Dear Dr Loder,

Thank you for the offer to resubmit our manuscript (BMJ-2019-049540). We have addressed the Editors' and the reviewers' comments below (in bolded text) and in the manuscript (using track changes).

Thank you for your time in consideration of our manuscript.

Sincerely,

The Authors

Editors' comments

Decision: Reject and offer

* We note that you have applied conventional systematic review and meta-analysis methods but along with some of the reviewers we were not convinced that the data lends itself to these approaches. For example, is the RoB methods used really appropriate for these types of studies? Our statistician was not persuaded. We also wonder if pooling of data is wise given the not unexpected high levels of heterogeneity. The forest plots without pooling give a very nice summary of the range of prevalence of industry funding to patient groups across studies and other outcomes considered. Moreover, few of the (if any) planned subgroup analyses could explain any of this heterogeneity so there is a lot if uncertainty about where this is all coming from.

RESPONSE: We thank the Editors for these useful comments.

We agree with the statistician that the graphical representation is useful and that we cannot meaningfully present an average effect due to the high levels of heterogeneity that we could not explain with any of the subgroup analyses. We have therefore included in the manuscript the forest plots with no summary estimate for the following two outcomes: prevalence of industry funding and prevalence of organizational policies. However, in Supplementary File 4, we have retained the summary estimates on forest plots of subgroup analyses that we carried out in order to explore sources of heterogeneity. This is consistent with the exploration of sources of heterogeneity described in our protocol. We have also deleted Figure 5 where we presented the pooled risk ratio for two studies that analysed the association between industry funding and policy statements of patient groups. We agree that the two included studies are addressing different research questions and types of patient group samples and their results should not be pooled.

With regard to the Risk of bias assessment, we used a Checklist developed by the Joanna Briggs Institute (JBI). We agree with the Editor and with Reviewer 5 that the tool includes items relevant to broader study quality, to reporting quality, and to assessing risk of bias. Interestingly, this mix of types of assessment criteria has been described as a common problem in a recent systematic review of 62 tools for assessing methodological quality of observational studies. (Ref: Wang Z, Taylor K, Allman-Farinelli M, Armstrong B, Askie L, Ghersi D, McKenzie J, Norris S, Page M, Rooney A, Woodruff T, Bero L. A systematic review: Tools for assessing methodological quality of human observational studies. NHMRC. 2019. Available at https://nhmrc.gov.au/guidelinesforguidelines/develop/assessing-risk-bias) Following the suggestion from Reviewer 5, we deleted any reference to "bias/methodological quality" and we instead refer to "quality". We have also mentioned the limitations of this tool in the Discussion. (page 17, line 473)

* Despite this we thought that the paper has value but should probably be reworked. As presently written it lacks focus.
One of our editors tried to summarize the questions that are asked here (and added the numbers) and given suggestions about the way forward.

"In particular, we sought to answer the following questions:
1. how prevalent is pharmaceutical or medical device industry funding of patient groups?
2. how transparent are patient groups about industry funding?
does industry funding influence the positions of patient groups on specific issues?
3. what do representatives of patient groups think about receiving industry funding?"

He notes the following: Q1 is a quantitative one that lends itself to descriptive studies. The question might be better specified as % of patient groups that accept industry funding; % of all funding that is from industry and % from just one company.
Q2 is two different questions. 2a could be % patient groups that report the source of their funding and again a descriptive study would do but 2b is an analytic question asking whether presence or absence of funding affects an outcome such as "recommendation of a specific therapy" Q3 is a qualitative question and can hardly be tackled any way other than through in depth interviews.

The result of this unfocused set of objectives is a search that misses the relevant studies for RQ 3 (because you exclude qual studies) and a real mixture of studies, many of which don't address the same RQ. We looked at 3 research titles to see what they were about.

A. Presentation on websites of possible benefits and harms from screening for breast cancer: cross sectional study. Jorgensen et al. They used internet search engines to find patient information on

breast cancer and restricted themselves to Scandanavian and English speaking countries. They extracted data on whether the information was balanced and reflected current research. Although the text mentions funding this wasn't the focus of the data collection and is not reported in any detail or in tables.

B. Assessing stakeholder opinion on relations between cancer patient groups and pharmaceutical companies in Europe. Leto di Priolo et al. This was a telephone survey of "161 policy makers, cancer healthcare group representatives, and cancer patient group leaders from France, Germany, Hungary, Italy, Latvia, the Netherlands, Poland, Portugal, Romania, Spain, Sweden, and the UK".

C. Financial Conflicts of Interest and the Centers for Disease Control and Prevention's 2016 Guideline for Prescribing Opioids for Chronic Pain. Lin et al. After CDC published its guidelines on pain it invited comments on its website because of criticisms raised about conflicts of interest. This letter in JAMA Int Med reports data extracted from comments made by the 151 organisations leaving comments on the website. (This article is classified as "Peer reviewed journal"...)

These studies are so different it doesn't make much sense to try and combine them numerically. We did not think they are even addressing the same RQ except in a very general way in that they are about conflicts of interest and health information (Study A is about patient information, Study B is about professional, policy and patient views about industry, Study C is about a government sponsored professional guideline).

What to do? A more narrative style of review would be one way to go but would require quite a different writing style. An alternative would be to tighten up (restrict the scope of) the objectives and research question. This would require removing many of the studies and perhaps running a more focused search to bring in more appropriate study designs.

RESPONSE: We thank the Editors for these comments which have prompted us to carefully revise the research questions in order to make them more focused (see below). We have also carefully revised the manuscript trying to use standardized wording.

Q1: ***how prevalent is pharmaceutical or medical device industry funding of patient groups?***
We have revised the text to state this research question more clearly as suggested by the Editors. We rephrased Q1 as: "percent of patient groups that accept industry funding, percent of patient groups' funding that is from industry, and number of funders per group". Apart from rewording Q1 for clarity, we also tried to present the results in a more meaningful way. Our sample for Q1 includes a range of studies on industry funding of patient groups, addressing different research questions and with different types of study

samples. We carefully looked at the characteristics of the 16 studies that addressed Q1. After this assessment, we excluded Jorgensen, 2004. As the Editors pointed out, Jorgensen analysed the information about mammographic screening on websites of 16 consumer advocacy groups. The study mentions funding but we cannot consider this a prevalence estimate of industry funding of patient groups.

We retained the other 15 studies in Q1. Looking at the characteristics of those studies, we divided them into three groups:

1) **Population sample – multiple disease: studies on prevalence of industry funding that are based on a national or regional population of groups that focus on multiple diseases (8 studies);**
2) **Population sample - specific condition: studies that are based on a national or regional population of patient groups that focus on a specific disease (e.g. breast cancer) (3 studies)**
3) **Consultation: studies that looked at prevalence of industry funding in a pre-selected group such as respondents to a consultation or patient groups that interact with regulatory agencies. These are all related to public policy issues and we have therefore grouped the studies together. (4 studies)**

These separate sets of studies are important sources of data to answer Q1. However, we agree that different types of studies should not be combined in a single forest plot with a summary estimate, as they cannot contribute to a meaningful average effect. We therefore present a forest plot with no summary estimate in the manuscript and we separately describe the prevalence in these three subgroups. We also conducted a meta-analysis only for the 11 studies that are based on a population sample. We found a high level of heterogeneity that was not explained by any of the subgroup analyses, therefore we do not include a summary estimate in the manuscript but we retain all the analyses in Supplementary File 4 for transparency.

Q2a: ***how transparent are patient groups about industry funding?***

We rephrased this question as "proportion of industry-funded patient groups that report the source of their funding on their websites and during governmental consultations". We believe our distinction between disclosure on websites and in consultations is important as those are two different situations and it would not be appropriate to present them together. We now present a forest plot with summary estimate (Figure 4) only for the studies that analysed patient groups' websites (I^2=0%).

Q2b: ***does industry funding influence the positions of patient groups on specific issues?***

We retained this question as it can be tackled through an analysis of the content of submissions or materials produced by patient groups. We avoided the pooling of the data as suggested by the Editors.

[Please note: in this Response we used the numbering Q2a and Q2b used by the Editors, but these are two separate questions and should not be labelled Q2a and Q2b. Our original intent was to make these separate questions. We apologize if this was unclear and we have kept them separate in the revised manuscript]

Q3: "*What do patient and consumer organisations think about receiving industry funding*?" This was listed as a secondary outcome in the Protocol we submitted to Prospero. We agree with the Editors that this question is best addressed with qualitative research involving in-depth interviews. We have not included qualitative studies in the current review because a qualitative systematic review uses different methods for data synthesis and interpretation than a review of quantitative studies. On reconsideration, we concluded that this question should be considered to be outside of the scope of the current review. We have therefore submitted a request for an amendment to our protocol to the Prospero team, which is currently under consideration. Deleting this research question led to the exclusion of the study by Leto di Priolo as it did not address any of the other research questions. The study flowchart and the Table of excluded studies have been amended accordingly.

Of all the research we see surely this one needed patient participation more than most, so you might consider involving some patients in any reworking of the paper.
Several editors mentioned they favor the "more limited scope" idea.

RESPONSE: Following the Editors' suggestion, we asked one patient group representative (Sharon Batt, Canada, co-founder of Breast Cancer Action Quebec, executive board member of the Nova Scotia Health Coalition and a member of the Public Awareness Committee of the Canadian Deprescribing Network) to read the manuscript and provide feedback which we have considered in the reworking of the paper.
We also believe that addressing the comments of four Reviewers that are representatives of patient groups has contributed to bring the perspective of consumers into our work.
Moreover, it should be noted that two review authors are member of consumer groups. A/Prof. Barbara Mintzes has worked for many years with women's health and consumer groups, including DES (diethylstilbestrol) Action Canada, Women and Health Protection (a Canadian non-profit organization), and Health Action International (a non-governmental organization representing the public interest in pharmaceutical policy). She is currently a member of the European network of Health Action International (HAI-Europe Association), http://haiweb.org/hai-europe-association/

Another author of the systematic review, Dr Paola Mosconi is on the Board of Europa Donna, the European coalition of breast cancer associations. (https://www.europadonna.org/about/organisation/)
Dr Mintzes' and Dr. Mosconi's engagement with consumer groups is listed in their COI disclosure.
Finally, we agree with Reviewer 2 that it will be fundamental to involve patient groups in the next steps. In this regard, we are currently collaborating with patient groups to convene a seminar about patient group-industry interactions in Sydney in 2020, and this systematic review will inform part of the patient group-led discussions.
We have amended the section of the manuscript on "Patient involvement" to reflect some of these points. (page 9, line 254)

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments:
Thank you for the opportunity to review this systematic review and meta-analysis. The topic is timely, important, and has been an ongoing focus of BMJ campaigning (e.g. Sophie Arie's report in 2014, the recent Mandeville piece on NICE HTAs, and Jeremy Taylor's reasoned response in BMJ opinion). So the question remains, is *this* study and approach shedding new light?

Reviewing the literature systematically the authors describe a spotty literature that finds that at least half of medical non-profits have received at least $1 of industry funding and that recipients may be more likely to tow the industry line than non-recipients (albeit in a small sample). While the methods are clearly described and the statistical approach appears careful given the potential for bias, I suspect most readers will be unsurprised of the findings and conclusions from prior reporting.

RESPONSE: Even if the results of this review are unsurprising, we strongly believe it is important to generate empirical data on the extent of industry funding of patient groups. This data could inform an evidence-based discussion and future actions on this topic.

Methodologically I am not quite convinced that describing industry funding only in terms of "prevalence" or "exposure" as if it were an infection quite works. Industry funding in some form or another (whether sponsoring a small regional meeting or sponsoring a survey or taking out advertising space) is so prevalent that the charities who don't receive it are more exceptional – is

it because they've "taken a stand", because they are so small they don't register on industry's radar, or that there are no drugs for their disease?

RESPONSE: The Reviewer raised interesting questions on why some charities receive or do not receive industry funding. This would be a good topic for a qualitative study, but is outside the scope of this systematic review. It is worth mentioning that some authors of the review are conducting a qualitative study to explore the views and experiences of patient group representatives in Australia in regards to pharmaceutical industry funding. The results of that study will address some of the issues raised by the Reviewer.

I find the estimates in Table 3 to be quite low; "Platinum" sponsorship of key conferences often weighs in at six figures just to secure the position, for instance. It's a shame there wasn't better data on the % of funding streams received from industry as giving a $20k donation to the ALS Association who are sitting on $100m from the Ice Bucket Challenge is probably less of a threat to integrity than a larger sum to a smaller organization.

Some non-profits are set up in a HQ & local (e.g. state) chapter model of affiliates, so local vs. central funding is hard to tease out and I've seen the local branches roped in on local issues by their industry liasions e.g. lobbying their elected politicans on biosimilars or generics

.

RESPONSE: We thank the Reviewer for the interesting insights. As stated in our protocol, one of the questions we aimed to answer was: "*Among industry-funded groups, amount of funding (absolute) and proportion (relative) from industry".* As Table 3 shows, many of the included studies generally did not provide data on the amount and proportion of funding that came from industry. We agree that these data are of interest, and have included them whenever they were available. We added a sentence in the Discussion to highlight how limited this information was. (page 16, line 436)

Focussing solely on money misses the fact that much influence (which can be in shorter supply than money) is informally reciprocated "in kind" for instance inviting non-profit staff to sit on industry's advisory committees or combine forces on a sponsor's advocacy efforts which may lend credibility but is in fact budgeted from marketing and executed by a communications agency.

RESPONSE: The Reviewer is raising important questions for future research. Our review includes data on a related outcome, namely the presence of industry employees or people with financial conflicts of interest on the governing or advisory board of the patient organisations. We did not include a question on the presence of patient group representatives on industry advisory committees. We rechecked the included studies to see whether this was reported, as it could be reported as an exploratory secondary outcome. However, none of the

included studies report on this. We agree that available reports do not necessarily reflect the full story on extent of interactions.

Industry support often has a lifecycle associated with its products – therefore cross-sectional studies across a broad swathe of diseases may give an uneven picture. For instance in the multiple sclerosis world there are a number of highly competitive biotechs with patented products trying to build a portfolio of products, whereas in cystic fibrosis there is one dominant company that (for now) has a somewhat unique relationship with non-profits in the space. The cycle often starts with "awareness raising" around the disease which is a shared objective but then may mutate as products make their way through the pipeline and particularly at the point of approvals or market access (e.g. NICE) is when the influence has the most chance of being problematic.

RESPONSE: None of the studies that met our inclusion criteria addressed this interesting topic. This issue could definitely be the subject of future research.

While I agree with the authors conclusions that more transparency is warranted and that governments should "do something" it might be informative to point to initiatives that have been successful (or at least a good start) such as the "sunshine initiative" around physician payment.

RESPONSE: We have added a reference to the Sunshine Act in the Discussion.(page 17, line 488)

Reviewer: 2

Comments:
Are the questions the paper addresses relevant and important to patients and/or carers?
Yes, the questions are relevant for patients and carers. As the paper states patients and carers are dependent on the patient organisation for information, support, education and lobbying on many subject like health policy, reimbursement decisions, HTA etc. that have a direct impact on (quality of) care, availability and quality of medication and devices, selection and funding of research etc. on a national and international level. This directly and indirectly influences quality of life and the options of dealing with the consequences of the disease on a daily basis for patients and carers. The influence of patient organisations in designing the future of health care is increasing. This makes this research even more relevant. The selection and range of outcome measures is broad enough to give insight on the consequences, results of industry funding of patient organisations.
The study makes clear that better reporting of links/funding with industry is needed. Not just on the yes or no questions, but also the impact of the funding, dependency of the funding from

industry and the contacts with industry. A way of monitoring of the influence of the industry involvement in the policy and action of the patient organisations would not be amiss.
We have seen in other areas (like tobacco control) the impact industry can have on policy development by perverting the proposal consultancy process by influencing the input of certain groups and people.
As stated in the study better regulation and monitoring of industry funding and contacts is needed. National and international standards are needed.

RESPONSE: We thank the Reviewer for these comments.

Are there topics or issues that are missing, or need to be highlighted more?
It would be good if they define what they mean with multiple disease areas as the focus of the patient organisations. Would an organisations on lung diseases be multiple or one area. Is cancer one type of cancer or multiple? Are the multiple disease organisations umbrella organisations, where the members are not patients but patient organisations? Are the disease specific organisations umbrella organisations? Is it within one country or on a super national/super state level? It would be good to better describe the type of patient organisation in this way if possible. If this information is not available, please indicate this as well.

RESPONSE: The term 'multiple disease' was used for studies that focused on patient groups that work on a range of clinical areas (e.g. the study by Ball, 2006 was defined as 'multiple disease' because the authors analysed the websites of national and international patient organisations that focus on ten major health conditions: cancer, heart disease, diabetes, asthma, cystic fibrosis, epilepsy, depression, Parkinson's disease, osteoporosis, and rheumatoid arthritis). We used the term "single disease" when the study included patient organisations that focus on one specific clinical area. For example, if the study included organisations focusing only on cancer we considered this as a "single-disease" situation. We have added a footnote at the bottom of Table 1 to clarify this.

The location of study sample for each included study is presented in Table 1. Nearly all studies focused on organisations based in one country. The exceptions are four studies that focused on organisations based in various countries (Ball, 2006; Jorgensen, 2004; Perehudoff, 2010; Perehudoff, 2011)

The study is quite comprehensive, but does raise questions on how to move forward.
It would be good to formulate an advice to patients and carers on the influence of industry funding on patient organisations and what questions to ask of your own organisation on the subject of industry funding and industry influence. It would be very interesting to have a study done on this subject in low- and middle income countries and patient organisations in other disease areas.

RESPONSE: We agree with the Reviewer that this study raises questions on how to move forward. In this regard, it is worth mentioning that we are currently collaborating with patient groups to convene a seminar about patient group-industry interactions in Sydney in 2020, and this systematic review will inform part of the discussion.

We did not exclude studies carried out in low- and middle income countries but found no such studies. One study includes South Africa (Ball 2006), but otherwise all included studies were in Europe, the UK, North America or Australia. We agree that research is needed in low- and middle- income countries and a broader range of disease areas.

Is the treatment or intervention suggested or guidance given something which patients/carers can readily take up? or does it present challenges?
The study is not about a treatment or intervention. It is however important in the development and acceptance of treatments by both doctors and patients/carers.

RESPONSE: We thank the Reviewer for these comments.

Are the outcomes described/measured in the study important to patients/carers? Are there others that should have been considered?
Given the scope of the study, it is a good starting point. For the future it might be good to involve patients in developing relevant criteria for measuring the influence of industry on the policies of patient organisations and behaviour of the people working for patient organisation.

RESPONSE: As the Reviewer noted, this review is only a starting point and was conducted to assess the magnitude of the phenomenon. Our plan is now to involve patient groups in future projects/initiatives informed by the results of our study. As mentioned above, the event that we will organize in Sydney in 2020 will be a first step in that direction.

Do you have any suggestions that might help the author(s) strengthen their paper and make it more useful for doctors to share and discuss with patients/ carers?
Not at this moment.

Do you think the level of patient/carer involvement in the study could have been improved? If there was none do you have ideas on how they might have done so?
On the one hand it was good that no patients were involved as most of us are a volunteer for one or more patient organisations. I would however advise to involve patient experience experts in developing policies and information material for patients on financial and other links with industry.

RESPONSE: We agree that it will be fundamental to involve patient groups in the next steps.

With regard to the present study, it should be noted that two review authors are member of consumer groups. A/Prof. Barbara Mintzes has worked for many years with women's health and consumer groups, including DES (diethylstilbestrol) Action Canada, Women and Health Protection (a Canadian non-profit organization), and Health Action International (a non-governmental organization representing the public interest in pharmaceutical policy). She is currently a member of the European network of Health Action International (HAI-Europe Association), http://haiweb.org/hai-europe-association/
Another author of the systematic review, Dr Paola Mosconi is on the Board of Europa Donna, the European coalition of breast cancer associations. (https://www.europadonna.org/about/organisation/) This information is reported in the authors' conflict of interest disclosure.

Reviewer: 3

Comments:
This is an important issue for patients and for patient organisations in the light of concerns that have been raised in recent years about financial relationships between patient groups and industry and the threats these might pose to the integrity and reputation of patient groups. These are issues that, in my own experience as a patient advocate, patient organisations are usually very much aware of and strive to conduct themselves ethically and transparently. However, despite a number of inherent limitations, the study findings made me aware of some less than ideal practices that need addressing by patient organisations.

RESPONSE: We thank the Reviewer for these comments.

As a general remark, I would like to see more effort made in the preamble to define the landscape and to define the role of patient advocates and growing importance of networking and umbrella organisations, and to describe the increasing number of educational programmes for patient advocates such as the European Patient Academy.

RESPONSE: We now cite the European Patient Academy educational programs, the WECAN Document, the EFPIA Document (mentioned by the Reviewer below), and the Australian Working Together Guide in the Introduction of the manuscript to show the increasing attention that this topic is getting and the involvement of industry associations and coalitions of patient groups and industry in development of guidelines around the issue. (Page 4, lines 114-118)

Are the questions the paper addresses relevant and important to patients and/or carers?

The paper addresses four questions that were also defined on PROSPERO International prospective register of systematic reviews:

. how prevalent is pharmaceutical or medical device industry funding of patient groups?
This is the first systematic review on the topic and confirms what is generally known, that pharmaceutical industry funding of patient groups is common in many higher income countries and disease areas. Sixteen studies looked at prevalence of industry funding of patient groups. More than half of the patient groups surveyed received some or all of their funding from industry. Some patient groups received funding from 6-7 industry donors.
What is lacking from these findings is the difficulty patient groups face in finding funding from alternative non-industry sources. Ensuring that they have funding from multiple sponsors can help patient organisations to maintain objectivity and ensure they are not dependent on a single source of income.

RESPONSE: Even if the results of this review confirm what is generally known, we strongly believe it is important to generate empirical data on the extent of industry funding of patient groups to inform an evidence-based discussion and future actions on this topic.

With regard to the second point, we agree that patient groups face financial constraints that do not make independence easy. However, the statement above, that funding from multiple sponsors can ensure that patient organisations maintain objectivity, is a testable hypothesis. Health professionals who accept industry funding also frequently state that accepting money from multiple sponsors is a strategy used to maintain objectivity. This is also a testable hypothesis that is inconsistent thus far with a body of research on outcomes of industry sponsorship of clinicians. (see for example: DeJong et al. JAMA Intern Med 2016; Spurling et al. PLos Med 2010; etc.) There is increasing evidence that industry sponsorship can create bias in medical research and clinical practice, and similar biases may occur with industry sponsorship of patient groups. Therefore strategies for non-conflicted support might be a public health priority worth strategizing about. We have amended the Discussion to include some of these points. (page 17, line 496)

. how transparent are patient groups about industry funding?
Four studies reviewed by the authors analysed patient groups' websites and found that only one quarter to one third of the groups disclosed industry funding. The amount, use or the proportion of income derived from industry funding was rarely disclosed. This is a helpful finding and patient groups need to address this if this is so.
It would be helpful if the authors were to clarify the number of patient groups covered by these studies and their geographical location.

RESPONSE: We agree with the Reviewer that limited transparency is an important finding and one that could potentially contribute to discussion and changes in disclosure practices. With regard to the second point, we have added some text on the geographical location of the four studies that analysed patient groups' websites (page 12, lines 342). The number of patient groups covered by those four studies is presented in Table 4.

. does industry funding influence the positions of patient groups on specific issues?
The authors review four studies that analysed organisational positions versus industry funding, two of which included comparisons between industry-funded and non-funded groups. Two studies showed a low risk of bias and two showed a high risk of bias. Although in some cases the patient groups' positions were aligned with industry, no evidence was provided of overt industry influence, and the conclusion that these studies raised concerns about industry influence does therefore seem to be overstated.

RESPONSE: Our data are limited to draw conclusions for this question and future work may be able to obtain more data to better answer this question. Following the Reviewer's suggestion, we have changed the text in the Discussion to clarify that this is an association, rather than an evidence of overt industry influence: "*Additionally, this association of sponsored groups' and sponsors' positions does not necessarily reflect an influence by sponsors on a group's agenda. It is also possible that sponsors selectively funded groups with positions that were closely aligned with their interests.*" (page 16, line 449)

The authors report that one study found that 5/8 of German patient groups had members of advisory boards with financial ties to industry. A more detailed analysis would be helpful, since industry draws its medical advisers from the same pool of expertise as patient groups, and it would be helpful to clarify if these advisors are solely funded by an industrial company or receive support from several companies, and what this consists of (speaking honoraria or more substantial support). Of more concern, a US study reported that 37/104 (35.6%) patient groups had at least one drug, device, or biotechnology company executive on the board.

RESPONSE: We rechecked the German study and found an inaccuracy that we have fixed. The proportion of groups with advisory board members that have ties with industry is 5/5 and not 5/8, as only 5 of the 8 included groups had advisory boards. However, no additional information was provided in the report to answer the Reviewer's questions on numbers of supporting companies per advisor or types of support received.

.what do representatives of patient groups think about receiving industry funding?
This section is particularly disappointing. The authors review five studies on this question but provide only a short summary paragraph of their findings. Of particular note, a paper by Leto di Priolo S, et al (2012, ref 25) which conducted telephone interviews with 161 European policy

makers, cancer healthcare group representatives, and cancer patient group leaders is summarised in one sentence as reporting that 'industry was seen as a vital source of funding' (page 17, lines 21-22). This sentence appears to have been taken out of context and is not included in the Leto di Priolo study's results or conclusion that 'Despite ongoing concerns about the openness and transparency of relations between pharmaceutical companies and patient groups, there is scope for these two sectors to work together on issues of common interest.'
I would recommend a thorough reworking of this section of the paper.

RESPONSE: Following the Reviewer's suggestion and also the advice we received from the Editors, we have deleted this research questions from our systematic review. This question is best addressed with qualitative research involving in-depth interviews. We have not included qualitative studies in the current systematic review because a qualitative systematic review uses different methods for data synthesis and interpretation than a review of quantitative studies. On reconsideration, we concluded that this question should be considered to be outside of the scope of the current review. We have therefore submitted an amendment to our protocol in PROSPERO.

Are there topics or issues that are missing, or need to be highlighted more?
I miss any mention of the way in which patient advocates are educated, for example, the European Patient Academy (EUPATI), the patient advocacy tracks at the ASCO, ECCO and ESMO congresses, the European School of Oncology patient advocacy masterclasses, and networking groups such as EURORDIS and WECAN. It would also be relevant to reference the recent document released by WECAN on 'Guiding principles for reasonable legal agreements,' as an example of how patient organisations and industry interact. https://protect-au.mimecast.com/s/czPaCoVzGQiEM99gu6yx-V?domain=wecanadvocate.eu

RESPONSE: We thank the Reviewer for providing these References. We now cite the WECAN Document, together with the EFPIA document 'Working Together with Patient Groups (mentioned by the Reviewer below), and the Medicines Australia 'Working Together Guide' in the Introduction of the manuscript to show the increasing attention that this topic is getting. (page 4, lines 114-118)

Is the treatment or intervention suggested or guidance given something which patients/carers can readily take up? or does it present challenges?
The authors recommend that patient groups should critically evaluate the role of industry funding on their operations and recommend a broader discussion around the role of industry funding in the patient group sector. These discussions are already taking place both in patient groups and in the umbrella patient organisations to which they belong. Patient organisations are generally aware of public concerns about industry funding and many are actively working on improving transparency

and where possible reducing their dependence on industry sponsorship or diversifying their income.

RESPONSE: We now mention the increasing attention to this topic and the discussions that are taking place in the Introduction of our Systematic Review. (page 4, lines 114-118)

The observation that 'Few patient groups have policies governing corporate sponsorship and transparency of funding arrangements on patient groups' websites is inadequate,' is helpful and one that patient groups should act on if not already doing so.

RESPONSE: We agree with the Reviewer's call to action.

Are the outcomes described/measured in the study important to patients/carers? Are there others that should have been considered?
Patients are increasingly involved in medicines research and development and health technology assessment, as well as in reviewing grant proposals and manuscripts submitted for publication. There are scattered references to working with the EMA, FDA and NICE, but it would have been interesting to frame a separate research question on this subject and to draw these findings into an additional section of the paper.

RESPONSE: The Reviewer is raising an interesting point. When describing the prevalence of industry funding of patient groups, we now separately present the four studies that focused on patient groups in official relations with FDA and EMA, and the studies that focused on patient groups that responded to specific consultations. These are all public policy issues and we have therefore grouped them together. (See Figure 3)

In the section on implications for research, there is an oblique mention that 'Increased requirements of pharmaceutical companies for transparency about funding relationships may lead to more accurate estimates [about the association between industry funding and organisational policy]. (page 19 lines 22-24). It would be appropriate to provide a reference to legislation such as the Sunshine Act (USA). The associated reference is to EFPIA's Code of Practice on the relationships between the pharmaceutical industry and patient organisations. 2011. It omits mention of the more recent EFPIA document 'Working Together with Patient Groups (September 2017) which does not carry the weight of a code of practice but includes several sections on the principles of engagement. I suggest revising this section.

RESPONSE: We cited the EFPIA's Code of Practice on the relationships between the pharmaceutical industry and patient organisations because Article 5 of that document is about Transparency and states that *"Each company must make publicly available a list of*

patient organisations to which it provides financial support and/or significant indirect/non-financial support".

Following the Reviewer's suggestion we now mention also the US Sunshine Act. (page 17, line 488)

We thank the Reviewer for pointing us to the recent EFPIA document 'Working Together with Patient Groups. We have included a Reference to this document in the Introduction. (page 4)

Do you have any suggestions that might help the author(s) strengthen their paper and make it more useful for doctors to share and discuss with patients/ carers?

See above.

RESPONSE: We have addressed the Reviewer's point above.

Do you think the level of patient/carer involvement in the study could have been improved? If there was none do you have ideas on how they might have done so?

The investigators mention that no patients were involved in planning and conducting this review and that 'results will be disseminated to patient groups through publicly accessible conferences, workshops and the media'. I regret to say this implies to me that the authors are in an academic bubble, and fails to take account of the efforts that patient organisations are themselves putting into raising awareness of the need for transparency about their relations with industry and promoting best practice through networking with other patient groups and educational initiatives.

RESPONSE: It should be noted that two review authors have been involved for many years with women's health and consumer groups and maintain strong community engagement. A/Prof. Barbara Mintzes has worked for many years with women's health and consumer groups, including DES (diethylstilbestrol) Action Canada, Women and Health Protection (a Canadian non-profit organization), and Health Action International (a non-governmental organization representing the public interest in pharmaceutical policy). She is currently a member of the European network of Health Action International (HAI-Europe Association), http://haiweb.org/hai-europe-association/

Another author of the systematic review, Dr Paola Mosconi is on the Board of Europa Donna, the European coalition of breast cancer associations. (https://www.europadonna.org/about/organisation/) This is stated in the authors' conflict of interest disclosure statement. (page 19)

Moreover, following the Editors' suggestion, we asked a patient group representative to read the manuscript and provide feedback which we have carefully considered in the reworking of the paper.

The study could have been enriched by consulting for example representatives of EUPATI (European Patients' Academy), WECAN (Workgroup of European Cancer Advocacy Networks) or one of the umbrella organisations of patient groups such as the ECPC (European Cancer Patients Consortium) or Eurordis (European Organisation for Rare Diseases) about the study design, to add supplementary questions, and to help to develop a picture of the study 'landscape'.
If this paper is accepted for publication I would encourage the journal to invite leaders of patient organisations and consortia to provide feedback and present the patient advocacy perspective as a letter(s) to the editor.

RESPONSE: We agree with the Reviewer's suggestion that it would be important to have patient organizations commenting on the paper if it is accepted for publication. We are also collaborating with patient groups to convene a seminar about patient group-industry interactions in Sydney in 2020, and this systematic review will inform part of the patient group-led discussions.

Reviewer: 4

Comments:
I was asked to review this paper, because I'm a patient advisor. As such, I found this study fascinating. Among patient advisors this is a very relevant and topical issue.

RESPONSE: We thank the Reviewer for these positive comments.

Perhaps I missed it, but I'm curious about the type of funding that organizations receive or that patients within the organizations receive. Is it only money or in-kind services, and what is the percentage of the organization's income, etc., which might be beyond the purview of this study, but interesting, nonetheless.

RESPONSE: We checked again the included studies to find any reference to in-kind donations. Most of the studies did not mention in-kind donations so we cannot assess whether they were included in their analysis or not. Two studies explicitly stated that they excluded in-kind donations from their analysis (Ball, 2006; Perehudoff, 2010). Three studies assessed both financial and in-kind support; however the data on these 2 forms of support are presented jointly (O'Donovan 2007, Jones 2008, Lin 2017). Based on the limited available data, we did not amend the manuscript to include this information.

To make the article more accessible, especially to patients, I recommend using common and easy-to-understand words instead of verbiage that may not be known by readers. (e.g., "DerSimonian-Laird estimate of single proportions with Freeman-Tukey arcsine transformation was used.")

RESPONSE: We have now described the analysis first with simpler and more understandable language and have added the technical description in parentheses afterwards. (page 8, line 226) We did not feel that we could delete this technical description but believe that the current description is clearer.

Since conflict of interest disclosure is mandated for all activities that have continuing medical education in the US, it seems that organizations should also reveal their funding sources, especially if they are influencing policy and healthcare decisions. Thank you for all the work that went into this study. I appreciate your interest in examining this very important topic.

RESPONSE: We thank the Reviewer for the positive comments on our work and we agree with the importance of disclosure.

Reviewer: 5

Comments:
General comments
The authors report on a systematic review investigating industry funding of patient groups. To my knowledge no previous systematic reviews have covered this topic. The review is generally well conducted using appropriate methodology and is also clearly reported. However, I have some comments concerning the paper which I have addressed below.

Major compulsory revision

p8 para 8 The paragraph heading reads 'methodological quality'. However, in the text below and elsewhere in the manuscript the authors use the term 'risk of bias'. My main reservation regarding this manuscript, concerns the use of the 'Checklist for Prevalance Studies'. This checklist includes items related to statistical issues (e.g. item #8) and reporting quality (e.g. item #4). This is something different than bias/methodological quality. I am not aware of specific tools developed solely for addressing bias in prevalence studies, so this may be the best there is. However, I suggest to avoid the terms bias/methodological quality and instead just use 'quality'. Furthermore, using a tool based on different quality issues may impact on the tool's ability to measure what you want to measure (e.g. bias). In their analyses the authors found no difference in estimates based on 'low' and 'high' risk studies. This could be because the tools is not very good

a measuring bias. Based on the cited tool reference (#9) I cannot find anything about how this tool was developed, validated or reliability tested. The authors should therefore also address the limitations of this tool in their discussion. Lastly, the authors use the term scale to describe the tool. The term scale is typically used when an overall summary score is derived based on 'scoring' of individual items, which is not the case (see The Cochrane Handbook).

RESPONSE: We thank the Reviewer for raising this important methodological issue.

With regard to the development and validation of the Checklist developed by the Joanna Briggs Institute (JBI), all the *"JBI Critical appraisal tools have been developed by the JBI and collaborators and approved by the JBI Scientific Committee following extensive peer review".* (Ref: http://joannabriggs.org/assets/docs/critical-appraisal-tools/JBI_Critical_Appraisal-Checklist_for_Prevalence_Studies2017.pdf)

We agree that the tool includes items relevant to broader study quality, to reporting quality, and to assessing risk of bias. Interestingly, this has been described as a common problem in a recent systematic review of 62 tools for assessing methodological quality of observational studies. (Ref: Wang Z, Taylor K, Allman-Farinelli M, Armstrong B, Askie L, Ghersi D, McKenzie J, Norris S, Page M, Rooney A, Woodruff T, Bero L. A systematic review: Tools for assessing methodological quality of human observational studies. NHMRC. 2019. Available at https://nhmrc.gov.au/guidelinesforguidelines/develop/assessing-risk-bias)

Following the reviewer's suggestion, we deleted any reference to "bias/methodological quality" and we instead refer to "study quality". We changed the possible answers to each domain to "High quality/Low quality/Unclear/Not applicable" in the manuscript, in Figure 2 and Supplementary File 3. We also deleted the term "scale". Finally we have added a sentence on the Checklist to the limitation section. (page 17, lines 473-475)

Minor compulsory revision

p5 para 2 One of the primary aim is to describe the prevalence of industry funding. However, the concern related to industry funding of patient groups may differ depending on the degree of funding. For example, if 90% of all income is from industry it may be a cause for greater concern than if it is only 5%. While the authors report on this I think this should receive more attention in the manuscript here and in general and since they report on it I think it also needs to be described in the aims. E.g. How prevalent and to which degree is ……

RESPONSE: Taking into account the Reviewer's and the Editors' suggestions, we have revised the text to state this research question more clearly. We rephrased Question 1 as:

"percent of patient groups that accept industry funding, percent of patient groups' funding that is from industry, and number of funders per group".

As Table 3 shows, many of the included studies did not provide data on the amount and proportion of funding that came from industry. We agree that these data are of interest, and have included them whenever they were available. We added a sentence in the Discussion to highlight how limited this information was. (page 16, lines 436)

p6 para The authors searched Web of Science, Scopus and Google Scholar using search strings. However, these databases (Web of Science in particular) are also citation databases and I wonder why they searched them using the same strategy as MEDLINE and Embase. Typically citation databases are searched based on included studies in order to identify other recent studies citing them.

RESPONSE: The databases cited can also be used for conventional (rather than citation) searches and that is why the searches were designed as they were.

p6 para 3 I am unsure whether 'outcome' is the appropriate term here. I would not use outcome to describe prevalence and for #3 the actual outcome is 'position on health and policy issues' whereas the text describes an association between comparison and outcome.

RESPONSE: We are not quite sure what the Reviewer is suggesting. We have used a PICOS approach to the study inclusion criteria, so 'Outcome' seems an appropriate word to use. However, if the Reviewer and the Editors are unhappy with this, we will replace it following their advice.

p7 para 2 The authors should please define what is meant by pharmaceutical and device industry. I.e. were companies producing vaccines, vitamins and nutritional supplements considered as part of the pharmaceutical industry? Were companies producing diagnostic tools/equipment considered to belong to the device industry? What about companies producing software/apps?

RESPONSE: We relied on how the included studies defined pharmaceutical and medical device companies. We have made this more explicit and have added a note to state that pharmaceutical companies included producers of biologics as well as small molecule drugs (e.g. biotech industry).(page 6, line 153)
In several cases these industries were defined quite broadly. We are aware that this might have brought in some inconsistencies and have now mentioned this in the limitations.(page 17, lines 464-466)

p7 para 4 line 7 I am unsure what is meant by 'primary outcome'. No primary or secondary outcomes are defined in this systematic review as far as I can see. Do the authors mean primary outcome according to the publication of the included studies? I assume that they included all relevant data despite the data being reported as a primary or secondary outcome in study publications.

RESPONSE: The distinction between primary and secondary outcomes reflects what we stated in the protocol for our systematic review that was registered in PROSPERO. We included all data that were relevant to the outcomes we identified as important in this review (and listed in the PROSPERO registration) regardless of whether they were reported as primary or secondary outcomes in the included studies.

p7 para 4 According to the headings of the results section the authors estimated 7 measures (e.g. 'prevalence of industry funding of patient groups'). Four of these are described under 'outcome measures' in 'Study selection' and all are mentioned in the paragraph below concerning GRADE. However, mentioning them under GRADE without introducing them before is somewhat confusing. I suggest that the authors report all 7 in a separate section to give the reader a better overview.

RESPONSE: We have listed the outcomes to be included in the summary of findings table in the Methods (page 7, lines 209-216)

p12 para 1 line 2-3 See comment above. Reporting of baseline data is a reporting quality, not a bias issue.

RESPONSE: We deleted any reference to "bias/methodological quality" and we instead refer to "study quality" throughout the manuscript.

p12 para 2 line 3-4 As previously described I think the degree of industry funding should be described and discussed in more detail as it is an important result.

RESPONSE: As Table 3 shows, many of the included studies generally did not provide data on the amount and proportion of funding that came from industry. We agree that these data are of interest, and have included them whenever they were available. We added a sentence in the Discussion to highlight how limited this information was. (page 16, lines 436)

p12 para 3 line 3-5 The authors compare the results of the low risk with the high risk group. So this is essentially a subgroup analysis and not a sensitivity analysis. Sensitivity analysis is typically done in order to test the robustness of findings on the basis on review decision e.g. eligibility criteria or publication status. So in a sensitivity analysis the results would be compared against the

primary analysis and not each other. I suggest reporting it as a subgroup analysis as this is typically what is done in relation to study quality (see Cochrane Handbook).

RESPONSE: We changed the language as suggested by the reviewer.

p12 para 3 I suggest describing which post-hoc subgroup analyses were done in the appendix and just describing that various analyses were done and none explained the heterogeneity.

RESPONSE: As suggested, we summarized the paragraph the Reviewer refers to and we now state: "We found a high-level of heterogeneity that was not explained by any of the pre-specified and post-hoc subgroup analyses".(page 11)

p13 para 3 In the results section the groups 'consultation' and 'website analysis' are reported separately, but in Figure 4 an overall estimate is provided. I think pooling these very heterogeneous sources should be avoided so I suggest not reporting the overall estimate in Figure 4. Also one can question pooling the data from the two studies of 'consultation' since the results are very heterogeneous likely due to difference in sources used.

RESPONSE: We agree with the Reviewer that we should not pool these very heterogeneous studies. The Editors raised a similar point. Figure 4 has been amended and we now pool only the results of the studies that focused on disclosure on patient groups' websites. The results of the two studies that looked at consultations are summarised narratively (page 12, line 345) and are also presented in Table 4.

p14 para 3-4 p15 para 1-3 The reporting of these four studies is in my mind too detailed and it is unclear to me why they should receive more attention than the 23 other studies. I suggest reporting them in a more overall manner and the report these details in the appendix. Also some of the results are available in Figure 5 so no need to describe it in detail here.

RESPONSE: We have cut some of the text in the section "Relationship between industry funding and organisational positions". It should also be noted that following the Editors' suggestion, we have deleted Figure 5 where we presented the pooled risk ratio for two studies that analysed the association between industry funding and policy statements of patient groups. Since Figure 5 was deleted, we retained some of the text.

p18 para 1 As described above I think more emphasis should be put on reporting degree of industry funding in patient groups. Also I think the authors should discuss whether a summary prevalence estimate makes sense across such a heterogeneous group of organisations from different countries.

RESPONSE: As suggested both by the Reviewer and the Editors, we cannot meaningfully present a summary estimate for prevalence of industry funding due to the high and unexplained heterogeneity. We have therefore deleted the summary estimates on prevalence of industry funding. However, in Supplementary File 4, we have retained the summary estimates and the subgroup analyses that we carried out in order to explore sources of heterogeneity. This is consistent with the exploration of sources of heterogeneity described in our protocol.

p18 para 1 line16 I suggest focusing on the uncertainty of the estimate instead of the sample size.

RESPONSE: We removed the summary estimate for the association between industry funding and policy statements of patient groups (previous Figure 5), as we agreed with the Editors that these disparate situations should not be combined.

p18 para 2 line 7 I suggest writing 'may not be generalisable'. Generalisability is only a problem if the estimates should differ in other populations and we do not know this.

RESPONSE: We amended that sentence as suggested. (page 16, line 461)

p19 I think a section putting the study in 'context' seems to be missing. Both in relation to discussing the differences in estimates across included studies, but also discussing the findings in relation to industry influence on other issues (e.g. research, clinical practice etc). Also I suggest the authors discuss potential 'double counting' in the review. Was there a chance that some of the included studies sampled the same patient organisations and if so how could this influence the findings. Lastly, some studies seems to be 'investigative journalism' and not 'scientific studies' which have undergone peer review. The authors should please discuss whether they believe this could have influenced the findings.

RESPONSE: We have mentioned the increasing evidence of industry influence on research and professional practice in the section "Implications for policy and practice", stating that patient groups may be subject to same concerns. (page 17, line 497)
We have rechecked the year of data collection and location of study sample of the included studies to identify potential double counting. The timing is different for most of the studies that have been conducted in the same country. There could be an overlap between the two studies by Abola: they were conducted in the US in 2015-2016 and they both focused on cancer groups. However, as showed in Figure 3, we placed the two studies in two different groups ("Consultation" and "Population sample", respectively). When we pooled the data

(as showed in Figure 1 of Supplementary File 4), we only included the studies based on population sample so only one of the studies by Abola was included.
For the investigative journalism vs. peer reviewed studies, these studies were sometimes more comprehensive than the studies in the peer reviewed literature. We have added a sentence to the limitation stating that not all studies were peer reviewed. (page 17, line 477)

p28 The Jorgensen 2004 study is described as multiple for 'disease focus'. As far as I can see the topic is breast cancer screening (i.e. a single disease). If this is the case, then the authors should please correct this and any impact it has on the subgroup analyses.

RESPONSE: We thank the Reviewer for identifying this inaccuracy in our coding. We have amended the manuscript accordingly.

p31-2 I suggest using appropriate GRADE terminology in the 'comments' i.e. imprecision instead of small sample size and inconsistency instead of heterogeneity. Also it should be described for each comment whether it leads to up- or downgrading. Lastly I suggest organisational instead of institutional.

RESPONSE: We changed the language in the GRADE Table as recommended. (page 28-29)

Discretionary revision
Abstract - review methods I suggest reporting study quality assessment before data analysis.

RESPONSE: We amended the Abstract-Review Methods as suggested by the Reviewer.(page 2, lines 38-42)

Abstract – results The sentence "Transparency of industry…." Does not read clearly in relation to the estimate of 27%. Suggest something like…"Among patient organisations having received industry funding 27% (95% CI: 24-31%) disclosed this information on their websites.

RESPONSE: We restructured the sentence on transparency as suggested by the Reviewer.(page 2, lines 46-47)

Abstract conclusion While 'majority' is correct I would suggest 'around half'. Also the term 'rate' is used to describe a prevalence, which is incorrect. I suggest instead 'with prevalence estimates ranging from 20% to 88% among the included studies'.

RESPONSE: We have amended the Abstract conclusion as suggested. We have deleted "around half" as we do not present a summary estimate for prevalence of industry funding anymore.

p4 para 1 The authors may also consider to describe that some patient groups are included in guideline development.

RESPONSE: We have added the patient groups' contribution to guidelines development.(page 4, line 95)

p4 para2 Line 3-5 I suggest providing a reference for this statement.

RESPONSE: We have added a reference for that statement.

p6 para 1 I suggest reporting the PROSPERO record ID here. No need to report it as a citation.

RESPONSE: We have added the Prospero record ID. (page 5, line 137)

p6 para 2 Line 1 I suggest reporting the exact date (i.e. January 20th 2018).

RESPONSE: We have added the exact date.(page 5, line 140)

p6 para 3 line 17 I am unsure what is meant by 'secondary outcomes based on survey data'.

RESPONSE: As suggested by the Editors, we deleted this research question from our systematic review ("*What do patient and consumer organisations think about receiving industry funding*?") This was listed as a secondary outcome in the Protocol we submitted to Prospero. This question is best addressed with qualitative research involving in-depth interviews. We have not included qualitative studies in the current review because a qualitative systematic review uses different methods for data synthesis and interpretation than a review of quantitative studies. On reconsideration, we concluded that this question should be considered to be outside of the scope of the current review. We have submitted an amendment to our protocol which is under consideration by the Prospero team.

p7 para 3 line 4 Does this refer to the pair of investigators (i.e. two) or should all eight be involved in cases of disagreement?

RESPONSE: In case of discrepancies in the coding, the two coders met and tried to reach consensus among themselves. In case of disagreement, a third adjudicator adjudicated the outcome. We have clarified this in the manuscript (page 7, lines 188-189)

p9 para 2 line 7 I suggest describing the cut-off for proportion of industry funding. It is not clear from this paragraph nor the data extraction section how 'service provision' and 'advocacy only' was coded.

RESPONSE: In the protocol we did not pre-specify a cut-off for proportion of industry funding. We left this open to be based on authors' analysis.
We have added a clarification on the 'service provision' versus 'advocacy only' groups: the 'service provision' ones are the groups that provide direct support (e.g. information, education, services) to their members, while the 'advocacy only' are the ones that focus mostly on lobbying for patient access to new medicines or other policies related to health services and /or health products.(page 8, lines 238-240)
We have also added a sentence in the manuscript to state that these pre-specified subgroup analyses could not be conducted because of lack of adequate data. (page 10, line 280)

p11 para 1 line 5 I suggest 'not research' instead of 'not empirical'. Also it is not clear to me why editorials and commentaries were not excluded at abstract stage since this should have been apparent.

RESPONSE: We replaced "not empirical" with "not research" both in the Flowchart (Figure 1) and in the Table of Excluded studies. Editorials and commentaries do not present abstracts so the coders decided to assess them at the full text level before making a decision to exclude them.

p11 para 2 The authors use 1 decimal on their estimates in many cases. However, many of these estimates are based on only 20 to 30 groups. I therefore suggest writing percentages without decimals. Also I suggest writing 8 to 1215 (27,36). 8 (36) to 1215 (27) looks like it is the SD in parenthesis and not the study reference.

RESPONSE: We now present percentages without decimals as the reviewer suggests. We also amended the sentence on the sample size ('8 to 2015') so that the study references do not create confusion.

p11 para 3 line 1-6 Most of this paragraph seems redundant as it is implicit from the methods that meta-analysis was only done if data were available.

RESPONSE: We thought that this information was useful for the reader and so have kept it in the text.

p11 para 3 line 6-8 I suggest moving this to the methods section.

RESPONSE: We moved the sentence on the authors that we contacted for clarifications to the Methods. (page 7, lines 193)

p12 para 2 line 2-3 This sentence seems redundant as the next paragraph provides the meta-analysis estimate.

RESPONSE: Following the Editors' suggestion, we have deleted the summary estimate for the prevalence of industry funding from the manuscript due to the high levels of heterogeneity that we could not explain with any of the subgroup analyses. (See Supplementary File 4)

p13 para 1 The word donor, sponsor and funder seems to be used synonymously here and elsewhere in the manuscript. To avoid confusion I suggest using only one term.

RESPONSE: We have amended the text and used only the word "sponsor".(Page 12, para 1)

p13 para 2 line 1 I suggest reported instead of discussed.

RESPONSE: We amended the text as suggested. (page 12, line 327)

p13 para 3 It is not always clear that the results relates to groups which received industry funding and who disclosed this information.

RESPONSE: We have amended the title of the paragraph and the title of Table 4 as follows: "Proportion of industry-funded patient groups which disclosed information about this funding". (page 12, para 3)

p14 para 1 I think the word 'versus' is used in a confusing sense here since the analysis is actually whether there is an 'association'. Also the quality assessment is previously described so no need to repeat it here.

RESPONSE: We deleted the word "versus" and replaced it with "association".(page 13, line 354) We deleted the sentence on the quality assessment.

p14 para 2 I suggest association instead of links.

RESPONSE: The sentence the Reviewer refers to has now been completely deleted from the manuscript.

p15 para 4 line 1-4 I suggest reporting this in the methods section.

RESPONSE: We now report this in the Methods (page 6, line 164).

p16 para 3 This does not seem to be part of study aims though in some sense it can be viewed as a sort of transparency about industry affiliation and it would maybe be more appropriate to describe it in that section.

RESPONSE: We interpreted the data on the presence of industry logos on patient groups' websites as a form of advertising, and not as transparency of industry funding. Including the logo of a company on a patient group's website may be interpreted more as an endorsement than simply a statement acknowledging receipt of funding. Moreover, authors that assessed presence of logos on the patient groups' websites generally considered this separately from funding transparency. Therefore we believe it is important to keep these results in a separate section of the manuscript. (page 15)

p18 para 1 line 8 Since there are only two studies I would not describe this as a range.

RESPONSE: We have amended the sentence as suggested. (page 16, lines 439-440)

p19 para 2 line 4-5 Triangulate is used here and elsewhere. This is a term typically used in qualitative research and I would just suggest deleting it. I.e…..should use multiple sources. Also I suggest avoiding 'true prevalence' and instead write better estimate. The truth may not be possible to find.

RESPONSE: We deleted the words "triangulate" and "true prevalence" as the reviewer suggested. (page 17)

p21 para 2 line 4 Were the two authors also prohibited from assessing study quality of their own studies?

RESPONSE: The two authors were also prohibited from assessing study quality of their own studies. We clarified this also in the "Conflicts of interest statement". (page 19)

p21 para 3 line 4 It is unclear what #5690 refers to.

RESPONSE: This was a formatting problem with the Endnote Library that has been fixed. (page 19)

p33 I am unsure what 23/59 is? Also I suggest just reporting the mean amount for Kopp 2018 and not the total. Otherwise the authors should report the total for the 2 other studies by multiplying the mean with the number of groups.

RESPONSE: In Table 3, we moved the study by McCoy at the bottom of the Table where we report the proportion of groups with funding over a specific threshold.
We have also deleted the total for the study by Kopp and reported only the mean amount.

p34 Table 4 I suggest that the authors describe that this relates to groups having received industry funding (see previous comment).

RESPONSE: The title of Table 4 has been amended as follows: "Proportion of industry-funded patient groups which disclosed information about this funding"

p36 Instead of describing that 17 additional records were identified I suggest reporting how many additional studies were actually included based on other sources. This gives some sense of the sensitivity of the database search.

RESPONSE: 10 of the 16 additional records identified through other sources and through the hand search of the references of the included articles, met the inclusion criteria. These were reports (n=4), studies published in scientific journals (n=3), lay press articles (n=2) and conference presentations (n=1). Reports and lay press articles can be easily missed with a traditional literature search.

p37 I suggest yellow is unclear (between red and green) and the blank is NA. Similar to Cochrane RoB colours.

RESPONSE: We amended the colors in Figure 2 as suggested.