at the most important connection, the one between your liver and your heart.

The Liver and the Heart: A (Potentially Tragic) Love Story

Although developing fatty liver disease can be a major blow to your health—one that can even become deadly over time—believe it or not,

the liver isn't likely to be the cause of death for the vast majority of people with fatty liver.

Ibrahim often tells his patients that the liver is like a car. It can get dented and beat up through everyday wear and tear. It can even be involved in minor accidents and still get you where you need to go. It may not look pretty, but it remains functional despite a fair amount of adversity. It's only if you keep crashing the car that it won't be able to take you to work anymore. And just as most cars on the road aren't dented beyond recognition, only a small percentage of people with fatty liver develop cirrhosis or liver cancer.

The most common cause of death in patients with fatty liver is cardiovascular disease—most often meaning a heart attack, heart failure, or stroke. That's not just an interesting coincidence; it's because the state of the liver is negatively impacting the health of your cardiovascular system. This is a big deal, because cardiovascular disease is the leading cause of death worldwide.

The liver and the heart are like romantic partners who each have their separate roles but who collaborate to keep the train on the tracks. The liver makes cholesterol, for one. And when fatty liver develops, the liver makes more of a specific type of cholesterol known as very low-density lipoprotein (VLDL). Once VLDL is circulating in the blood, it is vulnerable to being transformed into small, dense, low-density lipoprotein (LDL), the worst kind of the “bad” form of cholesterol. This LDL then begins to build up in arteries and reduce the flow of blood to the heart. In addition, as fat in the liver builds up, there is more inflammation in the liver, and fatty liver disease progresses into the “bad” territory. When this happens, proinflammatory chemicals can get into the blood and contribute to impaired vascular system function. It's like the liver starts spewing out trash that clogs up the roadways used to carry blood and nutrients to and from the heart.

We don't mean to be all doom and gloom. Remember that your liver can regenerate. Unless you are in the later stages of liver disease, it *can* get better. And remember that taking better care of your liver will take better care of your entire being—your heart, your kidneys, your brain, your bones, and your metabolic health. In fact, if you are among the one in three people who are either prediabetic or diabetic, the

FUNCTIONS OF YOUR SUPERHERO ORGAN

- Filtering toxins out of blood
- Transforming those toxins so they can be excreted
- Forming bile, which carries toxins out of the body
- Making cholesterol
- Metabolizing and storing fat, carbohydrates, and proteins
- Processing, storing, and secreting glucose
- Metabolizing and storing vitamins and minerals, including vitamin A (important for eye health), vitamin K (important for blood clotting), vitamin D (vital for bone health and immunity), and calcium and phosphorus (key components of bone health)
- Making and storing proteins that help the blood clot properly

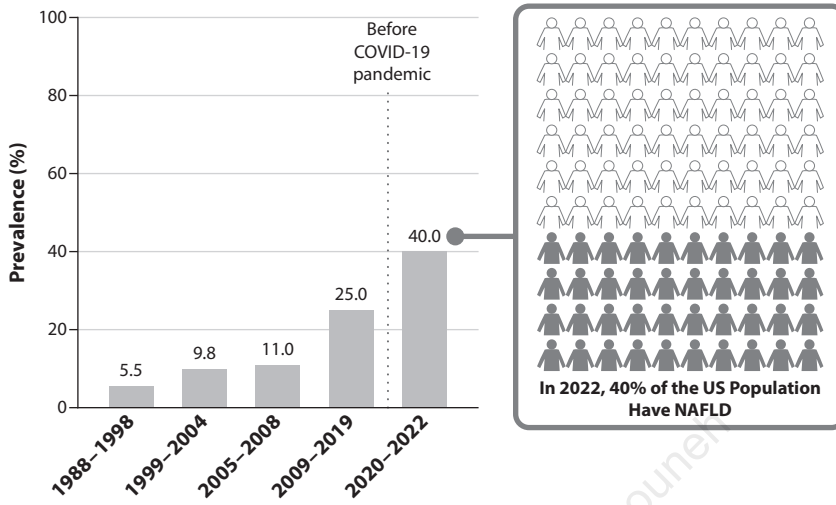
liver-friendly plans we share in this book will help to address your metabolic dysfunction, too.³

A Crisis for Many

Fatty liver has very few symptoms until the disease is very far along—so unless you’re looking for it, you likely won’t find it. And the truth is, fatty liver is spreading like wildfire. Three and a half decades ago, between 1988 and 1994, the prevalence of NAFLD was 5.5 percent. Just a few years later, between 1999 and 2004, it jumped to 9.8 percent. Between 2005 and 2008, it ticked up again, to 11 percent.⁴ And now, additional studies have put the current prevalence of fatty liver at closer to 40 percent.⁵ Some studies have found even higher rates of prevalence, even in asymptomatic people, as high as 46 percent.⁶

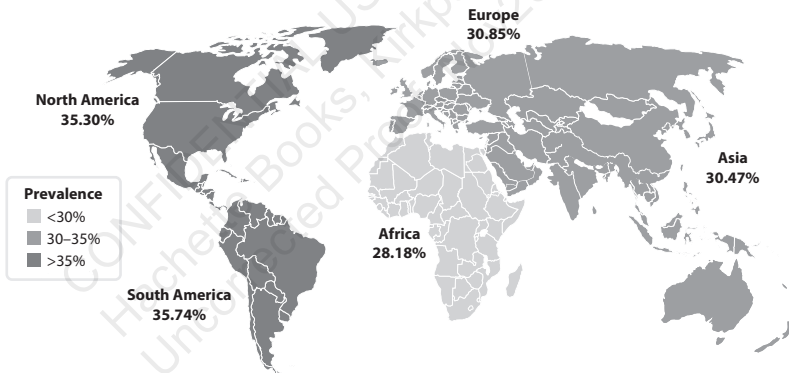
The number of Americans with late-stage liver disease—past the point of possible reversal—that was not associated with alcohol more than doubled in the decade between 1999 and 2009.⁷ And the number of patients on the waitlist for liver transplant due to a non-alcohol-related case of liver disease has been steadily increasing since 2002 like a roller coaster inching its way up to the highest part of the track.⁸

At this rate, one in two people will have NAFLD worldwide by the time today’s kindergartners are in high school. Think about that—every other person in the world!



Source: <https://pubmed.ncbi.nlm.nih.gov/33746083/>

Figure 1.1. Prevalence of NAFLD in the United States



Source: [https://www.cghjournal.org/article/S1542-3565\(21\)01280-5/fulltext](https://www.cghjournal.org/article/S1542-3565(21)01280-5/fulltext)

Figure 1.2. Global Prevalence of NAFLD

The First and Second Waves: Obesity and Type 2 Diabetes

As important as it is to quantify how many people are experiencing non-alcoholic fatty liver disease, it’s just as vital to understand *why* it’s as pervasive as it is.

Since the 1970s, obesity has become significantly more common around the globe. And obesity is regularly mentioned in scientific literature as a cause of non-alcoholic fatty liver disease. In addition, as obesity rates have risen, the prevalence of NAFLD has followed a similar path, like a dog on a leash following its human.

However, just because obesity and non-alcoholic fatty liver disease are correlated, this doesn't necessarily mean obesity *causes* NAFLD. The true root of NAFLD is more nuanced than that (and is something we'll dive into in Chapter 2).

Another condition that closely correlates with NAFLD is diabetes. That one in two people will be diagnosed with NAFLD in the near future is shocking, but it makes sense when you consider how fatty liver is often found in people who have been diagnosed with type 2 diabetes or who are prediabetic. While in the general population, two out of five adults have fatty liver, in people with type 2 diabetes, it's three out of four. That's a difference of 40 percent versus 75 percent. And most of those people have no idea that their livers are in peril.

According to the CDC, one in ten Americans have diabetes, and one in three Americans have prediabetes.⁹ Other sources, such as the International Diabetes Foundation (IDF), put this number much higher—the IDF says that one in seven Americans are living with diabetes.¹⁰ Because full-blown diabetes and prediabetes significantly ratchet up your risk of developing fatty liver, and both are on such an upward trajectory, it stands to reason that fatty liver is on the same dramatic rise.

The connection between type 2 diabetes and fatty liver disease is so strong that the American Diabetic Association updated their standards of care in 2019 to state that every patient with type 2 diabetes should be evaluated for the presence of fatty liver. Increasingly, it is reasonable to assume that if you are prediabetic or diabetic, your liver is in danger.

The Third Wave: COVID-19

As bad as these trends are, COVID-19 only made them worse. Part of the reason for this rise is that during the lockdown portion of the

pandemic, three things that are harmful to liver health skyrocketed: stress, overeating, and alcohol consumption. In general, we moved a lot less, we ate a lot more processed foods, and we drank more. While we are now past those intense days, their effects can still be felt on our livers—particularly if some of the coping mechanisms we developed during that time solidified into lasting habits. While you were trying to just get through the pandemic, you could have overworked your liver to the point that you developed the early stages of fatty liver disease. Or if you already had it (even if you didn't know it), your fatty liver disease could have progressed without your realizing it.

Beyond that, the COVID-19 virus does directly attack the liver. It is not uncommon to see abnormal liver tests in patients infected with COVID-19, as the virus targets specific receptors on liver cells that then become damaged, and liver enzymes then leak out of those cells, making their levels elevated. After the virus recedes, liver tissue typically will regenerate and chronic or progressive injury won't develop—unless you're one of the approximately 20 percent of people whose COVID symptoms linger, in what's known as long COVID, where symptoms last weeks or even months beyond the initial infection. A 2022 survey conducted by the CDC found that 40 percent of adult Americans had been infected with COVID. Of those, about 20 percent experienced long COVID—that's over 20.5 million people in the United States alone.¹¹ As the virus continues to infect more people, and more people repeatedly, the number of people with long COVID will only rise, which is concerning not just because of the symptoms' effects on quality of life but also because NAFLD has been found to be highly prevalent in people who have long COVID.

Although the worst days of the pandemic are behind us, COVID is still very much a part of our reality, and with continual risks of recurring infections—which increase the risk of developing long COVID—we now have yet another reason to prioritize our liver health.

In a common example of COVID's lasting effects, one of Kristin's patients had been following our liver health plans and had made some really great advances in swapping out ultra-processed foods, eating fewer carbs, and improving her markers of metabolic health (in her case, her waist size decreased and her blood sugar and triglyceride

levels came down). She was enjoying a partial reversal of her NAFLD and on her way to full reversal when COVID hit. She went from working in an office to working from home. The fact that she was always home coupled with the stress and anxiety of the pandemic made emotional eating an easy outlet. This woman has kids, who were now home from school. To feed her hungry kids during the day, she started keeping a lot of snack foods on hand, which are high in refined carbs and sugar, and began eating them herself.

Hers was a perfect storm of conditions that so many of us faced, and she lost all the gains she had made—she was headed toward “the bad” stage of fatty liver disease, and her metabolic profile (particularly her blood sugar and waist size) worsened.

Kristin put her on a moderate-carb plan that was easy to implement, and she is making progress. Her story is a great example of how even the best plan has to take into account your environment and whatever may be happening in your life. New stressors provide all the more reason to have a range of options to choose from so that you can personalize your plan to your body and your life.

The Crest of the Wave: Our Children

Speaking of schoolkids, the most alarming trend in the spread of fatty liver disease is its appearance in children. While most patients are diagnosed with NAFLD in their forties or fifties,¹² fatty liver is becoming more common in children and young adults. This is particularly troubling because liver disease takes time to progress. There are typically one to three years between NAFLD and NASH (non-alcoholic steatohepatitis, when the liver becomes inflamed), and then another three to five years between NASH and fibrosis (when the liver starts to become scarred). Cirrhosis (when scar tissue replaces a significant portion of healthy liver tissue) typically takes from twenty to twenty-five years to develop, and liver cancer comes next. So the longer you have fatty liver, the higher your odds of developing cirrhosis or liver cancer—the two stages of disease for which transplant is the only treatment.

In Ibrahim's practice, he is seeing more and more patients in their mid- to late twenties with the stage of liver disease that you normally see at age fifty or sixty. This is the natural result of becoming metabolically unhealthy in childhood: you can end up being twenty years into liver disease before you're thirty.

Just as with adults, COVID-19 did not help the health of our children. As they quarantined indoors and took classes virtually, their sedentarism and screen time rose exponentially, and for many, their metabolism suffered as a result. Parents who were trying to complete work while also taking care of their kids, or who had to report to work and leave their kids at home, faced a number of difficult situations and decisions during those days. Too often (but understandably), parents had to rely on packaged convenience foods to make mealtimes easier—but these are the very foods that contribute to liver disease.

Whitney Houston sang it, and it's true—the children are our future. If we continue on the current trend of metabolic challenges in childhood, we will see a significant increase in cirrhosis and liver cancer in the not-too-distant future that will only add to the trends already rising in the current adult population. And as you'll learn, when the liver is impaired, other diseases follow. Research has confirmed that children and young adults with biopsy-confirmed early stage liver disease have significantly higher rates of mortality overall, including from cancer and heart disease.¹³

We realize this is a hard truth to hear, but we also know that often-times adults are motivated to change their eating and lifestyle habits when they understand the impact those habits have on their family members—which is exactly why we've created a family-friendly plan to help all members of your household take better care of their livers.

There Is Still Time to Flatten the Curve

The writing on the wall couldn't be clearer: our livers, and thus our whole-body health, are in peril, and everyone, even if you are lean and metabolically healthy, needs to take better care of their liver. Quite frankly, unless you are super healthy and make it a point to eat mostly

unprocessed foods with only a moderate intake of foods that spike your blood sugar, the chance of your having fatty liver to some extent is pretty low. But if you're experiencing insulin resistance, prediabetes, or full-blown type 2 diabetes—or a combination of other metabolic dysfunctions, such as high cholesterol, high blood pressure, or high triglycerides—that chance is high. And if you care for one or more children who eats a typical American diet of fast and processed foods with few fruits and vegetables, and you're thinking it's OK for them to eat these high-calorie/low-nutrient foods because they're young and resilient and have a high metabolism, the time to rethink that choice is now.

All of this may seem like bad news, but simply by realizing the extent of how prevalent fatty liver is and what risks it exposes you to, you are already miles ahead of the general population.

Most of Kristin's patients don't come to her for help addressing their liver problems. They want her perspective as a dietitian to help them address the weight that they can't seem to lose as well as their lack of energy. Mainly, they want some guidance on how to clean up their diet.

She always checks in on their liver health, because it is such a common companion to metabolic dysregulation. And nine times out of ten, she discovers that their liver is somewhere on the fatty liver disease spectrum.

We know no one wants to hear that their liver is struggling, but both of us have noticed in our practices that when patients realize their liver is in jeopardy, they get motivated to take better care of themselves, and they do it quickly. Perhaps the reason for their acceptance and willingness to change is the knowledge that, eventually, their livers can get past the point of no return, when only a transplant can save them. Or perhaps they want to avoid the stigma of liver disease because of its association in most people's minds with alcohol or drug use. Some of them take it as an overall wake-up call to attune to their own health in general. Whatever the reason, we'll take it! We know that motivation can pay off in across-the-board health improvements—for your liver, yes, but also for all the other organs and systems

connected by the roadways of your body. And the sooner you start making changes, the more fully your liver can recover and your fatty liver disease can reverse.

Liver Disease: The Good, the Bad, and the Ugly

Some fat in the liver is healthy—fat comprises about 5 percent of a normal liver. Problems typically start to arise when you consume too many nutrient-poor calories that consist primarily of added sugars or simple carbs: think of your basic, standard American diet, with lots of bread, pasta, cookies, chips, fries, ice cream, flavored yogurts, and sweetened beverages (including sweetened coffee drinks, sodas, and energy drinks), along with few vegetables and little fiber.

Your liver is charged with processing all that sugar. Every time it does so, it uses up a lot of adenosine triphosphate (ATP), the primary molecule of energy used by your cells to metabolize sugar as well as fat. Consuming too many carbs depletes your ATP, and you have less of it to process fat, which means you have more fat on hand. Because the liver can't break the fat down so that it can be burned for fuel, it stores it. It's kind of like how your house can get overrun with clutter and you just keep sticking items in the basement.

Once you get to the point where fat makes up more than 5 to 10 percent of your liver—and you aren't a heavy user of alcohol or drugs—you reach the threshold of having non-alcoholic fatty liver disease (NAFLD). While people typically understand the threat to the liver that abusing alcohol and drugs poses, they are less likely to be aware that diet and toxin exposure can be just as threatening. Sugar is as bad as alcohol for your liver. As Ibrahim likes to say, sugar is “alcohol without the buzz.”

When the fat in the liver is joined by inflammation, it's called non-alcoholic steatohepatitis (NASH). NAFLD and the early stages of NASH are what Ibrahim calls “the good” stage of liver disease, because these stages can be reversed (which is exactly what this book will show you how to do), and in reversing them, you can prevent cardiovascular disease.

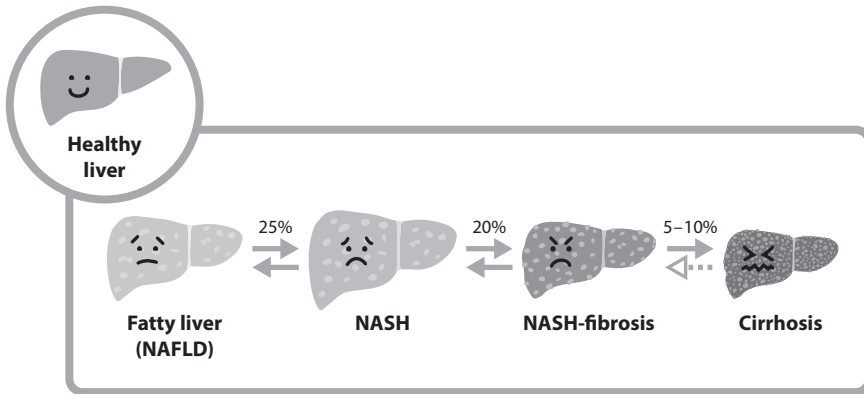


Figure 1.3. The Stages of Fatty Liver Disease

To continue the cluttered house analogy, as your liver becomes more fatty and inflamed, at some point you can't really use the basement anymore because there's no place left to walk, and it becomes a fire hazard because it's so packed with stuff. There is a big opportunity to clean out that basement, but that opportunity will go away the more crowded it gets down there.

When the fat and inflammation of NASH leads to pervasive scarring, you reach “the bad”—a stage of liver disease called NASH-fibrosis. At this point, you have to pay close attention to your diet and lifestyle and intervene as soon as possible to slow progression and possibly reverse the damage that has happened. And “the ugly” stages are cirrhosis—when so much of the liver tissue has been replaced by scar tissue that it can no longer function—and liver cancer—when malignant cells take root in the liver and potentially spread to other parts of the body. For “the ugly” phase, liver transplant might be necessary.

Even though only a small percentage of people with NAFLD will progress to “the bad” or “the ugly” stages of liver disease, a small percentage of a big number is still a lot of people. Assuming a total US population of 329.5 million people, that's 6.59 million Americans with fibrosis, and 1.3 to 2.6 million American with cirrhosis. That's simply too many.

THE STAGES OF FATTY LIVER DISEASE

The Good

NAFLD. Mostly asymptomatic, although some people with NAFLD may experience fatigue, a general malaise, or mild abdominal pain on the right side. A physical exam may reveal that the liver has become enlarged, although less than a third of NAFLD patients have an enlarged liver. NAFLD is discovered or confirmed by elevated levels of liver enzymes on a blood test, or thanks to an ultrasound, CT scan, or MRI that reveals a significant presence of fat in the liver.

NASH. The only definitive way to differentiate between NAFLD and NASH—in other words, to determine if there is inflammation present in the liver in addition to excess fat—is to do a liver biopsy. Although there is a research-backed algorithm that uses the results of a few simple blood tests and your age to gauge how far your liver disease has progressed (which we tell you about on page 50), we believe a biopsy is still the best method. Of people with NAFLD, 25 percent will go on to develop NASH.

The Bad

NASH-fibrosis. This stage of liver disease is identified by the presence of inflammation and scarring. Of all people with NASH, 20 percent will go on to develop NASH-fibrosis.

The Ugly

Cirrhosis. This is the stage of liver disease where too much of the liver tissue has been replaced by scar tissue.

Of people with NASH-fibrosis, 5 to 10 percent will go on to develop cirrhosis. It generally takes twenty to twenty-five years from the first development of fatty liver to progress to cirrhosis.

Liver Cancer. Of people with cirrhosis that develops as a result of fatty liver, 1 to 2 percent will develop liver cancer each year. Even though the risks are low, because liver cancer is much more treatable in its early stages, individuals with cirrhosis should get a liver ultrasound every six months to promote early detection.

How Happy Is Your Liver?

While we will share more specific diagnostic tools in Chapter 2 to help you determine your metabolic profile, this assessment can help you start to objectively assess which risk factors for fatty liver you may have. After all, typically, we're not motivated to change our behaviors until we start to realize that a specific health condition actually pertains to us and to understand how our daily habits may be fostering that health condition.

Health Risk Assessment

It's hard to get a clear picture of how your daily choices may be impacting your health. Truthfully, we all tend to think we're doing a little better at making healthy choices than we actually are, and we minimize any unhealthy choices we make. When new patients come to see us, they'll often tell us they "eat pretty well," but when we drill down, we discover that there is almost always room for significant improvement—maybe they're drinking soda every day, or smoking cigarettes, or not eating very many vegetables at all. We designed this assessment to help you raise your awareness of your own habits—to identify the habits that warrant your attention, and to also give yourself credit for the healthy choices that you are making. We hope that gaining some objectivity on your current habits will help motivate you to start making healthier choices.

To use it, first resolve to be honest and brave. Then, place a checkmark near every item in each column that pertains to you. This is not a diagnostic tool—in order to truly determine which metabolic profile fits you best, you'll need some actual measurements, which we walk you through in Chapter 3. For now, the more checkmarks you have in Column A, the higher your risk for some form of non-alcoholic fatty liver disease—as well as other chronic diseases, such as type 2 diabetes and cardiovascular disease—and the more likely you are to fit the Regenerator or Recalibrator metabolic profiles. From there, Columns B, C, and D show a continuum, with Column D being the most protective of liver health; the more you have in Column D, the better for your liver and the more likely you are to be a Preventer or a Fine-Tuner.

We'll include this assessment again at the end of the book so that you can visually assess the progress you've made by seeing fewer checkmarks in Columns A and B and more in Columns C and D. Just remember that the ultimate goal isn't necessarily to have every single answer in Column D. As you will learn throughout this book, our plans are for the long haul, and we know that small changes add up—and are definitely more doable. Every answer that you move from the left to the right between now and the end of this book is a big win. Think about it: while it might be faster to try to jump ten feet over a roaring river, the more certain way is to go step by step over rocks in the stream.

Liver Health Risk Assessment

	Column A	Column B	Column C	Column D
Diet				
I eat red meat (beef or pork) or red processed meat (sausages, hot dogs, pepperoni, etc.)	Pretty much every day	A few times a week	Once a week or so	Rarely
I eat more than 25 grams of added sugar in a day (the amount in 1/2 a can of soda, 1–2 scoops of ice cream, 2 cookies, or a slice of cake)	Pretty much every day	A few times a week	Once a week or so	Rarely
I eat more than 50 grams of low-fiber carbs in a day (from an assortment of white bread, wraps/tortillas, pasta, white rice, crackers, pretzels, standard breakfast cereals)	Pretty much every day	A few times a week	Once a week or so	Rarely
I eat fast food	Pretty much every day	A few times a week	Once a week or so	Rarely
I eat at least three servings of fruits and vegetables of different colors	Rarely	Once a week or so	A few days per week	Every day
I have a total of at least seven servings of fruits and/or vegetables in a day (a serving equals a large handful of fruit and colorful vegetables and two handfuls of fresh raw greens)	Rarely	Once a week or so	A few days per week	Every day

	Column A	Column B	Column C	Column D
I eat at least 20 grams of fiber in a day (for example, from a blend of beans, oats, vegetables, nuts, seeds, berries, avocados, quinoa)	Rarely	Once a week or so	A few days per week	Every day
Exercise				
The average number of hours I spend sitting in a day are	10 or more	8–10	5–8	Less than 5
I get some light exercise—such as an easy walk, light yoga, or anything that doesn't make me out of breath, for at least 30 minutes	Rarely	Once a week or so	A few times a week	Most days
I work out to the point of being able to notice my breathing	Rarely	Once a week or so	A few times a week	Most days
In general, I spend this much of my day either standing or moving around (i.e., not sitting)	An hour or less	1–2 hours	3–4 hours	4 hours or more
Alcohol				
I drink alcohol	5 or more days per week	3–4 days per week	1–2 days per week	Less than once per week
When I drink alcohol, I have this many servings (one serving equals one drink—5 ounces of wine or 1 ounce of hard alcohol—for women, or two drinks for men)	4 or more	3–4	2–3	1
Smoking or Vaping				
My relationship with smoking or vaping is	I currently smoke cigarettes or vape multiple times per day	I currently smoke cigarettes or vape 1–2 times per day	I used to smoke cigarettes or vape, and I quit less than five years ago	I used to smoke cigarettes or vape, and I quit more than five years ago, or I have never smoked or vaped

	Column A	Column B	Column C	Column D
Coffee				
I drink unsweetened coffee	Rarely or never	Once or twice a week	2 or more cups per day	1–2 cups per day
Sleep				
Most nights I sleep	Less than 5 hours	5–6 hours	6–7 hours	7 hours or more
I have been diagnosed with sleep apnea	I have been diagnosed with sleep apnea and am not treating it	I don't know if I have sleep apnea but am told I snore loudly with periods of not breathing	I have sleep apnea and I am treating it	I do not have sleep apnea
Stress Management				
I practice something to reduce my experience of stress (for example, meditate, stretch, garden, journal, talk to a counselor, do yoga)	Rarely	Once a week or so	A couple of times per week	Most days
Waist Size				
The circumference of my waist is (see page 45 for measuring instructions)	40 or higher (for men) or 35 or higher (for women)			39 or lower (for men) or 34 or lower (for women)
Type 2 Diabetes				
	I have been diagnosed with type 2 diabetes	My doctor has told me I'm prediabetic	I have not consulted with a doctor about my blood sugar levels	I've had my blood sugar levels tested and my doctor tells me they are in a healthy range

For a deeper understanding of how the things you eat and drink, how much you move or exercise, and how your stress and your sleep all influence your liver health, keep reading. We'll also dive into what

has long been considered a primary risk factor for fatty liver disease—obesity—and how it’s not really the number on the scale that drives fatty liver but your metabolic profile. This is where we get to start customizing your approach to preventing, reversing, or managing fatty liver, and where things start getting exciting.

CONFIDENTIAL USE ONLY
Hachette Books, Kirkpatrick/Hanouneh
Uncorrected Proof, Nov2023