= Bad Pharma =

Bad Pharma : How Drug Companies Mislead Doctors and Harm Patients is a book by British physician and academic Ben Goldacre about the pharmaceutical industry , its relationship with the medical profession , and the extent to which it controls academic research into its own products . It was published in the UK in September 2012 by the Fourth Estate imprint of HarperCollins , and in the United States in February 2013 by Faber and Faber .

Goldacre argues in the book that " the whole edifice of medicine is broken , " because the evidence on which it is based is systematically distorted by the pharmaceutical industry . He writes that the industry finances most of the clinical trials into its own products and much of doctors ' continuing education , that clinical trials are often conducted on small groups of unrepresentative subjects and negative data is routinely withheld , and that apparently independent academic papers may be planned and even ghostwritten by pharmaceutical companies or their contractors , without disclosure . Describing the situation as a " murderous disaster , " he makes suggestions for action by patients ' groups , physicians , academics and the industry itself .

Responding to the book 's publication , the Association of the British Pharmaceutical Industry issued a statement in 2012 arguing that the examples the book offers were historical , that the concerns had been addressed , that the industry is among the most regulated in the world , and that it discloses all data in accordance with international standards .

In January 2013 Goldacre joined the Cochrane Collaboration , British Medical Journal and others in setting up AllTrials , a campaign calling for the results of all past and current clinical trials to be reported . The British House of Commons Public Accounts Committee expressed concern in January 2014 that drug companies were still only publishing around 50 percent of clinical @-@ trial results .

= = Author = =

After graduating in 1995 with a first @-@ class honours degree in medicine from Magdalen College , Oxford , Goldacre obtained an MA in philosophy from King 's College London , then undertook clinical training at UCL Medical School , qualifying as a medical doctor in 2000 and as a psychiatrist in 2005 . As of 2014 he was Wellcome Research Fellow in Epidemiology at the London School of Hygiene and Tropical Medicine .

Goldacre is known for his " Bad Science " column in the Guardian , which he has written since 2003 , and for his first book , Bad Science (2008) . This unpicked the claims of several forms of alternative medicine , and criticized certain physicians and the media for a lack of critical thinking . It also looked at the MMR vaccine controversy , AIDS denialism , the placebo effect and the misuse of statistics . Goldacre was recognized in June 2013 by Health Service Journal as having done " more than any other single individual to shine a light on how science and research gets distorted by the media , politicians , quacks , PR and the pharmaceutical industry . "

= = Synopsis = =

= = = Introduction = = =

Goldacre writes in the introduction of Bad Pharma that he aims to defend the following :

Drugs are tested by the people who manufacture them , in poorly designed trials , on hopelessly small numbers of weird , unrepresentative patients , and analysed using techniques which are flawed by design , in such a way that they exaggerate the benefits of treatments . Unsurprisingly , these trials tend to produce results that favour the manufacturer . When trials throw up results that companies don 't like , they are perfectly entitled to hide them from doctors and patients , so we only ever see a distorted picture of any drug 's true effects . Regulators see most of the trial data , but only from early on in a drug 's life , and even then they don 't give this data to doctors or patients , or

even to other parts of government . This distorted evidence is then communicated and applied in a distorted fashion .

In their forty years of practice after leaving medical school , doctors hear about what works through ad hoc oral traditions , from sales reps , colleagues or journals . But those colleagues can be in the pay of drug companies ? often undisclosed ? and the journals are too . And so are the patient groups . And finally , academic papers , which everyone thinks of as objective , are often covertly planned and written by people who work directly for the companies , without disclosure . Sometimes whole academic journals are even owned outright by one drug company . Aside from all this , for several of the most important and enduring problems in medicine , we have no idea what the best treatment is , because it 's not in anyone 's financial interest to conduct any trials at all .

= = = Chapter 1 : " Missing Data " = = =

In " Missing Data , " Goldacre argues that the clinical trials undertaken by drug companies routinely reach conclusions favourable to the company . For example , in a 2007 journal article published in PLOS Medicine , researchers studied every published trial on statins , drugs prescribed to reduce cholesterol levels . In the 192 trials they looked at , industry @-@ funded trials were 20 times more likely to produce results that favoured the drug .

He writes that these positive results are achieved in a number of ways . Sometimes the industry @-@ sponsored studies are flawed by design (for example by comparing the new drug to an existing drug at an inadequate dose) , and sometimes patients are selected to make a positive result more likely . In addition , the data is analysed as the trial progresses . If the trial seems to be producing negative data it is stopped prematurely and the results are not published , or if it is producing positive data it may be stopped early so that longer @-@ term effects are not examined . He writes that this publication bias , where negative results remain unpublished , is endemic within medicine and academia . As a consequence , he argues , doctors may have no idea what the effects are of the drugs they prescribe .

An example he gives of the difficulty of obtaining missing data from drug companies is that of oseltamivir (Tamiflu) , manufactured by Roche to reduce the complications of bird flu . Governments spent billions of pounds stockpiling this , based in large part on a meta @-@ analysis that was funded by the industry . Bad Pharma charts the efforts of independent researchers , particularly Tom Jefferson of the Cochrane Collaboration Respiratory Group , to gain access to information about the drug .

= = = Chapter 2 : " Where Do New Drugs Come From ? " = = =

In the second chapter , the book describes the process as new drugs move from animal testing through phase 1 (first @-@ in @-@ man study) , phase 2 , and phase 3 clinical trials . Phase 1 participants are referred to as volunteers , but in the US are paid $ 200 ? $ 400 per day , and because studies can last several weeks and subjects may volunteer several times a year , earning potential becomes the main reason for participation . Participants are usually taken from the poorest groups in society , and outsourcing increasingly means that trials may be conducted in countries with highly competitive wages by contract research organizations (CROs) . The rate of growth for clinical trials in India is 20 percent a year , in Argentina 27 percent , and in China 47 percent , while trials in the UK have fallen by 10 percent a year and in the US by six percent .

The shift to outsourcing raises issues about data integrity , regulatory oversight , language difficulties , the meaning of informed consent among a much poorer population , the standards of clinical care , the extent to which corruption may be regarded as routine in certain countries , and the ethical problem of raising a population 's expectations for drugs that most of that population cannot afford . It also raises the question of whether the results of clinical trials using one population can invariably be applied elsewhere . There are both social and physical differences : Goldacre asks whether patients diagnosed with depression in China are really the same as patients diagnosed with depression in California , and notes that people of Asian descent metabolize drugs differently from

Westerners .
There have also been cases of available treatment being withheld during clinical trials . In 1996 in Kano , Nigeria , the drug company Pfizer compared a new antibiotic during a meningitis outbreak to a competing antibiotic that was known to be effective at a higher dose than was used during the trial . Goldacre writes that 11 children died , divided almost equally between the two groups . The families taking part in the trial were apparently not told that the competing antibiotic at the effective dose was available from Médecins Sans Frontières in the next @-@ door building .

= = = Chapter 3 : " Bad Regulators " = = =

Chapter three describes the concept of " regulatory capture , " whereby a regulator ? such as the Medicines and Healthcare products Regulatory Agency (MHRA) in the UK , or the Food and Drug Administration (FDA) in the United States ? ends up advancing the interests of the drug companies rather than the interests of the public . Goldacre writes that this happens for a number of reasons , including the revolving door of employees between the regulator and the companies , and the fact that friendships develop between regulator and company employees simply because they have knowledge and interests in common . The chapter also discusses surrogate outcomes and accelerated approval , and the difficulty of having ineffective drugs removed from the market once they have been approved . He argues that regulators do not require that new drugs offer an improvement over what is already available , or even that they be particularly effective .

= = = Chapter 4 : " Bad Trials " = = =

" Bad Trials " examines the ways in which clinical trials can be flawed . Goldacre writes that this happens by design and by analysis , and that it has the effect of maximizing a drug 's benefits and minimizing harm . There have been instances of fraud , though he says these are rare . More common are what he calls the " wily tricks , close calls , and elegant mischief at the margins of acceptability . "
These include testing drugs on unrepresentative , " freakishly ideal " patients ; comparing new drugs to something known to be ineffective , or effective at a different dose or if used differently ; conducting trials that are too short or too small ; and stopping trials early or late . It also includes measuring uninformative outcomes ; packaging the data so that it is misleading ; ignoring patients who drop out (i.e. using per @-@ protocol analysis , where only patients who complete the trial are counted in the final results , rather than intention @-@ to @-@ treat analysis , where everyone who starts the trial is counted) ; changing the main outcome of the trial once it has finished ; producing subgroup analyses that show apparently positive outcomes for certain tightly defined groups (such as Chinese men between the ages of 56 and 71) , thereby hiding an overall negative outcome ; and conducting " seeding trials , " where the objective is to persuade physicians to use the drug .
Another criticism is that outcomes are presented in terms of relative risk reduction to exaggerate the apparent benefits of the treatment . For example , he writes , if four people out of 1 @,@ 000 will have a heart attack within the year , but on statins only two will , that is a 50 percent reduction if expressed as relative risk reduction . But if expressed as absolute risk reduction , it is a reduction of just 0 @.@ 2 percent .

= = = Chapter 5 : " Bigger , Simpler Trials " = = =

In chapter five Goldacre suggests using the General Practice Research Database in the UK , which contains the anonymized records of several million patients , to conduct randomized trials to determine the most effective of competing treatments . For example , to compare two statins , atorvastatin and simvastatin , doctors would randomly assign patients to one or the other . The patients would be followed up by having data about their cholesterol levels , heart attacks , strokes and deaths taken from their computerized medical records . The trials would not be blind ? patients would know which statin they had been prescribed ? but Goldacre writes that they would be unlikely

to hold such firm beliefs about which one is preferable to the extent that it could affect their health .

= = = Chapter 6 : " Marketing " = = =

In the final chapter , Goldacre looks at how doctors are persuaded to prescribe " me @-@ too drugs , " brand @-@ name drugs that are no more effective than significantly cheaper off @-@ patent ones . He cites as examples the statins atorvastatin (Lipitor , made by Pfizer) and simvastatin (Zocor) , which he writes seem to be equally effective , or at least there is no evidence to suggest otherwise . Simvastatin came off patent several years ago , yet there are still three million prescriptions a year in the UK for atorvastatin , costing the National Health Service (NHS) an annual £ 165 million extra .

He addresses the issue of medicalization of certain conditions (or , as he argues , of personhood) , whereby pharmaceutical companies " widen the boundaries of diagnosis " before offering solutions . Female sexual dysfunction was highlighted in 1999 by a study published in the Journal of the American Medical Association , which alleged that 43 percent of women were suffering from it . After the article appeared , the New York Times wrote that two of its three authors had worked as consultants for Pfizer , which at the time was preparing to launch UK @-@ 414 @,@ 495 , known as female Viagra . The journal 's editor said that the failure to disclose the relationship with Pfizer was the journal 's mistake .

The chapter also examines celebrity endorsement of certain drugs , the extent to which claims in advertisements aimed at doctors are appropriately sourced , and whether direct @-@ to @-@ consumer advertising (currently permitted in the US and New Zealand) ought to be allowed . It discusses how PR firms promote stories from patients who complain in the media that certain drugs are not made available by the funder , which in the UK is the NHS and the National Institute for Health and Clinical Excellence (NICE) . Two breast @-@ cancer patients who campaigned in the UK in 2006 for trastuzumab (Herceptin) to be available on the NHS were being handled by a law firm working for Roche , the drug 's manufacturer . The historian Lisa Jardine , who was suffering from breast cancer , told the Guardian that she had been approached by a PR firm working for the company .

The chapter also covers the influence of drug reps , how ghostwriters are employed by the drug companies to write papers for academics to publish , how independent the academic journals really are , how the drug companies finance doctors ' continuing education , and how patients ' groups are often funded by industry .

= = = Afterword : " Better Data " = = =

In the afterword and throughout the book , Goldacre makes suggestions for action by doctors , medical students , patients , patient groups and the industry . He advises doctors , nurses and managers to stop seeing drug reps , to ban them from clinics , hospitals and medical schools , to declare online and in waiting rooms all gifts and hospitality received from the industry , and to remove all drug company promotional material from offices and waiting rooms . (He praises the website of the American Medical Student Association ? www.amsascorecard.org ? which ranks institutions according to their conflict @-@ of @-@ interest policies , writing that it makes him " feel weepy . ") He also suggests that regulations be introduced to prevent pharmacists from sharing doctors ' prescribing records with drug reps .

He asks academics to lobby their universities and academic societies to forbid academics from being involved in ghostwriting , and to lobby for " film credit " contributions at the end of every academic paper , listing everyone involved , including who initiated the idea of publishing the paper . He also asks for full disclosure of all past clinical trial results , and a list of academic papers that were , as he puts it , " rigged " by industry , so that they can be retracted or annotated . He asks drug company employees to become whistleblowers , either by writing an anonymous blog , or by contacting him .

He advises patients to ask their doctors whether they accept drug @-@ company hospitality or

sponsorship , and if so to post details in their waiting rooms , and to make clear whether it is acceptable to the patient for the doctor to discuss his or her medical history with drug reps . Patients who are invited to take part in a trial are advised to ask , among other things , for a written guarantee that the trial has been publicly registered , and that the main outcome of the trial will be published within a year of its completion . He advises patient groups to write to drug companies with the following : " We are living with this disease ; is there anything at all that you 're withholding ? If so , tell us today . "

= = Reception = =

The book was generally well received . The Economist described it as " slightly technical , eminently readable , consistently shocking , occasionally hectoring and unapologetically polemical . " Helen Lewis in the New Statesman called it an important book , while Luisa Dillner , writing in the Guardian , described it as a " thorough piece of investigative medical journalism . "

Andrew Jack wrote in the Financial Times that Goldacre is " at his best in methodically dissecting poor clinical trials . ... He is less strong in explaining the complex background reality , such as the general constraints and individual slips of regulators and pharma companies ' employees . " Jack also argued that the book failed to reflect how many lives have been improved by the current system , for example with new treatments for HIV , rheumatoid arthritis and cancer .

Max Pemberton , a psychiatrist , wrote in the Daily Telegraph that " this is a book to make you enraged ... because it 's about how big business puts profits over patient welfare , allows people to die because they don 't want to disclose damning research evidence , and the tricks they play to make sure doctors do not have all the evidence when it comes to appraising whether a drug really works or not . "

The Association of the British Pharmaceutical Industry (ABPI) replied in the New Statesman that Goldacre was " stuck in a bygone era where pharmaceutical companies wine and dine doctors in exchange for signing on the dotted line . " The ABPI issued a press release , writing that the pharmaceutical industry is responsible for the discovery of 90 percent of all medicines , and that it takes an average of 10 ? 12 years and £ 1.1bn to introduce a medicine to the market , with just one in 5 @,@ 000 new compounds receiving regulatory approval . This makes research and development an expensive and risky business . They wrote that the industry is one of the most heavily regulated in the world , and is committed to ensuring full transparency in the research and development of new medicines . They also maintained that the examples Goldacre offered were " long documented and historical , and the companies concerned have long addressed these issues . " Goldacre argues in the book that " the most dangerous tactic of all is the industry 's enduring claim that these problems are all in the past . "

Humphrey Rang of the British Pharmacological Society wrote that Goldacre had chosen his target well and had produced some shocking examples of secrecy and dishonesty , particularly the nondisclosure of data on the antidepressant reboxetine (chapter one) , in which only one trial out of seven was published (the published study showed positive results , while the unpublished trials suggested otherwise) . He argued that Goldacre had gone " over the top " in devoting a whole chapter (chapter five) to recommending large clinical trials using electronic patient data from general practitioners , without fully pointing out how problematic these can be ; such trials raise issues , for example , about informed consent and regulatory oversight . Rang also criticized Goldacre 's style , describing the book as too long , repetitive , hyperbolic , and in places too conversational . He particularly objected to the line , " medicine is broken , " calling it a " foolish remark . "

= = AllTrials = =

Following the book 's publication , Goldacre co @-@ founded AllTrials with David Tovey , editor @-@ in @-@ chief of the Cochrane Library , together with the British Medical Journal , the Centre for Evidence @-@ based Medicine , and others in the UK , and Dartmouth College 's Geisel School

of Medicine and the Dartmouth Institute for Health Policy and Clinical Practice in the US . Set up in January 2013 , the group campaigns for all past and current clinical trials to be registered and reported , for all treatments in use .

The British House of Commons Public Accounts Committee produced a report in January 2014 , after hearing evidence from Goldacre , Fiona Godlee , editor @-@ in @-@ chief of the British Medical Journal , and others , about the stockpiling of Tamiflu and the withholding of data about the drug by its manufacturer , Roche . The committee said it was " surprised and concerned " to learn that information from clinical trials is routinely withheld from doctors , and recommended that the Department of Health take steps to ensure that all clinical @-@ trial data be made available for currently prescribed treatments .

= = Publication details = =

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