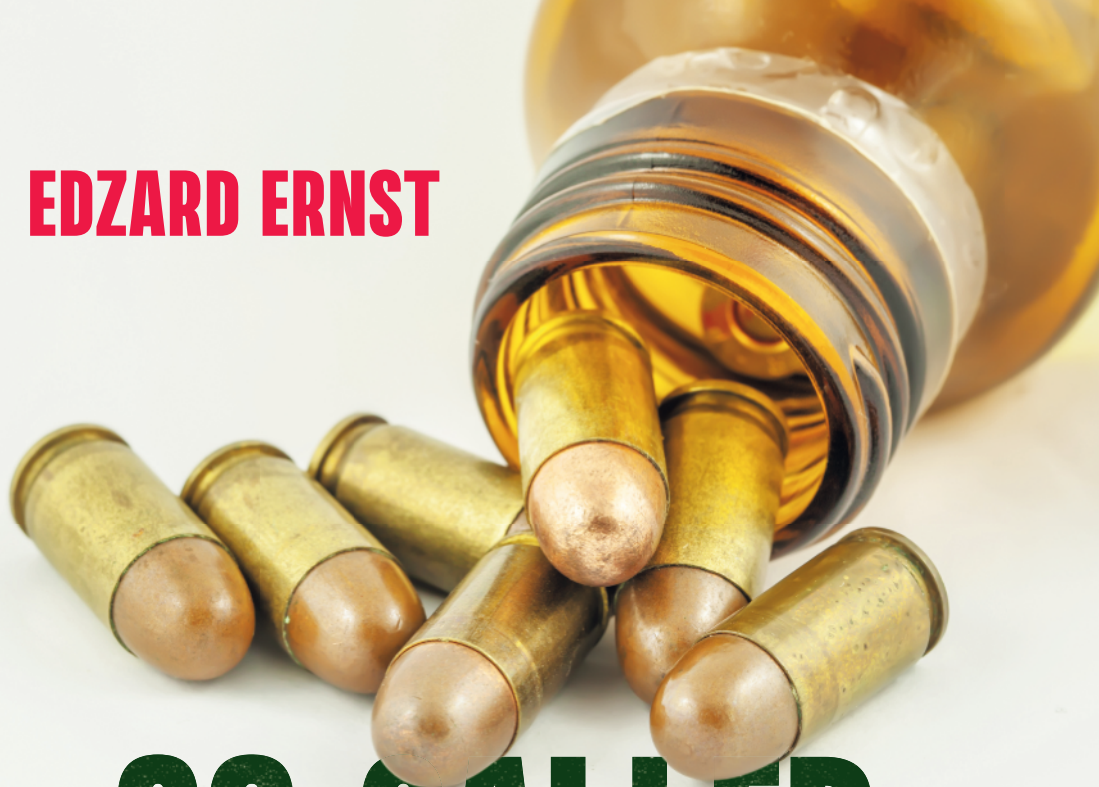


EDZARD ERNST



**SO-CALLED
ALTERNATIVE
SCAM MEDICINE
FOR CANCER**

So-Called Alternative Medicine (SCAM) for Cancer

Edzard Ernst

So-Called Alternative Medicine (SCAM) for Cancer

 Springer

Edzard Ernst
University of Exeter
Cambridge, UK

ISBN 978-3-030-74157-0 ISBN 978-3-030-74158-7 (eBook)
<https://doi.org/10.1007/978-3-030-74158-7>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2021

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Thumbs symbols used in tables: © ii-graphics / stock.adobe.com

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

To Danielle and Dr. Jacquot who saved her life

Foreword

In the doldrums between Christmas and New Year's Eve 2020, I was admitted to the Royal Free Hospital (RFH) in north-west London, following a heart attack. This was at the apogee of the worst pandemic in our living memory. I felt safe entering this hotbed of COVID-19, thanks to the first shot of the Pfizer vaccine two weeks before the event. Although I had once been Professor of Surgery at the RFH, I did not expect, nor was I offered, preferential treatment. I simply placed my life in the hands of our wonderful National Health Service (NHS) and went with the flow.

I was awake but sedated as they carried out my angiogram, threading a cannula up my left radial artery. The cardiologist swiftly identified the stenosis and dilated it up and cleaned out the clot. This was all done so competently, with speed and fluency, so as to minimise the damage to my myocardium (heart muscle). I marvelled at the way a cannula was navigated up my radial artery and manoeuvred into the coronary arteries on a big screen of magnified digital images. Before this intervention, my life was hanging on the threads of collateral vessels, but once unblocked, the beautiful fractal geometry of my coronary arterial system was displayed in front of my eyes and my fear was expunged. The external and internal structures of the human body are sublime, and the role of scientific medicine, aided by biotechnology of near-magical proportions, restores our bodies to functional perfection that has emerged over millions of years, through the process of evolution.

Whilst under sedation, I was in an almost transcendental state so that in my imagination I saw a long line of scientists from William Harvey who

described the circulation of the blood in seventeenth century; Edward Jenner who carried the first vaccination; Louis Pasteur, without whose discoveries we would not enjoy aseptic surgery; Claude Bernard in nineteenth century who perfected our knowledge of the physiology of the cardio-vascular system; Marie Curie who won the Nobel Prize for discovering radiation at the turn of the twentieth century; Cournaud, Forssmann, and Richards who shared the Nobel Prize in Physiology or Medicine in 1956; and finally the scientists Ugur Sahin and Ozlem Tureci who developed and trialled the first vaccine for the COVID-19 in record time, smiling down on me. These are just a few names of those who made the discoveries over the last 300 years that on aggregate saved my life. No thanks whatsoever to the proponents of so-called alternative medicine (SCAM), you might even go so far as to suggest that all these advances were in spite of the efforts of SCAM. We witness the worst examples of those who live in the parallel universe of the SCAMERS who spread conspiracy theories about vaccination not only for the MMR but amongst the refuseniks of the anti-COVID-19 vaccines.

This book of course is about cancer not heart disease, but my personal experience of what the NHS can achieve via evidence-based medicine (EBM), by the underlying principles, remains the same as those expressed in my personal anecdote.

I spent most of my professional life as a surgical oncologist with a specialist interest in the research and treatment of breast cancer. My interest in SCAM began in unusual circumstances nearly 40 years ago. I had recently been appointed as Professor of Surgery at Kings College London, and one of my first achievements was to raise the funds to establish a clinical trials centre for testing cancer treatments in randomised controlled trials (RCTs) throughout our Kingdom and later on to include Europe, the Commonwealth and Europe. One evening, I was invited to join in a late-night chat programme in a debate with a homeopathic doctor. At that time, I had only the vaguest ideas of what homeopathy was. Like most of my friends, I thought it was something like herbal remedies. I spoke about the progress with breast-conserving surgery and adjuvant tamoxifen that improves 10-year survival by >30% in return the homeopath lauded the success of *viscum album* also known as *Iscador*. I had no idea what that was, so he explained to me in a patronising way that it was an extract of mistletoe. When I asked how it worked in curing breast cancer, he explained to as if I was a child that mistletoe grows on oak trees like cancer grows on women; *ergo*, a *dilute* extract of *Iscador* must be good for breast cancer and that he had many anecdotes to prove this.

I could not believe my ears and made a promise to myself to research this area of ignorance. I started reading around the subject and could barely believe the nonsense in front of my eyes. By *a dilute extract*, he was describing infinitesimal dilutions wherein there was not a singular molecule of the “mother tincture” left. The choice of the “mother tincture” was based on the principle of like cures like. The simplest example might be a cure for the common cold using a very dilute extract of onion on the premise that onions make your eyes and nose run with tears and snot.

To my dismay, I learnt that there was a hospital specialising in homeopathy in London with a royal seal of approval. Royal London Homeopathic Hospital was established in 1849. It moved to its present site in Great Ormond Street in 1859. The hospital joined the NHS as a teaching hospital becoming the Royal London Homeopathic Hospital by permission of King George VI in 1948. It stopped providing NHS-funded homeopathic remedies as recently as April 2018.

Why was a bizarre blend of alternative medicine that was “invented” by an obscure German doctor in the mid-nineteenth century, the age before the enlightenment of the evidence-based medicine (EBM) era, be so popular amongst the great and the good attending a hospital with a royal warrant?

“Put not your trust in princes” (Psalm 146:3)

For reasons obscure to me, there has long been the tradition of “celebrity” endorsement.

Prominent amongst them have been Steve Jobs, Farrah Fawcett, Gwyneth Paltrow, Oprah Winfrey, Elle Macpherson, Kate Moss, Richard Gere, and Steve McQueen. Steve Jobs, the man responsible for my Apple Mac desktop upon which I type this very piece, died with pancreatic cancer. He delayed therapy for 9 months whilst searching for “natural” remedies.

Whether or not his delay influenced the outcome will never be known, but this kind of highly publicised endorsement could easily distract naïve patients with curable cancer and deny themselves the chance.

In my experience, the most alarming influencer for the promotion of alternative medicine is HRH, Prince Charles, Prince of Wales. I am guilty of *Lèse-majesté* by calling him to account on two occasions after his speeches at the 150th anniversary of the BMA and the bicentenary of the Royal Society. Here is an extract from an open letter I wrote at the invitation of the editor of the *BMJ* in 2004 [1]

Over the last 20 years, I have treated thousands of patients with cancer and lost some dear friends and relatives along the way with this dreaded disease. I guess that for the majority of my patients their first meeting with me was as momentous and memorable as mine was with you. Sadly, however hard I try, many of these

courageous men and women are not instantly recognised, and covertly, I check their notes before each follow-up in order to practise the benign deception of greeting them like long lost friends. This phenomenon of asymmetrical relationships I like to describe as the “gradient of power”. The power of my authority comes with a knowledge built on 40 years of study and 25 years of active involvement in cancer research. I am sensitive to the danger of abusing this power, and as a last resort, I know that the General Medical Council (GMC) is watching over my shoulder to ensure I respect a code of conduct with a duty of care that respects patient’s dignity and privacy and reminds me that my personal beliefs should not prejudice my advice. If you will forgive me sir, your power and authority rests on an accident of birth. There is no equivalent of the GMC for the monarchy, so it is left to either sensational journalist or more rarely the quiet voice of loyal subject such as me, to warn you that you may have overstepped the mark. It is in the nature of your world to be surrounded by sycophants (including members of the medical establishment hungry for their mention in the Queen’s birthday honours list) who constantly reinforce what they assume are your prejudices. Sir, they patronise you! Allow me this chastisement. Many lay people such as yourself have an impressionistic notion of science as a cloak for bigotry. Nothing could be further from the truth.

Professional development is part of our student’s core curriculum, involving modules in the humanities. Students are taught the importance of the spiritual domain but at the same time study the epistemology of medicine, or in simpler words the nature of evidence. The scientific method is based on the deductive process that starts with the humble assumption that your hypothesis might be wrong and is then subjected to experiments that carry the risk of falsification. This approach works. For example, in my own specialist disease, breast cancer, we have witnessed a 30% fall in mortality since 1984, resulting from a world-wide collaboration in clinical trials, accompanied by improvements in quality of life as measured by psychometric instruments. You promote the Gerson diet whose only support comes from anecdotes. I have Gerson’s book on my desk as I write. Forget the implausible rationale simply search for anything other than testimonial support. What is wrong with anecdote you may ask? After all, these are real human-interest stories. The problems are manifold but start with the assumption that cancer has a predictable natural history. “The patient was only given 6 months to live, tried the diet and lived for years”. This is an urban myth. None of us is so arrogant as to predict that which is known only to the Almighty. With advanced breast cancer, the median expectation of life might be 18 months, but many of my patients live for many years longer, with or without treatment. I have always advocated the scientific evaluation of complementary and alternative medicine, using controlled trials, and if “alternative” therapies pass these rigorous tests of so-called orthodox” medicine, then they will cease to be alternative and join

our armamentarium. If their proponents lack the courage of their convictions to have their pet remedies subjected to the “hazards of refutation”, then they are the bigots who will forever be condemned to practice on the fringe. I have much time for complimentary therapy that offers improvements in quality of life or spiritual solace, providing that it is truly integrated with modern medicine, but I have no time at all for “alternative” therapy which places itself above the laws of evidence and practices in a metaphysical domain that harks back to the dark days of Galen.

Supportive treatment that complements conventional cancer medicine.

As stated above, I believe there is such a concept of complementary therapy aimed at improvement in quality of life or spiritual solace and I am delighted to note that this domain is covered in a large section of this book. Unfortunately, the area of debate often gets stuck in a quagmire of semantics. In 2005, I found myself chairing a conference on the role of complementary and alternative medicine in the management of early breast cancer in Florence. [2] Professor Ernst, the author of this book, acted as a co-chairman, and I am sure he will never forget that first session where we tried to pin down the proponents of SCAM on the meaning of the words they used. Sadly, we wasted the first half day of the meeting not able to agree on the meaning of words like “complementary” and “alternative”, and I suspect that the acronym SCAM, he invented, might have been germinated in Florence in 2005.

The English language has a rich and beautiful vocabulary. All these wonderful words have precise meaning, and we tamper with them at our peril. George Orwell’s terrifying book 1984 illustrates the ultimate triumph of the evil of a totalitarian state. By the simple device of distorting the language as to make it impossible to even harbour subversive thoughts, “Big Brother” ruled absolutely. It saddens me to witness how the language is being debased by a pseudo-culture that encourages transient values and transient meanings to our vocabulary. The same worry concerns the use of the three words, alternative, complementary, and holistic, when applied to the practice of medicine.

The first question you have to ask about “alternative” is—alternative to what? Proponents of alternative medicine will describe the practice of doctors in the National Health Services, both in primary and tertiary care, as “orthodox”, “mainstream”, “Western”, “reductionist”, and so on. In return, the practitioners of conventional medicine view “alternative/unconventional” medicine as a series of comprehensive health belief systems, superficially with little in common, yet sharing beliefs in metaphysical concepts of balance and similarities which date back to Galenic doctrine from the second century A.D, or oriental mysticism 2,000 years older. So, in this parallel universe of alternative medicine, treatments are based on metaphysical concepts, rather than

orthodox physiology and biochemistry. Yet, it has to be accepted that each view of the other is to some extent pejorative, and if we are to establish a dialogue between the champions on either side of this conceptual divide, we must show mutual trust and mutual respect. Perhaps for the time being, we might blur these distinctions by using the word “unproven” which can apply equally well to therapeutic interventions on each side. Of course, the issue of the definition of “proof” then raises problems that I will address later.

Next, we must consider the definition of “complementary”. The Oxford English dictionary defines the word as, “that which completes or makes perfect, or that which when added completes a whole”. In other words, whilst modern medical science struggles to cure patients, complementary medicine helps patients to feel better, and who knows, by feeling better the act of healing itself may be complemented. Some complementary approaches may be placebos, and the touch of the “healer” or the hand of the massage therapist could be guided by strange belief systems that are alien to modern science. Providing the intention is to support the clinician in his endeavours rather than compete in the relativistic marketplace of ideas one might set aside these concerns.

Finally, “holism”, a slippery word whose ownership is competed for by both sides of the therapeutic divide. The word, holism, was coined by General Jan Smuts in 1926. He used the word to describe the tendency in nature to produce wholes from the ordered grouping of units (holons). Chambers twentieth-century dictionary describes holism in a precise and economic way as follows “Complete and self-contained systems from the atom and the cell by evolution to the most complex forms of life and mind”. It can be perceived then that the concept of holism is complex and exquisite and as an open system lends itself to study and experimentation. As such, it should be a concept that unites us rather than a continuing source of dispute. To do justice to the definition of the word holism, we have to start at the molecular level, and then from these basic building blocks attempt to reconstruct the complex organism which is the human subject living in harmony within the complex structure of a modern democratic nation state.

The basic building block of life has to be a sequence of DNA that codes for a specific protein. These DNA sequences or genes are organised within chromosomes forming the human genome. The chromosomes are packed within the nucleus with a degree of miniaturisation, which is awe-inspiring. The nucleus is a holon looking inwards at the genome and outwards at the cytoplasm of the cell. The cell is a holon that looks inwards at the proteins, which guarantee its structure and function contained within its plasma membrane, and at the energy transduction pathways contained within the mitochondria,

which produce the fuel for life. As a holon, the cell looks outwards at neighbouring cells of a self-similar type which may group together as glandular elements, but the cellular holon also enjoys cross talk with cells of a different developmental origin. These glandular elements group together as a functioning organ which is holistic in looking inwards at the exquisite functional integrity of itself and outwards to act in concert with the other organs of the body. This concert is orchestrated at the next level in the holistic hierarchy through the neuro-endocrine and immunological control mediated via the hypothalamic pituitary axis, the thyroid gland, the adrenal gland, the endocrine glands of sexual identity, and the lympho-reticular system that can distinguish self from non-self. Even this notion of “selfness” (essential individuality) is primitive compared with the next level up the hierarchy where the person exists in a conscious state somewhere within the cerebral cortex, with the mind, the great unexplored frontier, which will be the scientific challenge of doctors in the new millennium. Beyond the mind, those of strong religious faith believe in “the soul”. If these religious beliefs provide solace when facing an existential crisis, then I believe it is the role of the doctors administering to the dying to enable visits from the clergy to comfort their passing.

January 2021

Prof. Michael Baum, ChM, MD, FRCS
Professor Emeritus of Surgery and Visiting
Professor of Medical Humanities, University
College London, London, UK

References

- An open letter to the Prince of Wales: with respect, your highness, you’ve got it wrong *BMJ* 2004;329:118
- Baum M, Cassileth BR, Daniel R, Ernst E, et al. The role of complementary and alternative medicine in the management of early breast cancer: recommendations of the European Society of Mastology (EUSOMA) *Eur J Cancer*. 2006 Aug;42(12):1711-4

Contents

1	Introduction	1
1.1	Preface	1
1.2	Definition of SCAM and Related Terms	4
1.3	Common Assumptions About SCAM	8
1.4	Cancer and SCAM*	14
1.5	Integrative Cancer Care	17
1.6	Ethical Issues	22
1.7	What Is Reliable Evidence?	28
1.8	Pseudoscience and Pseudoscientists	35
1.9	How to Best Use the Following Sections of This Book	39
2	Prevention	43
3	Alternative Cancer Cures	59
3.1	Plant-Derived ‘Natural’ Remedies	59
3.2	Homeopathy	77
3.3	Diets	86
3.4	Non-plant-Based Supplements	97
3.5	Other Treatments	111
4	Palliative and Supportive Care	127
4.1	Acupuncture	129
4.2	Massage	135
4.3	Mind-Body Therapies	143

4.4	Herbal Remedies	152
4.5	Non-herbal Supplements	162
4.6	Paranormal Healing	172
4.7	Other Forms of SCAM	181
5	Risks of SCAM	191
5.1	SCAM as Replacements	191
5.2	Toxic SCAMs	193
5.3	Interactions Between SCAMs and Anti-cancer Drugs	194
5.4	Conclusions	196
6	Conclusion	199
	Appendix A: A Short Guide for Making Informed Choices	207
	Appendix B: Recommended Sources of Information	211
	Glossary	213



1

Introduction

1.1 Preface

In February 2013, my wife and I were in good spirits. I had recently retired from my post at Exeter University, and we were heading off to celebrate Danielle's round birthday with her family in Brittany. There was just one thing that bothered us: Danielle had recurring abdominal pains. She had seen our GP in England several times about it. The last time, she had received a prescription for some antibiotics. I knew they would not help; her symptoms were not due to an infection.

After our arrival in France, things got worse, and Danielle consulted a gynaecologist at the out-patient clinic of the local hospital. More tests were ordered; an ultrasound showed an abnormality; a subsequent MRI revealed a tumour of the uterus. The gynaecologist advised to operate as soon as possible, and Danielle agreed.

The operation went well, but the gynaecologist, Dr Matthieu Jacquot, was concerned and said he had to be more radical than he had anticipated. The diagnosis was still uncertain until the results from the histology lab were in. A few days later, when we saw Dr Jacquot again, our hopes that all was fine were thoroughly dashed. He explained that Danielle had cancer of the endometrium and laid out the treatment plan which an entire team of oncologists had designed after an in-depth review of her case: a second, much more extensive operation, followed by six sessions of chemotherapy, followed by months of daily radiotherapy, followed by two sessions of brachytherapy.

Dr Jacquot could not have been more empathetic. He explained in detail what consequences all this would have. Danielle's life would be dominated for the next year by a long series of treatments that were unpleasant, to say the least. We were both shocked and close to tears.

Before arriving at a decision, we talked to friends and experts in this area. Opinions differed marginally. Two days later, we had made up her mind: we would stay in Brittany for the entire year and get Danielle treated exactly as Dr Jacquot suggested.

The second operation was much tougher than the first, but Danielle recovered well. Ten days later, she was back in our home and looked after by a nurse who came daily to change the bandages and give injections. On her third visit, the nurse broached the subject of chemotherapy which was scheduled to start soon. She explained how unpleasant it would be and what horrendous side effects Danielle was facing. Then she said: 'You know, you don't need to go through all this. They only pump you full with poison. There is a much better approach. Just follow the anti-cancer diet of Dr Schwartz.¹ It is natural and has no side effects. It would surely cure your cancer.' When Danielle told me about this conversation, I informed the nurse that from now on I would myself take charge of the post-operative care of my wife and that her services were no longer required.

Today, Danielle is cancer-free. Had she listened to the nurse, she would almost certainly no longer be with us. But the lure of a 'natural' cancer cure with no side effects is almost irresistible. Faced with a serious diagnosis like cancer, most patients would consider any therapy that promises help without harm. Inevitably, they encounter a myriad of so-called alternative medicines (SCAMs), and many patients give SCAM a try.

In addition to Dr Schwartz's cancer diet, there are hundreds of SCAMs that specifically target vulnerable cancer patients like Danielle. How can patients not be confused, and who might give them responsible advice? Conventional doctors rarely do. A recent summary of 29 relevant papers concluded that *physicians will discuss complementary therapies only when a patient him/herself raises this issue within a consultation.*² But cancer patients are often too embarrassed to ask about SCAM. Those who are courageous enough usually get

¹ Dr Laurent Schwartz cancérologue iconoclaste—Guérir du Cancer (guerir-du-cancer.fr).

² Stub T, Quandt SA, Arcury TA, et al. Perception of risk and communication among conventional and complementary health care providers involving cancer patients' use of complementary therapies: a literature review. *BMC Complement Altern Med.* 2016;16(1):353. Published 2016 Sep 8. <https://doi.org/10.1186/s12906-016-1326-3>.

short shrift. Many conventional doctors are not just critical about SCAM, but also know very little about the subject.³

Patients deserve evidence-based information, instead they often get unhelpful blanket statements from their GPs such as:

- ‘there is no evidence’;
- ‘that’s all rubbish, best to stay well clear of it’;
- ‘if you want to try it, go ahead, it cannot do much harm’.

All of these are untrue. Frustrated by such erroneous platitudes, patients might go on the Internet for help where they are bombarded with uncritical promotion. My team investigated the information on SCAM for cancer provided by popular websites and found that they *offer information of extremely variable quality. Many endorse unproven therapies and some are outright dangerous.*⁴ Sadly, the advice patients might glean from newspapers⁵ or health-food stores⁶ tends to be equally misleading and potentially harmful.

Subsequently, some patients might visit a library and read one of the many books on the subject. If anything, they are even worse. We have repeatedly analysed the contents of consumer guides on SCAM and always concluded that following their recommendations would shorten the life of the reader.⁷ To give you a flavour, here are a few titles currently on sale:

- Cancer Medicine from Nature
- Outsmart Your Cancer: Alternative Non-Toxic Treatments That Work
- Cancer Medicine from Nature
- Perfect Guide on How to Cure Breast Cancer Through Curative Approved Alkaline Diets & Herbs
- How to Starve Cancer
- Healing the Prostate: The Best Holistic Methods to Treat the Prostate and Other Common Male-Related Conditions

³ Ziodeen KA, Misra SM. Complementary and integrative medicine attitudes and perceived knowledge in a large pediatric residency program. *Complement Ther Med.* 2018;37:133–135. <https://doi.org/10.1016/j.ctim.2018.02.004>.

⁴ Schmidt K, Ernst E. Assessing websites on complementary and alternative medicine for cancer. *Ann Oncol.* 2004;15(5):733–742. <https://doi.org/10.1093/annonc/mdh174>.

⁵ Milazzo S, Ernst E. Newspaper coverage of complementary and alternative therapies for cancer—UK 2002–2004. *Support Care Cancer.* 2006;14(9):885–889. <https://doi.org/10.1007/s00520-006-0068-z>

⁶ Mills E, Ernst E, Singh R, Ross C, Wilson K. Health food store recommendations: implications for breast cancer patients. *Breast Cancer Res.* 2003;5(6):R170–R174. <https://doi.org/10.1186/bcr636>.

⁷ <https://edzardernst.com/2013/09/drowning-in-a-sea-of-misinformation-part-8-books-on-alternative-medicine/>.

- Outsmart Cancer: Defeat Cancer With Vitamin B17, Healthy Nutrition and Alternative Medicine.

Cancer patients would, of course, all like to ‘outsmart cancer’; they are desperate and vulnerable. In this state of mind, they easily fall victim to anyone who sells false hope at inflated prices. The consequences can be tragic.

In 2016, the actress English Leah Bracknell, for example, raised ~ £50,000 to treat her lung cancer in the ‘Hallwang Private Oncology Clinic’ in Germany. The SCAMs used there included homoeopathy, micronutrients, natural supplements, whole-body hyperthermia and ozone therapy, none of which cures cancer. If cancer patients fall for bogus treatments, they not just lose their money but also their lives. Leah Bracknell died of her cancer in 2019.⁸

Three basic facts indisputably clear:

- a high percentage of cancer patients use SCAM,
- misinformation about SCAM is rife,
- misinformation endangers the lives of cancer patients.

It follows that there is an obvious and urgent need for an evidence-based text naming the SCAMs that are potentially harmful and discussing those that might be helpful.

This book is aimed at doing just that.

1.2 Definition of SCAM and Related Terms

We used to call it ‘alternative medicine’, the name most people still know best. But lately, I have started employing a different term for it; I now tend to call it **so-called alternative medicine** or **SCAM** for short.

Why?

Mainly because, whatever it is, it clearly is not an alternative:

- If therapy does not work, it cannot possibly be a reasonable alternative to an effective treatment.
- And if it does work, it simply is part of medicine.

⁸ <https://edzardernst.com/2019/10/leah-blacknell-1964-2019-another-victim-of-cancer-quackery/>.

After having been involved in this subject for over 25 years, I feel that ‘SCAM’ is preferable to the many vague and imprecise terms that have been used previously:

- ALTERNATIVE MEDICINE describes therapeutic and diagnostic modalities employed as a replacement for conventional modalities.
- COMPLEMENTARY MEDICINE is an umbrella term for modalities usually employed as an adjunct to conventional healthcare.
- COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) combines both expressions acknowledging that the same modality is often employed either as a replacement for or an add-on to conventional medicine.
- DISPROVEN MEDICINE is an umbrella term for treatments that have been tested and shown not to work.
- FRINGE MEDICINE is a derogatory term no longer used.
- HOLISTIC MEDICINE is healthcare that emphasises whole patient care.
- INTEGRATIVE MEDICINE allegedly incorporates ‘the best of both worlds’, i.e. the best of SCAM and conventional healthcare.
- NATURAL MEDICINE is healthcare exclusively relying on the means provided by nature.
- TRADITIONAL MEDICINE is healthcare that has been in use for a long time and is thus assumed to have stood the test of time.
- UNCONVENTIONAL MEDICINE is healthcare not normally used in conventional medicine (this would include off-label use of drugs, for instance, and therefore is not an appropriate term for SCAM).
- UNORTHODOX MEDICINE is a term for healthcare that is not normally used in orthodox medicine.
- UNPROVEN MEDICINE is healthcare that lacks scientific proof (many conventional therapies also fall in this category too).

And how do I define SCAM? The way I see it, **SCAM is an umbrella term for many therapeutic and a few diagnostic modalities that are not generally accepted as useful by conventional healthcare professionals while being promoted as helpful by practitioners operating outside the mainstream of medicine.**

One obstacle to finding a suitable name is, of course, that SCAM includes a wide range of highly diverse modalities (in a recent book,⁹ I evaluated 150,

⁹ Alternative Medicine: A Critical Assessment of 150 Modalities: Amazon.co.uk: Ernst, Edzard: Books.

but in total there are well over 400 in total) that do not easily fit under one single umbrella. Some of the most popular therapies include:

- **Acupuncture** involves the insertion of needles into the skin and underlying tissues at acupuncture points for therapeutic or preventative purposes (Sect. 4.1).
- **Anthroposophic medicine** is based on the mystical concepts of Rudolf Steiner. Various treatments are employed by anthroposophic doctors, the most famous of which is mistletoe (Sect. 3.1).
- **Aromatherapy** employs ‘essential’ oils usually combined with gentle massage; less commonly the oils are applied via inhalation (Sect. 4.2).
- **Chiropractic** is a SCAM that was developed about 120 years ago by DD Palmer. The hallmark therapy of chiropractors is spinal manipulation which, they claim, is necessary to adjust ‘subluxations’ (Sect. 4.7).
- **Crystal healing** uses the alleged power of crystals to stimulate the self-healing properties of the body (Sect. 4.6).
- **Dietary supplements** are preparations intended to supplement the diet; they can contain vitamins, minerals, herbal remedies and other substances (Sects. 3.1, 3.4, 4.4, 4.5).
- **Energy or paranormal healing** are umbrella terms for several SCAMs that rely on the use of ‘energy’ or vital force (Sect. 4.6).
- **Herbal medicine** (or phytotherapy) is the medicinal use of preparations that exclusively contain plant material (Sects. 3.1, 4.4).
- **Homoeopathy** is a therapeutic method using substances whose effects, when administered to healthy subjects, correspond to the manifestations of the disorder in the individual patient (Sect. 3.2).
- **Mind–body therapies** are SCAMs which are thought to influence bodily functions via the mind (Sect. 4.3).
- **Naturopathy** is a type of healthcare that employs what nature provides (e. g. herbal extracts, manual therapies, heat and cold, water and electricity) for stimulating the body’s ability to heal itself (Sect. 4.7).
- **Osteopathy** is a manual therapy involving manipulation of the spine and other joints as well as mobilization of soft tissues (Sect. 4.7).
- **Reflexology** is a SCAM employing manual pressure to specific areas of the body, usually the feet, which are claimed to correspond to internal organs with a view of generating positive health effects (Sect. 4.2).
- **Reiki** is a Japanese SCAM where the therapist claims to channel vital energy into the patient’s body, a process that allegedly stimulates his self-healing abilities (Sect. 4.6).

- **Therapeutic Touch** is a form of energy healing where the therapist claims to channel life energy into the patient's body which is said to stimulate his/her self-healing abilities (Sect. 4.6).
- **Traditional Chinese Medicine** is a diagnostic and therapeutic system based on the Taoist philosophy of Yin and Yang. It includes SCAMs like acupuncture, herbal medicine, tui-na (Chinese massage), tai chi and diet (Sects. 3.1, 4.1, 4.2).

In recent decades, these therapies have become important, not least because large proportions (25% (UK)—70% (Germany)) of the general population use them. Cancer patients, in particular, can hardly ignore the relentless promotion of SCAM. The usage of SCAM can therefore be even higher in cancer victims than in the general population. A 2012 summary of studies from 18 countries showed that the average use of SCAM by cancer patients was 40%.¹⁰ The financial burden caused by SCAM use can be considerable.¹¹ The reasons for SCAM's popularity are complex; they vary according to the type of SCAM, and differ from one individual to another. For cancer patients, some of the main motivations for trying SCAM include,^{12,13}:

- the wish to try everything that promises a cure,
- the disappointment with conventional oncology,
- the hope for a risk-free treatment,
- the fear of the adverse effects of conventional treatments,
- the hope to reduce the side effects of conventional treatments,
- the wish to improve quality of life,
- the hope to be able to cope better during difficult times.

¹⁰ Horneber M, Bueschel G, Dennert G, Less D, Ritter E, Zwahlen M. How many cancer patients use complementary and alternative medicine: a systematic review and metaanalysis. *Integr Cancer Ther.* 2012 Sep;11(3):187–203. <https://doi.org/10.1177/1534735411423920>. Epub 2011 Oct 21. PMID: 22019489.

¹¹ Longo CJ, Fitch MI, Loree JM, Carlson LE, Turner D, Cheung WY, Gopaul D, Ellis J, Ringash J, Mathews M, Wright J, Stevens C, D'Souza D, Urquhart R, Maity T, Balderrama F, Haddad E. Patient and family financial burden associated with cancer treatment in Canada: a national study. *Support Care Cancer.* 2021 Jan 5. <https://doi.org/10.1007/s00520-020-05907-x>. Epub ahead of print. PMID: 33403399.

¹² Ernst E. Alternative treatments for breast cancer. *Eur J Clin Pharmacol.* 2012;68(5):453–454. <https://doi.org/10.1007/s00228-011-1186-1>

¹³ Tangkiatkumjai M, Boardman H, Walker DM. Potential factors that influence usage of complementary and alternative medicine worldwide: a systematic review. *BMC Complement Med Ther.* 2020 Nov 23;20(1):363. <https://doi.org/10.1186/s12906-020-03157-2>. PMID: 33228697; PMCID: PMC7686746.

These motivations also suggest that cancer patients who decide to try SCAM are guided by certain assumptions. The next chapter will discuss some of these notions and ask whether they are realistic.

1.3 Common Assumptions About SCAM

Even though SCAM is a confusingly diverse area, there are some general assumptions that are often made for it. In this chapter, I will discuss some of the notions that seem important in the context of this book and explain how they are often used to mislead cancer patients.

SCAM Is Helpful

Cancer patients who try SCAM evidently hope that they will benefit from it. We will discuss the scientific evidence for specific therapies in Chaps. 2, 3 and 4 of this book. Suffice to say that the assumption of effectiveness is by no means always correct. Often it is a true leap of faith, and patients who make this leap blindly might pay dearly for their error.

A prominent example is Steve Jobs, the co-founder of Apple computers. Assuming that SCAM is effective, he delayed using conventional treatments for his pancreatic cancer. Based on the advice from SCAM practitioners, he decided to employ various SCAMs instead. When Jobs finally realised that he had made a mistake, it was too late and he died only months later. *Steve Jobs' decision to try an unproven therapeutic approach in the face of medical uncertainty was no different from similar decisions routinely made by many cancer patients. Jobs' example teaches that even those individuals with access to the most resources cannot make informed decisions about the use of conventional and/or CAM therapies if the information does not exist.*¹⁴

This and many similarly tragic cases serve as a powerful reminder of how risky erroneous assumptions about SCAM can be. Wishful thinking is only human but, in the realm of healthcare, it is certainly no substitute for reliable evidence.

¹⁴ Greenlee H, Ernst E. What can we learn from Steve Jobs about complementary and alternative therapies?. *Prev Med.* 2012;54(1):3–4. <https://doi.org/10.1016/j.ypmed.2011.12.014>

SCAM Is Natural and Therefore Safe

Few qualities attract consumers more than the claim of being natural. A multi-billion-dollar industry has thus developed around the assertion that SCAM is natural. At first glance, it seems that many forms of SCAM are indeed entirely natural:

- acupuncture is perceived as natural;
- essential oils are perceived as natural;
- herbal remedies are perceived as natural;
- homeopathy is perceived as natural;
- naturopathy even derives its name from being natural
- etc., etc.

In fact, it is hard to think of a SCAM that is not being promoted as natural. But, if we think critically about such assumptions, we find that there is nothing natural about SCAMs:

- acupuncture involves the unnatural process of sticking needles into the skin of a patient;
- essential oils are distilled and unnaturally concentrated volatile substances;
- herbal supplements are often highly processed;
- homeopathy employs artificial materials like, for instance, the Berlin wall;
- naturopaths use all sorts of unnatural procedures such as neural therapy (injection of a local anaesthetic), for instance.

We automatically assume that natural treatments generate more good than harm. Somehow, we seem to be hard-wired to think that mother nature is always benign. Apt examples are the many books for cancer victims that use 'natural' in their title:

A book entitled *Cancer: Natural cures they don't want you to know about*¹⁵ is being advertised with the following text:

This book will offer you other natural alternative ways that will help you fight your illness. Cancer: Natural Cures "That they don't want you to know about" will help you understand:

- *How to beat cancer by rebalancing your bodies pH back to a normal level*
- *Natural Cures that have helped save the lives of thousands at any stage of cancer*
- *Understanding what feeds cancer and makes it grow*
- *Simple*

¹⁵ <https://www.amazon.co.uk/Cancer-Natural-Cures-They-about/dp/1490905790>.