

Tax credits for pharmaceutical research, development and marketing?

Sergio Sismondo

Department of Philosophy, Queen's University, Kingston, Canada

E-mail: sismondo@queensu.ca

Received 2 July 2021

Accepted 5 July 2021

Abstract.

BACKGROUND: The pharmaceutical industry is believed to receive considerable support through research and development (R&D) tax credits.

OBJECTIVE: The objectives of this paper are (a) to show that many of the pharmaceutical industry's apparent R&D activities are entangled with marketing efforts, and (b) to argue that supporting these activities through tax credits does not serve public interests in health.

METHODS: The bulk of this paper summarizes the author's extended qualitative mixed-methods approach to following connections between pharmaceutical research and marketing.

RESULTS: The pharmaceutical industry's R&D should be understood as broadly entangled with marketing, and so generally should be understood as integrated research, development and marketing (RD&M).

CONCLUSIONS: R&D tax credits to the pharmaceutical industry largely do not serve public interests.

Keywords: Research and development (R&D), pharmaceutical industry, marketing, tax credits

1. Introduction

In a number of publications, I have demonstrated that a significant amount of pharmaceutical companies' research and development is tightly intertwined with marketing, and sometimes simply is marketing. When it comes to the pharmaceutical industry, we should probably not think in terms of R&D by itself, but instead in terms of research, development and marketing, or RD&M, which forms an often-coherent package. Just as R&D are not conceptually or practically distinct, neither are RD&M, which makes the acronyms more useful. I summarize the evidence and argument for the importance of pharmaceutical industry RD&M, before raising some then-obvious questions about tax incentives for research and development.

In addition to secondary sources, the material presented here is derived from a wide variety of sources within the pharmaceutical industry and its closely connected sub-industries and professions. The author and research assistants have attended and taken detailed notes at a number of conferences, meetings and workshops on such topics as: publication planning, sponsored clinical trials, the management of key opinion leaders and the running of speakers' bureaus. The result is an overview, but one built on the perspectives of people working on the ground within or closely connected to the pharmaceutical industry.

2. Publication planning for RD&M

People have legitimate concerns that pharmaceutical companies hide unfavorable data. At least equally concerning, though, is what the companies do with favorable data, or data that can be turned into favorable interpretations. Such data is the key resource for what is usually called “publication planning”, the development and organization of articles placed mostly in medical science journals [1–4].

Publication planning is a quintessential RD&M activity. Its central goal is to promote products, but by presenting scientific data and working mostly within the standard structures of medical science. Collections of publications place products in the medical world’s view, and convince researchers and prescribers of their value. The results are articles that many see in medical science journals, from the most prominent general journals to very specialized ones.

In one publication plan’s outline of goals, plans should in general provide an analysis of “the market” and “competitive issues”, develop “a series of key communication messages”, assess the availability of “data to support ... the key communication messages”, and identify the right “publication tactics” and “publication vehicles” for different “target audiences [5]”. Comments made at conferences of publication planners repeatedly echo these points: Publications are designed to serve commercial goals [3,4].

A publication plan for what is hoped to be a blockbuster drug, which is one with annual sales of more than a billion US dollars, may include as many as a hundred articles – this is a number presented in illustrative plans and confirmed to me in conversations with planners. These articles build on different aspects of trials, draw on different ways of dividing and combining the data, and take different shape for different audiences and specialties [4].

Although industry-sponsored articles about drugs in medical journals are often “authored” by academics, authorship does not necessarily represent significant contributions to the research, design or writing of the articles. In fact, authors typically make only modest contributions to these articles, contributions that rarely rise to the level at which they meet the spirit of authorship requirements [6]. The contributions that shape the articles are instead made by some or all of: the companies, contract research organizations, publication planners, ghostwriters, and others. It seems likely that one reason why these articles have apparently independent visible authors, but more hidden researchers, planners and ghostwriters, is that distance from the companies serves marketing goals. For their goals, the companies need to wear disguises [4].

If a pharmaceutical company is behind it, an article on a drug is almost always part of a dedicated publication plan, designed and implemented by publication planners. That means that almost all pharmaceutical industry research becomes entangled with marketing efforts, if not done for marketing purposes from the outset.

3. Key opinion leader management for RD&M

Within the industry, anybody who serves as an external author on a company-sponsored article, or who is likely to be hired to give scientific or clinical presentations, is referred to as a “key opinion leader” (KOL) or one of several equivalent terms [7,8].

Companies “manage” KOLs, so that the companies can count on the KOLs’ cooperation when they present research at meetings, seminars and other events – even if it is used with occasional discomfort, “KOL management” is a standard term. Pharmaceutical companies invest in KOL management systems, keeping track of all of their interactions with particular KOLs. Potentially influential researchers and physicians are enough of a resource that there are firms that provide lists of KOLs for a pharmaceutical

company project, design the KOL management plan, integrate that plan with a publication plan, and will even train KOLs in public speaking, so that they will be more effective when they give talks. There are many dozens of such firms, offering variations on these services and promising a good return on investment [4].

At least some of the expenses involved in managing KOLs can be accounted for as research and development expenses. Valuable KOLs can be given research grants – one former pharmaceutical-company medical science liaison even told me that a colleague had a budget for small research grants, awarding them whenever one of their contact KOLs' prescriptions of the target drug fell below certain levels. KOLs are hired as consultants, serving as advisory boards. Generally, though, pharmaceutical companies do not gather useful advice from KOLs through advisory boards; the boards serve as conduits in the other direction, subtly promoting products, allowing for legal payments, and establishing ties. As one marketing analyst writes: “Companies that assemble KOL advisory boards early in the product development phase stand to benefit by forging long-term ties with these experts [9]”. The advice that advisory boards provide the companies typically languishes unused [4].

The marketing of high-selling drugs can involve thousands of talks to physicians and others. As a result, the bulk of industry's use for KOLs is as speakers that are paid to give talks. They become part of “speakers bureaus” for particular drugs, and may give talks in clinics over lunchtime or after dinner, with other physicians assembled by sales representative. They give continuing medical education courses. More occasionally, they may speak at community events, again organized by sales representatives. In most of these contexts, KOLs, while conveying scientific information and clinical experience, become salespeople [8].

Most of these talks are classified for accounting purposes as promotion or education, and not research and development. However, the talks are outlets for the companies' scientific research. More generally, the activities engaged in by many KOLs connects research and marketing, again showing the entanglement of the two.

4. A variety of trials for RD&M

Publication planning is possible in part because the majority of industry-sponsored trials, at least in terms of expenditure, are organized and run by contract research organizations (CROs) [10,11]. CROs make no claim on the data that they generate, unlike most more independent researchers who may make authorship demands. The data coming from contract research organizations can be parcelled out for publication by a variety of medical scientists, who may or may not have been directly involved in the research – in roles running from consultants to recruiters of patients.

“Registration trials” are those run prior to drug approval, with the primary goal of providing evidence to support applications made to regulators such as the U.S. Food and Drug Administration and the European Medicines Agency. What these agencies provide is precisely marketing approval or authorization. Their approval of a drug is approval to promote specific formulations of it as treatments for certain conditions. As such, regulatory approval is the most important element and the most key step in the marketing of a drug. Moreover, regulatory approval provides additional value in the form of a government agency's positive evaluation of the drug, distinguishing it from, say, home remedies. Pharmaceutical company products often can be priced at levels vastly higher than can their unregulated competitors.

Most industry-sponsored trials *not* run by CROs are referred to as “investigator-initiated trials” (IITs) [4,12]. This category includes considerable variety. Some are fully arms-length from the companies

funding them. More often, companies advertise for the trials they want, or encourage KOLs to focus on their needs, and then investigators propose trials designed to fit the companies' parameters. At a conference on IITs, a senior medical affairs director for one company described how companies need to "interact with investigators to get the right studies submitted to meet your corporate needs – without crossing lines!". The trick is to make sure that investigators propose exactly what the companies need. "Say you need IITs in order to commercialize in a country", continued the director, "then you can work with influential doctors in the country", the relevant KOLs. One industry analyst writes, moreover, that IITs can generate publicity within medical communities, can familiarize physicians with products, and can "produce advocates [12]".

Phase IV trials are done after approval by regulatory agencies. Although estimates of the cost of Phase IV trials vary, they represent a significant expenditure – an estimate from close to the industry puts it at 25% of total R&D [13]. Marketing departments may be involved, because a considerable number of Phase IV trials are designed to familiarize physicians with products, to encourage prescriptions, or to allow drug representatives more access to prescribers [14,15]. For example, "seeding trials" pay physicians to prescribe specific drugs as part of trials, but are aimed at increasing prescriptions. Thus pharmaceutical companies also support research by non-academic physicians. Merck's "Advantage" trial of Vioxx, for example, appears to have been a seeding trial. It was designed by Merck's marketing division, which also handled all of the data [15]. According to one internal document, a goal of the trial was to allow physicians to "[g]ain experience with Vioxx prior to and during the critical launch phase". The prescriptions of 600 enrolled physicians were tracked, and compared to a control group of 99 physicians not in the trial. To the extent that data mattered, it was sales data; however, the company presented the trial to physicians as scientific research.

On the whole, then, industry-sponsored trials fit the RD&M label. Some may be more explicitly designed around marketing goals, and some less so. But all contribute to marketing.

5. Tax credits for RD&M

Tax credits are a central vehicle for funding science. For OECD countries as a group, government tax credits for business R&D amount to 0.1% of GDP [16], paying for roughly 4% of total R&D spending in OECD countries (by businesses, universities, governments, public and private research institutes, etc.). The pharmaceutical industry earns significant amounts from R&D tax credits. In 2021 in the U.S., the top marginal tax rate is 21%, so that is a reasonable floor to the amount of official R&D expenditures that U.S. companies earn in basic R&D tax credits. However, there are a number of ways in which they can claim beyond that floor [17].

There is a wide array of national and sub-national approaches to providing tax relief for R&D, presumably reflecting local policy priorities and taxation structures [16,18]. Some tax credits are for the total amount of R&D expenditure, and others are for increases in R&D expenditures over the previous year; systems might involve both kinds. Some countries are much more expansive than others in their definitions and use of credits; for example, some have credits to offset the costs of research infrastructure, including buildings and land. Some countries allow "super-deductions" of up to 200% of R&D expenditures, typically for short windows of time. Some allow credits to be carried forward, and others provide refundable credits that must be used immediately. Some have additional credits targeting outputs of R&D, in the form of income from intellectual property. For the purposes of this paper, all of this variety is unimportant: Almost all OECD countries provide some forms of tax credits for R&D

expenditures, and the total amounts are, while only a small proportion of R&D spending, nonetheless significant.

There are many studies of the extent to which, and the circumstances in which, different R&D tax incentives stimulate research investment [19, 20].

We could reasonably ask whether governments should provide blanket R&D tax credits, which effectively support businesses' priorities. There is no obvious public good served by all private R&D expenditures. For example, Biogen's Alzheimer's drug Aducanumab (Aduhelm), controversially approved by the FDA in 2021, has the potential to cost the U.S. health care system \$112 billion annually, even though it will help at best a small minority of patients – and may not be at all effective at slowing or preventing Alzheimer's disease [21]. Though there may be pharmaceutical products – COVID-19 vaccines, for example – that serve the public good and should get public support, Aducanumab is very unlikely to be one of them.

If we understand Big Pharma's apparent R&D as generally RD&M, even less public good is served. Presumably, the less obvious the health value of a drug, the more effort needs to be put into marketing. As a result, we can expect pharmaceutical companies to concentrate resources on drugs that are relatively ineffective or that have some other disadvantages. It turns out that there are many such drugs.

Across almost all areas of medicine, close studies of recently approved drugs show that most drugs offer negligible new benefits. For example, *Prescrire*, an independent healthcare evaluator, found that of ninety-nine new drugs it evaluated in 2018, there were no breakthroughs, two “real advances”, eleven that “offer an advantage”, twenty-two that are “possibly helpful”, fifty that offer “nothing new”, and nine that were “not acceptable”. *Prescrire* reserved judgment on five others [22]. The 2018 results were the most favorable ones for the pharmaceutical industry in a decade of evaluation – in most years there were not nearly as many considered possibly helpful and more considered unacceptable. Given the low number of genuinely good new products, support for marketing through tax credits contributes much more to higher sales and profits than to improved health.

Even for drugs that can offer real benefits, marketing makes them less effective and less safe. Let's imagine that for some new drug there is an ideal patient population, for all of whom the benefit-to-risk ratio is good. Pharmaceutical marketing is ultimately aimed at increasing the patient population for drugs. But the benefit-to-risk ratio for the additional patients will be at a lower level than it was for the original ideal population, making the drugs less effective and safe. Brody and Light derive from this an “inverse benefit law”: “The ratio of benefits to harms among patients taking new drugs tends to vary inversely with how extensively the drugs are marketed [23]”.

6. Conclusion

All of this suggests, then, that tax credits for pharmaceutical company R&D are effectively subsidies for RD&M. As such, they support pharmaceutical company interests, and there are reasons to believe that these have only limited overlap with public interests in health.

Conflict of interest

None to report.

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