THE GUT HEALTH SERIES

GUT AND MOOD

The gut-brain connection, and a six-step plan built on tested treatments



DR MICHAEL KLEIN

Before You Begin

Gut problems can affect what you eat, how you feel and how you live. This book brings together scientific evidence and practical guidance on one of them: gut and mood.

It is one of the problem chapters of *The Gut Health Manual*, published on its own. Chapter 2 is that chapter, word for word. Chapter 1 adds the short background it relies on, and Where to Go Next shows what the full manual adds for a reader with this problem. Where the text says "the constipation chapter" or similar, it means a chapter of the full manual.

IMPORTANT NOTICE

This book is for general information. It is not a diagnosis, and it does not replace advice from your own doctor, pharmacist or dietitian.

Read the **red flags** in Chapter 2 first. If any apply to you, see a doctor before trying the plan.

Never stop or change a prescribed medicine without speaking to the person who prescribed it.

Check with a pharmacist before taking herbal products if you are pregnant, breastfeeding, take regular medicines, or have a long-term condition.

How to Use This Book

Start with Chapter 2. You do not need to read Chapter 1 first, but it is short and explains the labels used throughout.

The evidence labels

Label	What it means
Strong	Several good randomised controlled trials, confirmed in meta-analyses.
Moderate	At least one good randomised trial, or several smaller trials pointing the same way.
Early	Small or laboratory studies, or traditional use with a plausible mechanism.
Expert advice	Recommended by specialist guidelines on the basis of experience rather than trials.
Not supported	Tested and found not to help, or advised against by specialists.

What the boxes mean

★ **KEY IDEA**

The single most important point of a section.

i **PRACTICAL TIP**

Advice that makes a step easier or more effective.

! **CAUTION**

Safety guidance, or a common mistake to avoid.

The workbook pages

Chapter 2 ends with **Key takeaways**, a **checklist**, a **14-day plan** and a **tracker** page. Patterns in your own diary are often more useful than any general advice. Each tracker is also in the free GutClarity™ app (see Free Downloads and the Companion Kit).

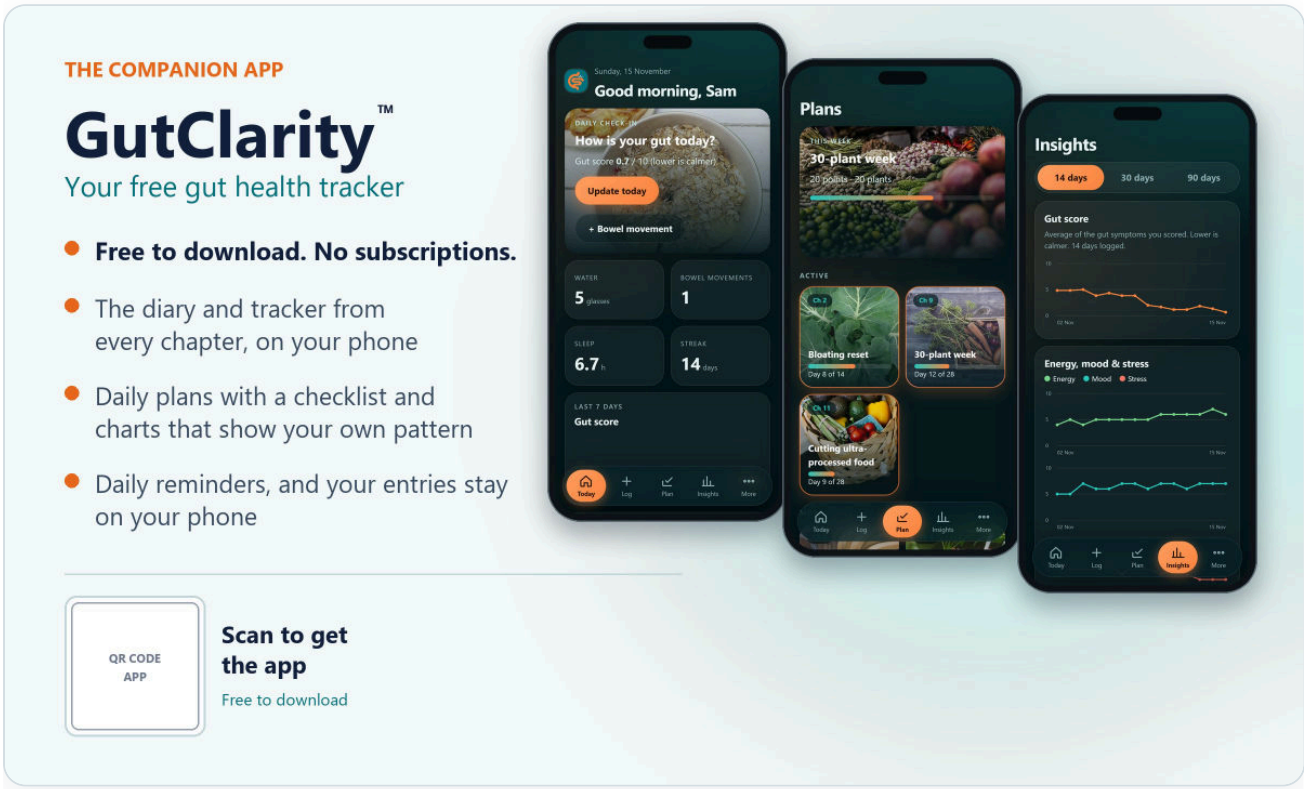
Free Downloads and the Companion Kit

To help you put the guidance into practice, a selection of free downloadable resources is available online, including printable checklists, symptom diaries and progress trackers. The complete Gut Health Companion Kit is free to download too, bringing together the chapter worksheets, practical plans, food-planning tools and reusable journal pages, alongside guided audio for breathing and gut-calming relaxation. These resources accompany the Natural Health Series and give you space to record your experiences, recognise patterns and prepare useful questions for your healthcare professional. You can print fresh copies whenever you need them and use the tools that suit you best.



Your free companion app

Every diary and tracker in this book is also available in **GutClarity™**, a companion app for your phone. It is free to download, and there are no subscriptions. You score your symptoms, log meals and bowel movements, tick off the steps of each 14-day plan, and see charts of your own pattern, with an optional reminder each day. Your entries stay on your phone. At the end of Chapter 2, a short panel shows the matching screens, for anyone who would rather not print and fill in the forms by hand.



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CHAPTER 1

01

This short chapter gives the background that Chapter 2 relies on: two ideas about how the gut works, and how to read the evidence labels. It is adapted from the opening chapter of The Gut Health Manual.

IN THIS CHAPTER

01 The gut-brain axis

02 The microbiome

03 How the evidence labels work

04 Where to begin

1.1 Two things worth knowing

The full manual explains four systems that sit under almost every gut problem: the microbiome, the gut barrier, short-chain fatty acids and the gut-brain axis. Two of them matter most for low mood, anxiety and stress, so they are summarised here.

The gut-brain axis

Your gut and your brain are in constant two-way communication through a network called the gut-brain axis. The gut contains its own network of nerve cells, the enteric nervous system. The vagus nerve carries signals between the gut and the brainstem in both directions. Most of the body's serotonin is made in the gut, mainly by the gut's own cells, not by bacteria. Gut serotonin does not cross the blood-brain barrier; the brain makes its own. Bacteria can influence signalling, but that is not the same as sending serotonin to the brain. **Evidence level: Strong (basic neuroscience and anatomy); Early (microbial mechanisms as an explanation for changes in human mood).**

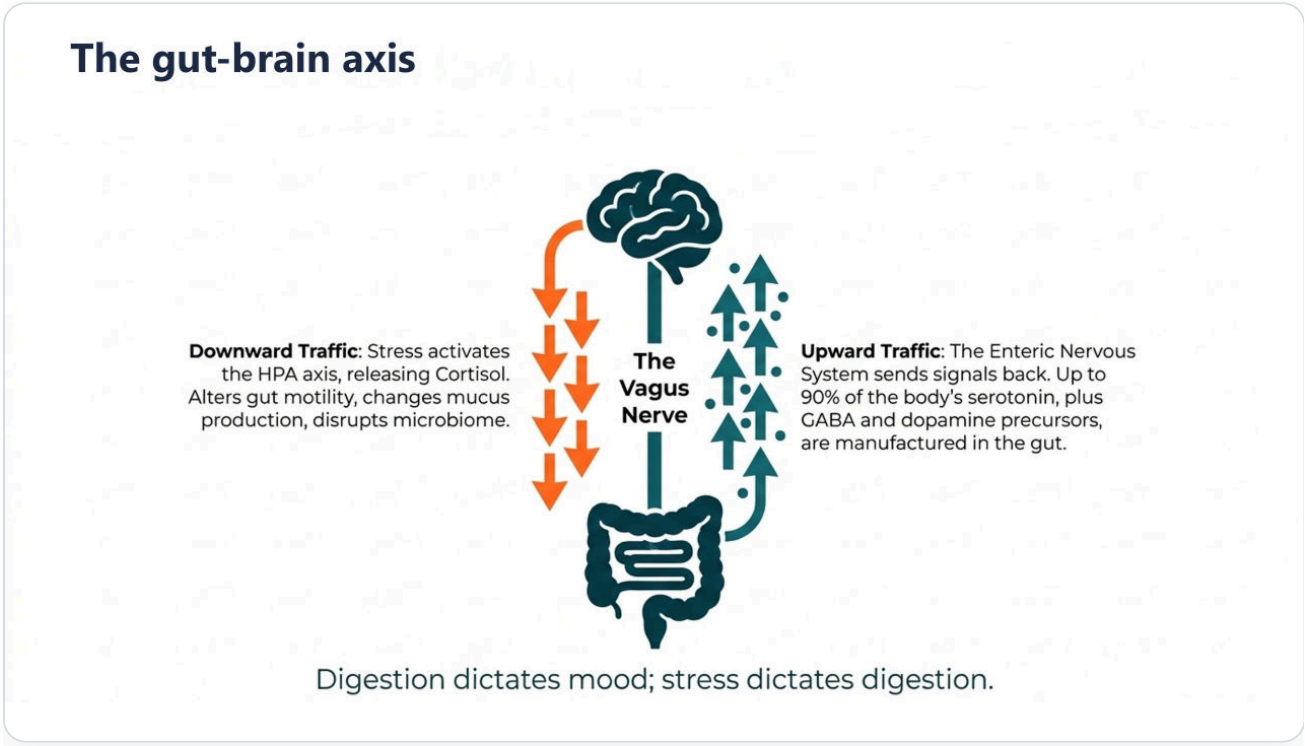


FIGURE 1.1 **The gut-brain axis** Signals travel both ways through nerves and other routes. Serotonin made in the gut is mainly produced by the gut's own cells and does not enter the brain. The arrows show possible routes, not that digestion dictates mood or stress dictates digestion.

The microbiome

Your large intestine is home to trillions of micro-organisms, mostly bacteria, and also viruses, fungi and other microbes. This community is called the gut microbiome. Its members help break down food that your own enzymes cannot digest. **Evidence level: Strong for these established biological functions.**

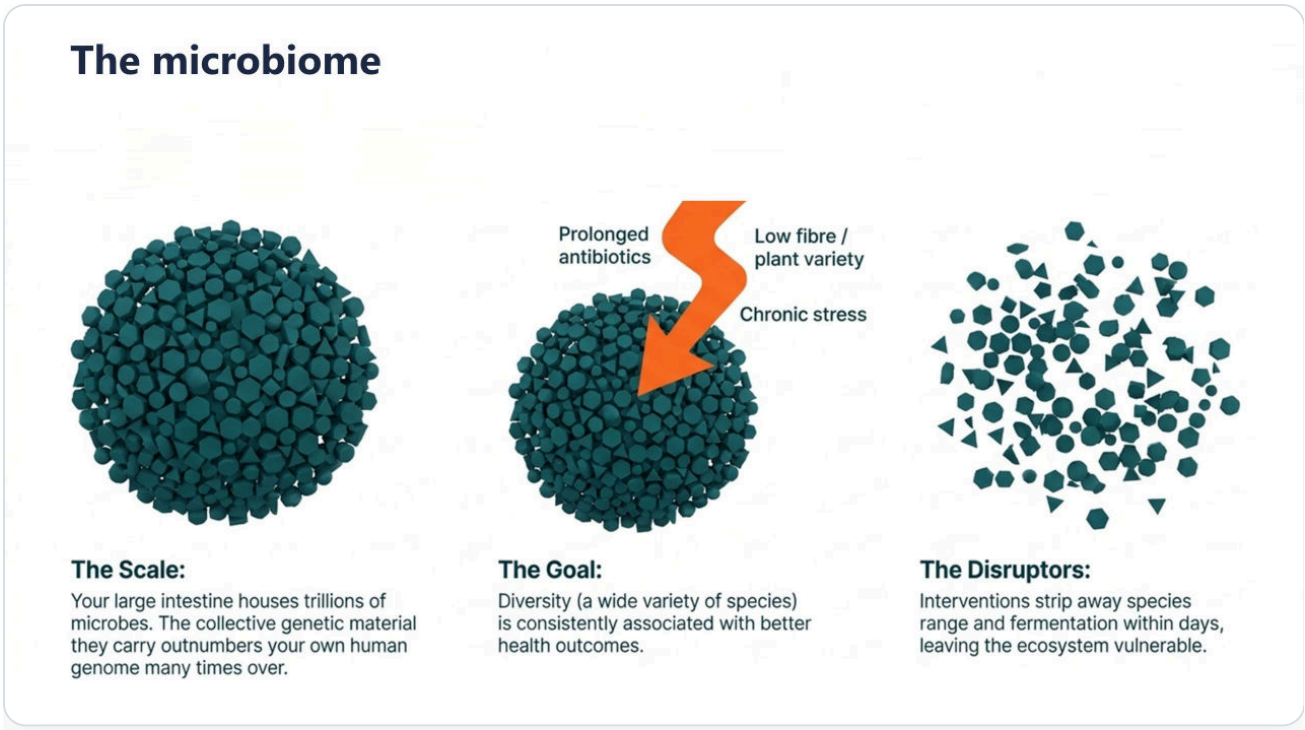


FIGURE 1.2 **The microbiome** A diverse community lives in the large intestine. Antibiotics can change it within days; diet and stress may also affect it. A link with health is not proof that raising diversity will relieve a particular symptom.

1.2 How the evidence labels work

The labels in the table in How to Use This Book (Strong, Moderate, Early, Expert advice and Not supported) sit beside the key claims in Chapter 2. Read the words beside a label. Where the evidence concerns an observational link or basic physiology rather than a treatment trial, the text says so. Strong evidence that a biological process exists is not strong evidence that changing it will improve your symptoms.

1.3 Where to begin

Chapter 2 is the main part of this book. Read its **Safety first** section before anything else: if you are thinking of harming yourself, or you do not feel you can keep yourself safe, follow the urgent-help advice there straight away. Then work through the six steps in order, with your doctor where the chapter says so, and use the 14-day plan and the diary at the end of the chapter to see what helps you.

This book is not a substitute for medical advice. If you have symptoms that are new, rapidly changing, or accompanied by blood, unexplained weight loss or pain that wakes you at night, see your doctor first.



CHAPTER TWO

Mood *and* Your Gut

How the gut and the brain talk, and six steps that help both.

39.1%

of adults with IBS had symptoms of anxiety.

IBS REVIEW, 2019

> *Your stomach churns before a hard day. Worry seems to set off your bowels, and a bad week for your gut leaves you flat, tired and low. You are not imagining the link: the gut and the brain talk to each other all the time, in both directions. This chapter explains how that conversation works, corrects a popular myth about serotonin, sets out when low mood or anxiety needs a doctor, and gives a six-step plan built on the treatments that have been tested: movement, food, sleep, talking therapies and, where needed, medicines.*

IN THIS CHAPTER

01 How often low mood and anxiety come with gut symptoms, and which comes first

02 How the gut and the brain talk: nerves, stress hormones, immune signals and gut bacteria

03 The serotonin story, corrected

04 Safety first: when to get help now, and what your doctor may check

05 The six-step plan, from movement and a Mediterranean-style diet to talking therapies and medicines

06 Probiotics for mood, supplements people ask about, and what specialists advise against

07 Myths, a 14-day plan and a mood and gut diary

2.1 Gut and mood: how often they meet

Gut symptoms and mood problems often travel together. The clearest numbers come from people with irritable bowel syndrome (IBS). A 2019 review pooled 73 studies of adults with IBS:

- **39.1%** had symptoms of anxiety, and **23%** had an anxiety disorder.
- **28.8%** had symptoms of depression, and **23.3%** had a depressive disorder.
- Compared with people without IBS, people with IBS had about **three times** the odds of anxiety or depression.

Symptoms and *disorders* are not the same thing. Symptoms were measured on a questionnaire; a disorder is a diagnosis made by a trained assessor. Both show the same pattern: worry and low mood are common in people with a troubled gut, and they deserve care in their own right.

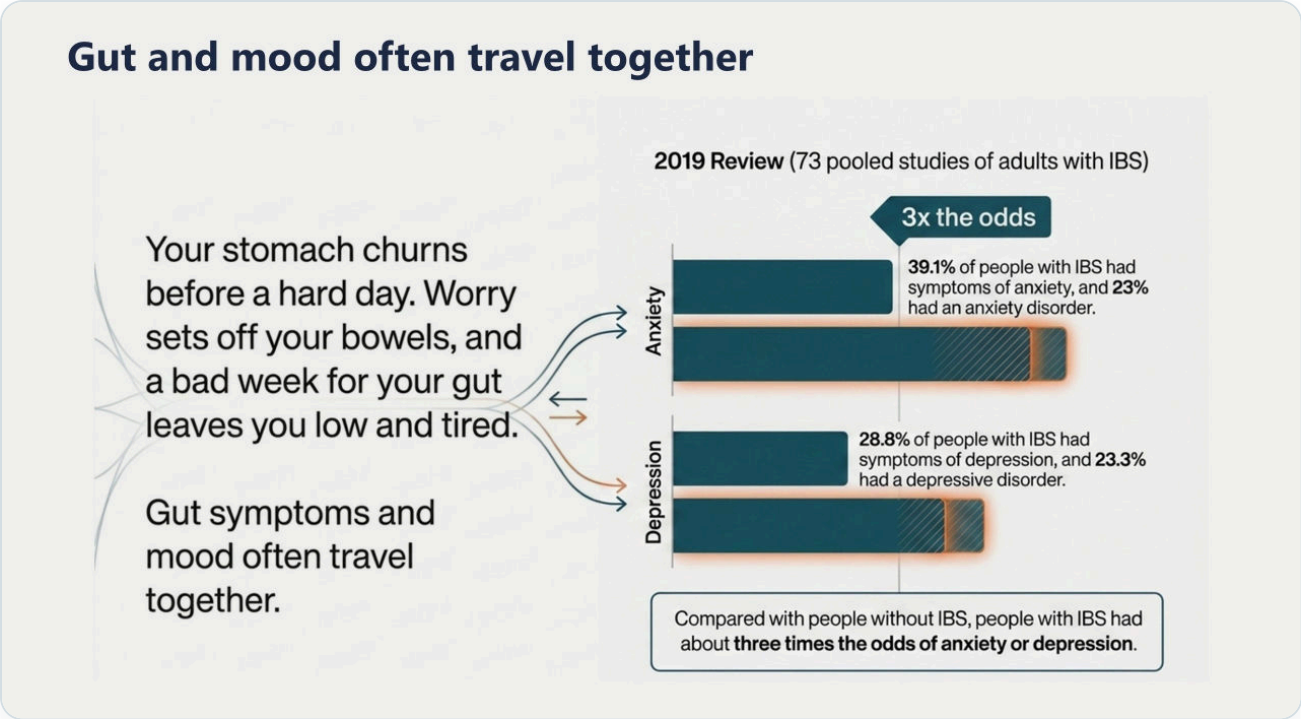


FIGURE 2.1 **Gut and mood often travel together** In a 2019 review of 73 studies, about four in ten adults with IBS had anxiety symptoms and nearly three in ten had depression symptoms.

Which comes first: the gut or the mood?

Two Australian population studies followed people over time to find out which way the link runs.

- **A 12-year study (2012).** Of 1,775 adults surveyed in 1997, 1,002 answered again 12 years later. Among people with no gut-brain disorder at the start, higher anxiety (but not depression) predicted a new disorder such as IBS 12 years later. And among people with no raised anxiety or depression at the start, those who already had a gut disorder had higher anxiety and depression scores 12 years later.
- **A 1-year study (2016).** In 1,900 adults, higher anxiety or depression scores predicted new IBS a year later, and IBS predicted higher anxiety and depression scores a year later. Among people who developed both problems, the authors worked out that the mood problem came first in about one-third, and the gut problem came first in about two-thirds.

The link runs both ways. Worry can set off the gut, and a troubled gut can, over time, lower your mood. That is why this chapter treats both at once.

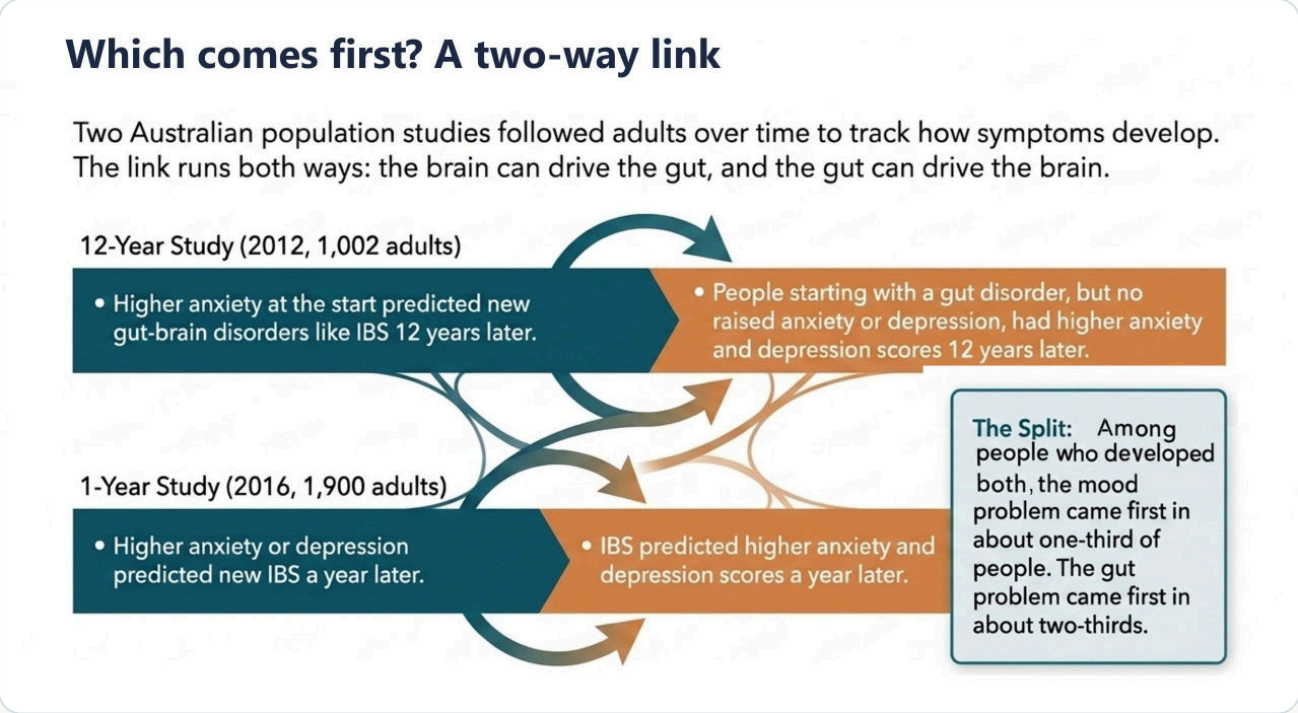


FIGURE 2.2 **Which comes first?** Two Australian population studies: the link runs both ways; in people who developed both problems, gut symptoms came first in about two-thirds.

2.2 Low mood, depression, anxiety and stress

These words are often used loosely. This chapter uses them as public health guidance does:

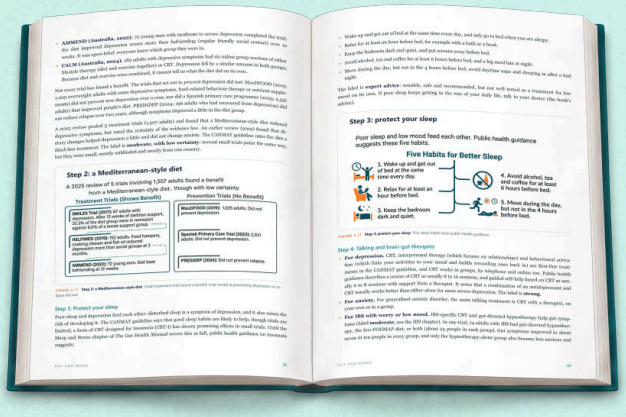
- **Low mood.** Feeling sad, anxious or panicky, irritable, tired or low in confidence. It often gets better after a few days or weeks, and small changes, such as more sleep or sorting out something that is bothering you, can help.
- **Depression.** A low mood that lasts for weeks or months and affects your daily life. Other signs include losing interest and enjoyment, feeling hopeless, poor concentration, disturbed sleep and changes in appetite. Physical symptoms can include constipation, aches and pains, and a lack of energy.
- **Anxiety.** Worry or fear. *Generalised anxiety disorder* means feeling anxious most of the time, about many things, in a way that is hard to control and affects daily life. Stomach problems are on the list of its symptoms, with poor sleep, restlessness and a racing heart.
- **Stress.** The body's response to pressure. Short bursts are normal and even useful; stress that goes on and on feeds both gut symptoms and low mood.

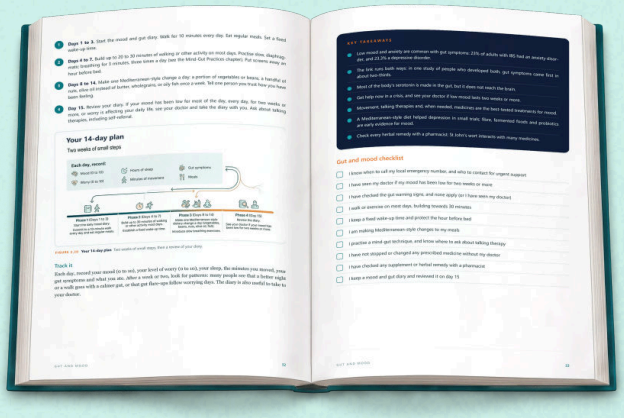
Stomach churning before a hard day?

Explore how the gut and brain talk to each other, why the popular serotonin story needs correcting, and six steps built on tested treatments. The book begins with a safety page and says when to see your doctor.

Practical help that sits alongside professional care, never in place of it, with every step graded by the strength of its evidence. Printable checklists, symptom diaries and progress trackers are free to download, and the GutClarity app is free too, with no subscription.

Read the safety page first, then begin with step one.



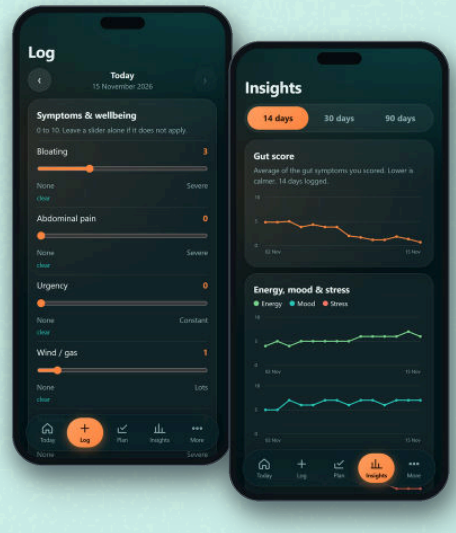


Clear explanations. Practical steps.

Checklists, diaries and trackers.

Explore The Gut Health Series





The complete Gut Health Manual • Seven focused guides • Free GutClarity app