

On the Path to Health, Wellbeing, and Fulfilment

This book explores health from a variety of perspectives. Interpreting scientific studies and communicating the findings in an easy to understand way is a gift that keeps on giving. *To Your Health* will help readers appreciate the importance of research, genetics, environment and lifestyle factors in everyday life and when working through complex medical conditions.

—Beth Frates, MD FACLM DipABLM

President-Elect American College of Lifestyle Medicine
Clinical Assistant Professor, Harvard Medical School

An insightful, timely work on what determines our very well-being.

—David Robert Grimes, PhD

In *To Your Health*, Dr. Iris Schrijver provides insight and commentary on how the medical community often fails to effectively communicate what is known about the prevention and management of disease, and how this failure impacts health disparities by race, ethnicity, education and socioeconomic status. Dr. Schrijver takes an in-depth and science-based look at what makes us thrive in body and mind and helps us apply a critical lens to market-driven fads. A must-read for medical providers and anyone interested in sorting fact from fiction in the search for better health and well-being.

—Martha L. Spiers LCSW, Executive Director Clackamas Volunteers in Medicine

In “*To Your Health*” Dr. Schrijver gives thoughtful and well-documented consideration to the things in our lives that influence our health and happiness. We can’t control all these things, but Dr. Schrijver shows how we can control our *responses*, to our inner cravings, to the things that cause us stress, and to information (and the abundant misinformation) surrounding us in both traditional and social media – misinformation that is intended, in many cases, to make others rich at our expense. “*To Your Health*” is an exceptional book that is well worth your time.

—Timothy J. O’Leary, MD, PhD, Adjunct Professor, University of Maryland School of Medicine.

Former Editor In Chief of the Journal of Molecular Diagnostics;
Former Chief Research and Development Officer, Veterans Health Administration

On the Path to Health, Wellbeing, and Fulfilment:

To Your Health

By

Iris Schrijver

**Cambridge
Scholars
Publishing**



On the Path to Health, Wellbeing, and Fulfilment: To Your Health

By Iris Schrijver

This book first published 2021

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Copyright © 2021 by Iris Schrijver

All rights for this book reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

ISBN (10): 1-5275-7476-8

ISBN (13): 978-1-5275-7476-2

To Karel, who illuminates the universe and makes the world turn my way

TABLE OF CONTENTS

Introduction: Setting the Stage

Introduction	2
--------------------	---

Part I: Foundations of Health

Chapter One.....	10
------------------	----

A fountain of information - How barriers to obtaining accurate information shape health decisions

Chapter Two	20
-------------------	----

In the know - How knowledge is classified and how it affects health and wellbeing

Chapter Three	32
---------------------	----

Know way - How cultural beliefs influence what is perceived to support health

Chapter Four.....	43
-------------------	----

Under the influence - How pseudoscientific notions and cognitive biases influence which health-related information is trusted and used

Chapter Five	53
--------------------	----

Rising to the bait - How subconscious bias and advertising strategies apply to health and healthcare

Chapter Six.....	64
------------------	----

So what, who cares? - How the sources of health information impact outcomes

Chapter Seven.....	75
--------------------	----

Public relations - How the value of science can be communicated effectively

Chapter Eight.....	87
Healers in the making - How information, knowledge, understanding and wisdom enabled the development of the evidence-based scientific method	
Chapter Nine.....	100
Science, not fiction - How the medical scientific process provides validity that can separate correct from incorrect understanding	
Chapter Ten	114
Windows of opportunity - How research opportunities depend on a multitude of factors, including the public perception of science, financial resources, and bias	
 Part II: The Science of Health and Wellbeing	
Chapter Eleven	128
What is health? - How the fluid and dynamic concepts of health and wellbeing relate	
Chapter Twelve	141
The instruction manual - How genetic makeup influences health and disease, and how it compares to the contribution of environment and lifestyle	
Chapter Thirteen.....	154
Keeping it together - How the process of homeostasis works and what happens when it fails	
Chapter Fourteen	165
The matter of the mind - How current science challenges the dichotomy between body and mind	
Chapter Fifteen	180
Of pills and potions - How placebos, nocebos, pharmaceuticals and dietary supplements relate to health and disease	
Chapter Sixteen	193
Stressfully yours - How stress affects health, disease prognoses, health outcomes, and willpower	

Chapter Seventeen	207
Diet or bust! - How global lifestyle changes have altered our relationship with food and resulted in a chronic disease epidemic	
Chapter Eighteen	219
An ounce of prevention - How lifespan and healthspan can be improved with positive lifestyle changes	
Chapter Nineteen	233
Alternative medicine - How complementary and alternative health practices can help or harm health and wellbeing	
Chapter Twenty	249
Are you happy yet? - How happiness contributes to health and longevity	
Conclusion.....	264
A Time of Hope	
Bibliography	267
Index.....	307

INTRODUCTION

SETTING THE STAGE

~Vade mecum~
[Go with me]

INTRODUCTION

You, I envision, are a reader with an open mind who is curious about what (at present) is known and not known about wellbeing and health, and, perhaps most importantly, how that knowledge can be applied in your own life.

My assumption is that most people share the goal of wanting to live as long as possible while feeling as well as possible. With that perspective, people should care about the prevention of illness because of their desire to enjoy life, to feel good, and to be healthy. This basic aspiration does not depend on age, gender, identification, geographic location, what or who we worship or bow to, how we were educated, or what our social status is. It is a fundamental desire that is given meaning and substance by every single one of us, in our own unique expression of being human in this world.

We all live in a global culture where health and wellbeing are not systematically supported and universally embraced. And yet, if we want to be happy and live our best life, we need to learn about health and wellness and make room for personal growth. It is my sincere wish that this book empowers you to think critically and to make informed decisions about your health based on facts instead of speculation or manipulation, no matter how compelling their packaging may be. Your choices can make a big difference: it has been estimated that genetic information determines no more than around a quarter of the variation in human lifespan and only about a third of your sense of happiness. Genes alone do not determine destiny!

What you do and what you know about food, physical activity, social connection and other aspects of your life and lifestyle has consequences. And although far from everything in life is a matter of choice, you can make a positive difference in your wellbeing by taking care of your body and mind as best you can. I am honored that you chose this book and that you are joining me on a journey of understanding and insight based on breakthroughs from the world of health and wellness science.

In the past few decades, information has become abundant and accessible. However, the application of knowledge and wisdom has not kept up with the pace at which information is produced. In other words: being “well-informed” has no direct bearing on whether the information that we are *informed by* is actually trustworthy. This discrepancy may go unnoticed for

quite a while in the busyness of daily life, but when health and wellbeing are at risk, the stakes are high. Knowing what is for real and what is incomplete, irrelevant, inaccurate, uncertain, or just plain wrong may well become a matter of life and death.

Precisely because of the spread of misinformation, some people have not participated in safe infectious disease prevention programs. As one consequence, measles has made a come-back to regions of the world where it had been eradicated. It is causing illness there once more, and a tragically unnecessary loss of lives. False information also causes people to place their trust in practices and products that are advertised to benefit health but not verified for their claims. These are not only unproven to work, but they can also cause considerable harm without the provision of disclosure of that risk.

These are just two examples, but many more are covered in the book that you are about to read. Along the way, the big questions that remain and those that are newly formed are both acknowledged and explored, while claims built on quicksand are exposed.

I hope that this book contributes to demystifying research and science. Research is the endeavor of systematic studies through experimentation, observation, and analysis. Science is a process too, but it develops out of the integration of *novel* findings with *other* research findings. Only then can we arrive at a more complete and advanced body of knowledge and possible application of new understanding.

Science is not easy, but it certainly can be made accessible, and to appreciate exciting developments one need not be a scientist. Physicist Oliver Heaviside (1850-1925) made the point by saying:

“Am I to refuse to eat because I do not fully understand the mechanism of digestion?”¹

It is a good point! In order to marvel at nature’s surprises and new technology that drives the progress of our understanding, it fortunately is not a prerequisite to understand how science works.

It is, however, certainly helpful to know something about *the process* that defines the path of scientific inquiry because it clarifies that science is not only a method of solving questions but also *a way of thinking*. It is a way of edging our way forward into unknown territory. It is a path with many dead ends and with ample detours, on which one encounters obstacles that stand in the way of understanding.

At times, scientific discoveries result in premature conclusions and it takes the building of a strong body of knowledge before something can be

considered proven. Scientific uncertainty is an almost constant companion on the path to knowledge. This inevitable degree of uncertainty, which becomes proportionally smaller with growing evidence, is an especially challenging aspect to communicate.

When taken out of context, scientific uncertainty may be misinterpreted as an ever-present flaw of science and, in response, solid scientific evidence may be categorically rejected (to the detriment of rational thinking, I might add). It may also be promoted nefariously as a lethal flaw, by influencers with an anti-science agenda. Tragically, this can negatively impact the health and wellbeing of many. Naysayers who maintain untenable positions in the face of overwhelming evidence to the contrary may spread their statements widely enough to draw a following of people who are unaware of the fantastic misinformation that is being pressed upon them.

A review of the foundation of knowledge and the contribution of early science to the development and evolution of that knowledge enables a fresh perspective on science today. And it is important to understand that there is a difference between information and knowledge. To that, I would like to add a quote by Dr. Martin Fischer (1879-1962), who said:

“Facts are not science, as the dictionary is not literature.”²

Science continues to build on what can be objectively verified and rejects anything that has been refuted. Science in any discipline is a complex process that is frequently slow but every now and then surprisingly fast. I hope that I can take away the veil that too often seems to shroud the topic, as it is exactly the sound basis of logic that should provide both confidence and assurance.

I readily admit that science does not have all the answers. In part this is because it does not have them *yet*, and in part because (I strongly suspect) there will always be phenomena that remain unexplained. And that’s okay. Whatever the categories and classifications into which we put our knowledge today, truth is something that emerges gradually. In this continuous process, the importance of a mindset of wisdom should never be underestimated. Wisdom and its traditions also have an important role in health and wellbeing, without the need to be perceived as separate from science or conflicting with it. This, however, is a reality that is commonly overlooked.

Whereas science can seem abstract, it helps shape our world and health. It provides a foundation for wise choices and gives us the tools to recognize the best insights of our time among the noise of loud and famous voices that

offer mere opinions. By using scientific studies to assess the current state of knowledge, it becomes clear what is supported by evidence and where the gaps are. This book shines a light on information about wellbeing and health, and, as such, it is a tool that helps distinguish fact from fiction.

Instead of being a “how-to” guide, the book offers a roadmap to help navigate the available information on a wide range of health and wellness topics. Along the way, it reveals the process of scientific discovery and the subsequent path of inquiry that probes whether newfound knowledge can stand the test of replication and of time. It also addresses the challenges that exist between knowledge in its scientific form and the way in which it is presented to and understood by nonscientists.

If we want to understand health and wellbeing, it is important to consider what these terms mean to different people and whether these concepts change in different phases of life. There are many definitions of health, but for the purpose of this book I use a working definition of *health* as the largely *objective* state that can be measured and thereby allows comparison of one person to others. For the concept of *wellbeing* I use the working definition of a primarily *subjective* appraisal that reflects where someone is now, compared to where that person would like to be.

I acknowledge that health and wellbeing can be assessed only to a degree. They are both also intrinsically subjective. The role of wisdom, culture, traditions, and personal preferences can not and should not be ignored. Thus, while we go ahead and ask the big questions, I suspect that some of your answers to them will be deeply personal.

An exploration of health and wellbeing is an invitation to look at the influence of lifestyle and genetics, and at how the human body performs the miracle of continuous metabolic balancing; to explore mind-body connections, the use of medications and supplements, the influence of stress on wellness and how it can benefit or erode health; to delve into the merit of diets, look at prevention of illness, put alternative medicine in the spotlight, and to examine the role of happiness.

What makes us thrive? What makes us tick? What do we factually know, and what seems plausible enough but has been refuted? It may seem ironic that a pathologist writes a book on health and wellbeing, as the traditional focus of this medical specialty (and almost all others!) is on disease, but we live in a time where that focus is, at least in part, beginning to shift. This motivated me to become a lifestyle medicine doctor. With my immersive work in medical practice and science on the one hand and the recent realization by researchers and doctors that someone’s lifestyle has major

repercussions for the development of disease on the other, I have become fascinated by the intersection of health and disease, the tipping point between *well-being* and *dis-ease*.

There is a slow but unprecedented change in medicine that is moving the focal point of medical care from the management of disease toward the improvement and maintenance of health and wellness. With that comes a greater emphasis on prevention and (partial or complete) reversal of lifestyle-driven chronic diseases that now account for the majority of premature deaths globally. The measures we can take to improve and maintain health throughout life include personal choices, but reach all the way into the social fabric of our world, including global politics and economies of scale. The book would not be complete without a critical look at contributing factors at those levels, too.

This book has two main parts. In the first part of the book, I look at the foundation of knowledge in a variety of different ways. Some of the posed questions are: What constitutes knowledge? What do you know for sure? What prevents us from questioning the validity of cultural beliefs? What is the vitally important role of wisdom? How are we influenced by biased thinking? What shapes choices and preferences? Does science impact regular life, and if so, how relevant is it? And what checks and balances exist in research?

The second part of the book uses the foundation of knowledge as discussed in part one to delve into questions around specific health and wellness topics. Questions covered there include: What is health? What is the contribution of nature versus that of nurture, and to what extent do genes determine fate? What, if anything, is the difference between body and mind? How are medications different from dietary supplements? How are stress and willpower connected? What does it mean to have a healthy relationship with food? Does money buy happiness? And does happiness influence health and longevity?

Every chapter begins with the overarching questions it raises and ends with a summary of the key points of that chapter. Toward the end of the book, the bibliography discloses some of the many sources of the information contained in this book, as well as resources that may be the most helpful for you and other readers. Finally, I need to point out that, in illustrative stories that involve actual people, some names and circumstances have been changed to protect privacy.

Just as life is a journey, health is a journey. No matter where we are today, that point is the start from which we each, and together, take the next step

forward. On that journey, we have one day at a time. Every day is an opportunity to align our internal values and our intentions, our realities, and our potential. An intentional life is a life of purpose that includes attention to the health and wellbeing of ourselves, those we know, and even those we do not know among humans and across species.

Take good care of yourself. You are worth it.

And, more than that, your life may well depend on it.

PART 1

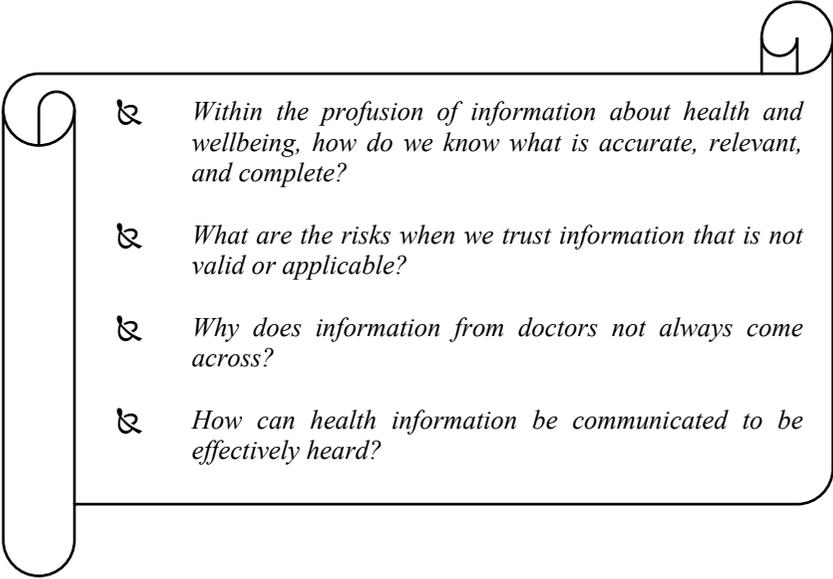
FOUNDATIONS OF HEALTH

~Non scholae, sed vitae discimus~
[We do not learn for school, but for life]

CHAPTER ONE

A FOUNTAIN OF INFORMATION

How barriers to obtaining accurate information shape health decisions

- 
- ↳ *Within the profusion of information about health and wellbeing, how do we know what is accurate, relevant, and complete?*
 - ↳ *What are the risks when we trust information that is not valid or applicable?*
 - ↳ *Why does information from doctors not always come across?*
 - ↳ *How can health information be communicated to be effectively heard?*

It was quite early in the year and a wonderfully sunny day in Portland. Eager to emerge from the rainy winter season that is typical for the Pacific Northwest, people flocked outside to enjoy the unexpected warmth. Exactly this was my intention too. The small restaurant where I ventured to have lunch that day certainly seized the day. The tables on its tiny patio had been placed so close together that one could barely squeeze between them.

This was in 2019, well before the physical distancing requirements of the COVID-19 pandemic, and the setting reminded me of my recent visit to France. There, often every square inch of a restaurant was used to maximize

occupancy so that dining became an unintended communal experience. It was quite intimate, yet in the hustle and bustle of the cozy Parisian cafes, nobody seemed to be bothered by a lack of privacy.

Next to me, two women were engaged in lively conversation. The topic: *Experts*. One of them, a professional woman in her thirties, talked about how she had roamed the self-help section at a local bookstore only to become frustrated by the vast offerings of what was, in her assessment, “so-called expert advice”.

Apparently, it was not only bewildering in its abundance but also often contradictory in content. I admit that I was eavesdropping, and as a matter of fact did so with considerable interest, although it would have been impossible to block out their exchange in any case.

“I looked at so many books and in the end I just left without buying anything,”

she said.

“The typical story is that these experts went through some difficult experience. Something life-changing happened to them, and somehow they found a way out of it that worked, for them. Of course, that automatically makes them *the* expert...Now they think they have a calling and can apply their solution to everyone else and tell you what to do. But I am not them. As if one size fits all!”

When my friend arrived my attention refocused, but the sentiment of the woman’s confusion and her consternation about experts and their expertise stayed with me. She was overwhelmed by choice and did not know how to determine the actual substance and validity of all the divergent advice offered. It resonated with me.

Especially in the area of health and wellbeing, there is a profusion of information, and trying to take it all in can feel like taking a drink from a spouting garden hose. This is not to say that there cannot be a positive outcome or genuine improvement from reading a book that is written by someone who overcame a profound personal experience and who subsequently chose to share the pearls of wisdom of this life-changing episode with others. First-hand experience can make a story much more powerful and solutions categorically compelling. And because the journey becomes a shared one, you as a reader, facing a similar issue or related questions, inevitably feel that you are not alone.

My own saving grace in a period of anxiety in medical school (which, as it turns out is not uncommon, but, in my early twenties, felt pretty

alarming and isolating) was a wonderful book: “Anxiety & panic attacks – their cause and cure”, by Robert Handley and co-authored with Pauline Neff.¹ It was not only a great comfort during that difficult time but, by outlining a simple program of desensitization, it was effective in helping me manage my fears. That book was invaluable for me on my chosen path of becoming a doctor and enabled me to manage the unavoidable pressures of medical school. Finding the right resource can be quite a challenge though, as we may not see the forest for the trees. My neighbor at the Portland lunch place found that out for herself.

How do we even begin to filter the abundance of advice so that we can extract information that is relevant to us, as well as accurate and complete? How do we know what of this copious information is based on factual knowledge and what is personal opinion? What constitutes experience and expertise that can be widely applied? How do we discern what is helpful versus harmful? And where does wisdom come into all this?

The traditional way to receive answers regarding health and wellness is from physicians and other healthcare professionals. And even though this can be an excellent way of receiving reliable advice, there are plenty of reasons why interactions of patients with their doctors can be frustrating, causing people to seek their answers elsewhere. In a time when we have loads of information and few filters, cognitive flooding not only happens to laypeople but to their doctors, too. Physicians and other healthcare providers experience the pressures of a shortage of time, and yet face growing expectations of being able to provide instant answers. This combination results in patient-doctor interactions that often are not optimal for either party.

Aware of their limited available time for each patient encounter, physicians feel pressed to be as efficient as possible within each brief time slot. One way of doing this is to determine their patient’s concerns as expeditiously as possible. Often, nowadays, a physician will have reviewed the reason for a patient’s visit in advance and is likely to assume that such notes, frequently taken by staff when the appointment was made, reflect the main motive for the visit to the doctor’s office. Of course, this could be an erroneous assumption if the patient was not comfortable disclosing the most important concern in advance and to a stranger!

Doctors rely heavily on the minimal information available in advance of the visit.² One study found that only around half of the time primary care physicians specifically asked about what brought their patient in that day. In specialty care settings, that fraction was even lower. There, it dropped down to one-fifth of patient visits, possibly because a referral to a specialist

is more frequently focused on a well-defined medical complaint. Not eliciting the patient's agenda during the visit, however, is at odds with basic medical training, which includes education on the importance of good communication, and addresses the fact that meaningful conversation between doctor and patient is critical to building trust. It also can be inherently therapeutic. We all have been there: being heard by a physician who is responsive to our concerns is a hope and expectation in each patient-physician relationship.

The study made another interesting observation: patients were given a median of just 11 seconds to tell their story before the clinician started speaking. If that seems extremely short to you, I would agree! The study was not very large and the times ranged from three to 234 seconds overall.² Still, it seems that in the rush to provide solutions, important aspects of patient-centered care are sometimes lost, especially with interruptions that take place very early during the conversation.

Apart from time pressure during medical appointments, there is also a growing information component to each visit. Patients ask more clinical questions than in the past, and whereas in general this is a very positive development, it comes with a need for physicians to accomplish efficient and effective retrieval of relevant medical information to answer these questions. In the ever-changing field of medicine, doctors need to make sure that they have current knowledge and that they can make the most pertinent information available to their patients. Physicians report that they spend substantial additional time searching for information and that much of this searching is done online.³

Fortunately, this has not replaced traditional methods of communication: doctors still rely on consultations with colleagues, especially for complex clinical questions that require a highly specific, tailored approach that falls outside the scope of routine medical issues with well-defined solutions. In such cases, the clinical insight from a peer with experience in a particular medical area can be extremely helpful. At the same time, technology use is expanding and new methods of information delivery are increasingly utilized in addition to more traditional means of gathering knowledge.

It is undeniable that a quick internet search can be very useful, critical even, for both healthcare providers and anyone in the community, but the source of the information is key: it needs to be transparent and reliable because the consequences of misinformation may be serious. Medical journal articles, frequently available online but rarely freely accessible, remain the gold standard for reputable, up to date information for physicians and, by

extension, their patients. Other sources that are highly regarded by doctors include certified courses for continuing medical education and medical practice guidelines, many of which are available and accessed through various technological means as well.

Unfortunately, for any given person who seeks information from a variety of sources, it can be challenging to discern the foundation and legitimacy of found advice, especially in areas for which we do not have specific training. Of course, this is why we rely on experts in the first place! Just as with general information, however, or perhaps even more so, this concern is paramount in the context of health. Which experts offer valid knowledge? Who should you trust? After all: inaccurate, irrelevant, or incomplete information can negatively impact health and wellbeing, despite the best intentions.

We live in a time of continuous access to information, and yet so much of it is distracting, useless noise. As just one example of this, Dr. Daniel Levitin, author of “The organized mind: thinking straight in the age of information overload”, acknowledged that

“The past generation has seen an explosion of choices facing consumers. In 1976, the average supermarket stocked 9,000 unique products; today that number has ballooned to 40,000 of them, yet the average person gets 80-85% of their needs in only 150 different supermarket items. That means that we need to ignore 39,850 items in the store. And that’s just supermarkets...”⁴

Apart from the sheer amount of distractions in long aisles of colorful cereal boxes and other areas of the grocery store designed to entice us to buy more, filtering that which is helpful from that which is not actually deserving of our attention can be a time and energy-consuming task in many activities of our daily lives.

Levitin goes on to say that

“In 2011, Americans took in five times as much information as they did in 1986—the equivalent of 175 newspapers. During our leisure time, not counting work, each of us processes 34 gigabytes or 100,000 words every day. The world’s 21,274 television stations produce 85,000 hours of original programming every day as we watch an average of 5 hours of television each day, the equivalent of 20 gigabytes of audio-video images. That’s not counting YouTube, which uploads 6,000 hours of video every hour. And computer gaming? It consumes more bytes than all other media put together, including DVDs, TV, books, magazines and the Internet.”⁴

Considering that these data are from 2011, the relentless stream of information will be even larger today. Not that I long for years past, when information was not literally at our fingertips... I remember the days when I would go to the university library and needed to find the topic of interest on cards, in index volumes of keywords, with the help of a kind librarian, or by using a very basic computer search. It was a tedious way of finding book chapters and scientific articles and it required wading through volume after volume of hard copies of journals and books. That approach was time-consuming too, and definitely less convenient. Nevertheless, information overload is our constant companion and good judgment is an exercise in self-discipline.

Given the abundant information available on virtually any topic, there seems to be a paradoxical hunger for information on how to optimize health and wellbeing. The online offerings are vast, as are the bookstore sections of self-help literature and other books on healthy living, improving wellness, and happiness. Just over the past decade on Amazon alone, comparing 2008 to 2018, the number of books on health has tripled from 20,000 to 60,000.⁵ The keywords “happiness” and “diet” each result in a tenfold increase in books offered on Amazon, from about 2,000 to 20,000 and from around 3,000 to 30,000, respectively.

Perhaps a robust supply and demand in the sphere of healthy living should not be surprising, given that we (need to) accumulate most of our knowledge about this in adulthood. The curriculum in schools does not usually include much practical education on health and wellness. As a result, unless we are fortunate enough to have parents who model good health-behaviors, most of us are not equipped with the tools for lifelong wellbeing early in life, when it would be most helpful to establish such knowledge together with health-promoting habits.

The level of received education does come into play, but not directly: people with more advanced education and higher incomes are known to have better overall health.⁶ This is evidenced by many indicators, including life expectancy. According to the annual report prepared by the Centers for Disease Control and Prevention (CDC)’s National Center for Health Statistics in 2011, data from 2006 indicated that 25-year-old women and men with a Bachelor’s degree or higher had an average life expectancy of 8.6 and 9.3 years more, respectively, than those without a high school diploma.⁷ That is a big difference. Education level is also predictive of higher socio-economic status⁸ and associated with lower risk factors for poor health such as obesity and smoking. In addition, chronic conditions are less common in people who have received more education.⁶

It would be a crude oversimplification to conclude that this positive association between level of education and health necessarily or largely resulted from more actual schooling on health issues. There is much more to that: health status and inequities depend on numerous factors, only one of which is education. They also include race, sex, early development, employment, income, degree of social integration or exclusion, and access to healthcare. According to the World Health Organization, the social determinants of health are those conditions in which people are born, grow, live, work, and age. These, in turn, are determined by how resources, money, and power are distributed locally, at the national level, and globally.⁹

Health literacy, generally defined as the skills and abilities to gain access to, understand, and use health-related information,¹⁰ is another factor that influences the likelihood of health and wellbeing. It is only one aspect, but it ties back to many of the determinants just listed. And whereas general illiteracy in the U.S. and other industrialized nations is uncommon, reading skills do influence how patients understand medical information. Many people struggle with this, both when such information is spoken and when it is written down.

Not surprisingly, comprehension of health information is strongly linked to health outcomes¹¹ because it involves the entire spectrum of communication between individuals and the healthcare system. Such information includes guidance on disease prevention and screening, education on health behaviors, and the explanation of a newly diagnosed disease. Patients may struggle to understand medication and treatment plans, but also be unclear on the management of a chronic disease, which in turn can hamper improvement or obstruct it altogether.

For many people, the entire healthcare system is difficult to navigate. This may allude to less-than-ideal education systems, but to be fair: the health information given to patients and the general public is often simply too difficult. It is frequently issued in complex language and presented in a way that exceeds the reading proficiency of average people with a high school diploma.¹⁰ Why is that the case?

Healthcare providers are not trying to do a disservice to their patients, but providing effective, actionable information at a basic level requires a skill that their training did not focus on. It takes more than time and compassion: in the fast-paced world of medical care, it actually takes additional effort to avoid jargon and to provide key information in uncomplicated layman's terms. This is an experience Dr. Ellen Jo Baron can speak to. She is a clinical microbiologist with a tremendous passion for her work and a former

medical director of the leading-edge microbiology and virology laboratories at the Stanford University Medical Center, where I had the pleasure of working with her.

Together with her colleague Dr. Jim McLaughlin, in 2008 she cofounded a nongovernmental organization, the Diagnostic Microbiology Development Program¹², to set up basic microbiology laboratory testing in Cambodia. After her return from Southeast Asia, she shared with me how challenging it had been to keep the educational content for Cambodian hospital workers completely clear and stripped of all unnecessary frills. After consulting with local hospital staff, she organized hands-on instruction by highly qualified medical technologists, and ultimately devised visual flow charts with straightforward images of the process of bacterial culture, so that infections could be identified properly.

Healthcare in Cambodia has extremely limited resources, and previously even basic approaches to diagnostic microbiology were not available. Consequently, infections were often not diagnosed or not treated correctly, because the means to establish what caused the disease and which antibiotics would be able to eradicate the infectious agents were unavailable. Patients could have complications and even perish from very treatable infections, given knowledge and resources.

With Dr. Baron's efforts and her direct involvement, microbiology laboratories were established in multiple hospitals, as well as a reference laboratory service for infections that were difficult to accurately characterize. Her contribution to patient care in Cambodia has been vital to the improvement of the country's healthcare and is inspiring. It also highlights how important it is to overcome the language barrier, which can be caused not only by speaking different languages in the literal sense, but also by differences that amount to another type of language barrier: that between those who know the medical vocabulary and those who do not.

I like to think that I am tuned in to culturally sensitive patient care, but must admit that I have been guilty of "medi-speak" myself: at Clackamas Volunteers in Medicine¹³, the free clinic where I work to provide medical care to un(der)insured patients, I wanted to put together a handout for patients with diabetes so that they could understand the meaning of a laboratory measurement for long-term blood sugar control (HbA1C). I wrote it in what I considered easy-to-understand language, covering everything I thought would be good to know and helpful to grasp. Then, I asked our staff and volunteers, some of whom were native English speakers whereas others were not, to read it, and to let me know their thoughts. The feedback I received was kind but clear: yes, it provided an explanation of

what the measurement was based on, of what happened in the body, and of how it impacted health in the long run, but it was far too detailed, with difficult words and without any visual context. Furthermore, it did not explain in a compelling way why the patient needed to take action today or should care to remember this in the future.

In other words, it failed to bring home how this measurement would be *important* in daily life and *relevant* in the long term. My initial response was surprise, but when I looked at it again I realized that their comments were spot-on. Our clinic manager soon found some example images that explained the same thing in a way that was much easier to comprehend for all patients, regardless of education level or language background, and we are now using a handout she designed, unless someone wants to have more background information. As you can imagine, only a very small minority of patients shares my fascination with the chemistry that takes place on a subset of cells in the body!

The bottom line is this: unless healthcare providers and healthcare facilities become true partners to patients and reduce barriers to understanding, literacy-related obstacles to improving health will remain. But health communication finally does receive systematic attention¹¹ and it is now understood that it must be addressed beyond the written and spoken word. Signage in healthcare facilities, the environment of a medical practice, and navigation of the overall healthcare system are being evaluated as well, and hopefully will be improved. Change takes time, however. And when the medical process is perceived to be confusing, people either give up altogether or try to find information they can understand. After all, there is an abundance of information available on the internet and on social media, and finding something, anything, on a topic of interest is easier than ever. The big challenge remains to differentiate helpful from unhelpful or even perilous information. Which brings us back to experts...

A few days before her 61st birthday, novelist and non-fiction writer Anne Lamott wrote down some things that she knows for sure. In her talk: “12 truths I learned from life and writing” she shared that one of these is that

“Everyone is screwed up, clingy, and scared, even the people who seem to have it most together. They are much more like you than you would believe, so try not to compare your insides to other people’s outsides.”¹⁴

Her point is well-taken. Our personal work, whatever it is, is an inside job, and perfection does not exist. The celebrity status that is bestowed upon some experts, or that some so successfully project about themselves, is best viewed with a healthy dose of skepticism.

Long before Anne Lamott's insights, Franklin D. Roosevelt in a speech from 1942 remarked:

"There are as many opinions as there are experts"¹⁵

and that, for sure, has not changed. Opinions can provide a starting point, but ultimately our goals must be supported and advanced by information that is accurate and applied in the right context. As my neighbor at the restaurant lamented, there is no solution that necessarily fits all. This is certainly the case for many dimensions of health and wellbeing. On the positive side, there is a vast sea of knowledge that, when navigated well, can inform sound decisions. Unfortunately, a lot of beacons in that sea look deceptively real, but are not going to give us safe passage through the shallows...

Key points:

- ☞ There is a profusion of information in the area of health and wellbeing. Some is factual and some is personal opinion. Some is spot on, but some is unreliable, not applicable, or incomplete.
- ☞ Misinformation can be detrimental to health and wellbeing.
- ☞ Physicians are recognized health experts, but interactions of patients with their doctors can be frustrating, confusing, or just too fleeting, causing people to either give up or seek their answers elsewhere, in information they can understand.
- ☞ How well we understand and evaluate information on health is strongly linked to health outcomes. If healthcare providers and healthcare facilities reduce barriers to understanding, obstacles to improving health can be reduced.

CHAPTER TWO

IN THE KNOW

How knowledge is classified and how it affects health and wellbeing

- ↳ *What constitutes knowledge?*
- ↳ *How can different kinds of knowledge be distinguished?*
- ↳ *Why is knowledge important and how does it influence health and wellbeing?*
- ↳ *What is the advantage of gaining knowledge and what are its limitations?*
- ↳ *How does knowledge change over time?*

Knowledge is a funny thing. It can be perceived as an absolute and final body of understanding but in actuality it is fluid, expanding or changing as additional facts are discovered. It is something that can be tested in a person but remains elusive, intangible in its actual extent.

The development of personal knowledge takes effort for each and every one of us, yet it can be lost suddenly, in an instant, or fade gradually over time when it is not maintained. Like those dark corners of a house that, when rarely visited, accumulate dust and cobwebs and no longer shine for lack of upkeep. Sometimes we can still retrieve something from a box in one such corner of an attic, but when we try to find it we do not recall exactly where the box was stored among all the other stuff we planned to organize on a