Author’s response to reviews

Title: Studying De-Implementation in Health: An Analysis of Funded Research Grants

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Author’s response to reviews:

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To: Drs. Anne Sales & Michel Wensing
     Editors-in-Chief
     Implementation Science

Re: Revised Manuscript #IMPS-D-17-00329

Dear Drs. Sales and Wensing,

We greatly appreciate the opportunity to revise and resubmit our manuscript for publication consideration in the journal Implementation Science.

In the pages that follow, we list each comment made by the reviewers and detail (in bold) how we have incorporated their suggestions into the revised manuscript. We believe the manuscript has been strengthened with these additions and requested changes. Please note that we have made some stylistic changes to the manuscript throughout (also in tracked changes) to improve readability.

Please let me know if you have any questions.
Thank you.

Sincerely,

Wynne

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Reviewer #1
1. The title seems a little long and cumbersome; consider tightening it up a bit.

We agree that the title is too long. Our revised (proposed) title is as follows: Studying De-implementation in Health: An Analysis of Funded Research Grants. We are certainly open to other suggestions.

2. Similar to the approach in the Purtle paper cited (ref #38), it would be useful to know the percentage of de-implementation grants funded under the D&I PAR/FOA as a percentage of
all grants under the D&I PAR/FOA. I realize this is a limited picture but might still be illustrative.

As suggested, we analyzed the number and percentage of de-implementation grants funded under the Dissemination and Implementation Research in Health (DIRH) funding opportunity announcement (FOA) to all grants funded under the DIRH PAR. Four de-implementation grants were funded by the DIRH PAR, representing 2% of the total grants (N = 201) funding through this announcement. We have now included this text in the manuscript in the Results.

3. Similarly, in Table 2, it would be helpful to show how many grants of the 20 were tied to various PARs/FOAs.

As suggested, we have noted which de-implementation grants were funded under specific funding opportunity announcements (FOA; PAs or PARs). However, since most FOAs only supported one de-implementation grant, listing all of them in Table 2 appears quite awkward and cumbersome. Instead, we have included the number of the FOA (and title in the Note section below) that supported each de-implementation grant in Appendix B, where they are listed by name. We have not included an active hyperlink to each FOA, as several hyperlinks no longer exist and/or the funding announcements have expired.

4. It is probably worth mentioning that a major gap is the de-implementation of policy (both Big P government policy and small p organizational policy). In the policy world, this is "policy termination." One can argue that policy has the largest impact on health yet does not show up prominently in any grants found in this review.

We agree this is an important aspect to mention and now include text to this point in the Discussion, as below:

“Changes in policy—whether it be ‘small p’ policy changes at an organization or ‘big p’ policy changes at local, state, or federal government—may be a particularly opportune time to study how policy termination has an impact on the de-implementation of health services and practices.”

5. Obviously, as you note, this is a US-centric study and important work is likely to be going on in multiple other countries. It is hard to imagine that in your quick search of other countries, no studies were found. Is this true or might it be terminology/search terms or the nature/limitations of searchable data bases in other countries?
We, too, were quite surprised to find zero matches for ‘de-implementation’ or ‘de-adoption’ in the Canadian database that was listed as a search engine for grants. As a follow-up, we contacted several individuals at the Canadian Institutes of Health Research (CIHR), who suggested alternative search engine to use, the Canadian Research Information System. We re-ran our search in this database and identified three programs (two research grants, one meeting grant) focused on de-implementation or de-adoption. Clearly, however, we are not familiar with the multitude of grants databases that are available in Canada, let alone other countries (e.g., Australia, U.K) that may be funding research on de-implementation.

With this new information, we considered two options in response to the reviewer’s suggestion. On one hand, we could reach out to major funding agencies in other countries and inquire about what research-focused grants (vs. planning, meeting, or capacity infrastructure) they have supported with the 11 search terms that we used in the NIH database. On the other hand, this would rely on the availability, willingness, and timeliness of other funding agencies to provide such information; we would not have access to the full grant applications and thus could not include them in our analysis; and a synthesis or summary of de-implementation grants funded by other countries is arguably outside the scope of the proposed study. Moreover, similar portfolio analyses conducted by NIH staff have not included a comparison to the funding portfolios of other countries (e.g., Neta et al., 2015; Ballard-Barbash et al., 2013).

As such, and after careful consideration of these options, we have removed the text in the Discussion section that refers to our initial search of ‘de-implementation’ and ‘de-adoption’ grants in Canada and the UK. We have retained the text noting the limitations of our findings—namely, the potential lack of generalizability to other U.S. federally-funded research entities (e.g., CDC) and/or to non-U.S. research funding organizations.

Of course, we are certainly open to other suggestions for addressing this question.

6. In Table 2, while not a certain trend, it appears that the number of de-implementation grants is increasing in recent years. This may be encouraging and worth noting.

We agree that the number of de-implementation grants has been increasing in recent years, and note that the majority (n = 11 of the 20) were funded between fiscal years 2015-2016 both in the Abstract. We have now revised the text in the Results section to include this statement, rather than the current text which states that 13 of the 20 grants were funded between fiscal years 2010-2017. We have also included text in the Discussion section noting that it is encouraging that most de-implementation grants have been funded relatively recently, and that we may see this as the beginning of an upward trend.
7. A study like this will miss studies not primarily on this topic but those that add questions in a related project. For example, we have an R21 grant on the uptake of evidence-based practices across four countries and we added a few questions on de-implementation. This would not show up in the original grant application.

This is a good point—any grant that included a few items in a survey or embedded in a semi-structured interview on de-implementation, for example, would not have been identified through our systematic review process. However, given our objective of identifying grants that focused that explicitly (but not exclusively) on de-implementation, we felt it appropriate not to include all grants that might possibly include some questions on de-implementation in our search criteria (for example, all implementation grants). We have now noted this limitation in the Discussion, acknowledging that our search criteria and overall study objectives may be an underestimate, to the extent that grants may have included items to assess de-implementation without a predominant focus on de-implementation.

“It is possible that the sample of 20 grants is an underestimate of the total number of grants on de-implementation, to the extent that some grants may include several items in a survey or questions in a semi-structured interview about de-implementation, but do not have a predominant or exclusive focus on de-implementation.”

Reviewer #2

1. Lilienfeld's paper on Treatments that Harm should be included in the introduction, first paragraph. https://www.ncbi.nlm.nih.gov/pubmed/26151919

While we agree that the Lilienfeld (2007) commentary published in Perspectives of Psychological Science is important, we are hesitant to include it as a reference because of its narrow focus on psychological treatments in mental health, rather than a broad inclusion of treatments, practices, and programs across health areas and delivery settings. If the current manuscript focused specifically on mental health treatments, we would certainly cite literature limited to psychological treatments. Given that the current manuscript cuts across many health areas and settings, we think it is only appropriate to include citations (e.g., references #1-#15) that reflect this broad scope, rather than those focused to one health area or delivery setting. However, if the reviewer still feels strongly that the Lilienfeld (2007) commentary should be cited, we can certainly do so.

2. In general, I'd like to see a little more commentary in the introduction/discussion on why de-implementation is so important. Cost to society, cost to patients, ethics? In the discussion,
the paper calls for additional funding opportunities - it should be more clearly detailed WHY this issue is so important.

We now include additional commentary in the Introduction documenting the extent to which overuse occurs and why de-implementation of inappropriate health practices and programs is important:

“In recent years, as health care costs have continued to rise[1], wasteful spending has been identified, [2, 3] and more robust evidence about health practices and programs has become available, issues pertaining broadly to reducing (frequency and/or intensity) or stopping (ceasing) the use of harmful, ineffective, low-value, and/or unproven health services and practices have become more salient[4-6]. Indeed, overuse of health services and practices is quite costly: a report from the Institute of Medicine (IOM) estimated that waste in health care accounted for approximately $750 billion in 2009. Further, Berwick and Hackbarth (2012) estimated that overtreatment accounted for upwards of $226 billion in wasteful spending in 2011. Rates of overuse vary widely by health area, patient population, and type of health service or practice [7-10]. Among a sample of 2,106 physicians in the United States, participants considered approximately 20% of overall medical care to be unnecessary, including prescription medications (22%), tests (24.9%), and procedures (11.1%)[11]. Overuse of health services and practices has a deleterious effect of patients, too, including cost, emotional distress, anxiety, harm, physical discomfort, adverse events, incidental findings, and quality of life, among others[11-15].”

3. On page 7, line 53, I think confusing to say 8 questions than switch to domains. I would just stick with domains.

We agree and have changed the wording to domains.

4. Related, related, why were frameworks not coded in the grant applications? (as a 9th domain?) I’d be curious what, if any, theoretical frameworks were proposed to guide these de-implementation projects, such as the ones referenced in the Introduction.

Since research on this topic is relatively new (and exemplified by 11 of the 20 grants having been funded in the 2015-2016 period), we did not originally include a domain to code the presence or absence of theories, frameworks, or models because we did not anticipate their inclusion in the proposals.

In response to the reviewer’s question, we revisited the sample of 20 grants, and one author attempted to code the research plan for theories, frameworks, and models. Among the sample, 35% did not mention any theory, framework, or model. Of the remaining, several mentioned
broad theories (e.g., theory of social contagion; theory of phenotypic frailty; theory of cumulative deficits; prospect theory) from other disciplines (e.g., psychology; behavioral economics; systems engineering), none of which were specific to or developed for studying de-implementation. Based on these data, we thought it best not to revise the codebook, double-code all grants, and update the results section to include this domain, as the results indicate use of more general theories, frameworks, and models rather than those that address de-implementation.

We also revisited text in the Introduction on ‘theoretical frameworks,’ as referenced by the reviewer. We now clarify that the articles mentioned (i.e., Prasad and Ioannidis; Montini & Graham; Niven et al.) describe ways in which one may study de-implementation and/or describe possible factors that may affect de-implementation; they do not, however, propose specific theories, frameworks, or models about de-implementation (using the definitions articulated by Tabak and colleagues [2012] on dissemination and implementation theories, frameworks, and models). We have revised the text accordingly.

5. Why were PCORI studies not included?

We did not include studies funded by the Patient-Centered Outcomes Research Institute (PCORI) because we do not have access to full copies of the grant applications. Per PCORI rules and regulations, only PCORI staff have access to copies of the funded grant proposals. Thus, since we are NIH staff, we are unable to conduct a search in their database and pull copies of grants to include in our analysis. In the Discussion, we have noted PCORI as a U.S. research-funding agency (with CDC as another example) that may fund research studies on de-implementation, but for which we are unable to include in our analyses because of limited access.

6. More clarity on the approach to coding (e.g., grounded theory; content analysis, etc.) would be helpful.

We now provide more detail on our coding approach in the Methods. Specifically, we note that each coder read the entire research plan to familiarize themselves with it and, subsequently, re-read the research plan and coded the domains using the codebook.

Since we were focused on answering specific questions about the grants—rather than trying to understand meaning (an overarching objective of qualitative research)—we did not use qualitative analytic methods (e.g., grounded theory, content analysis) to code the proposals. We note that other analyses of funded research proposals have not used qualitative analytic approaches, either.
7. It would be helpful to map on whether the work on de-implementation is being published in the top IS journals (based on Norton's just published paper) or in niche journals.

We reviewed the list of 37 journals that published at least one article that cited at least one of the 20 de-implementation grants, and compared that list to the one referenced in the recent Norton et al. (2017) article with the top 20 D&I journals. Below, we have listed the journals that appeared in the top 20 list from Norton et al. (2017) and those that included at least one publication from at least one de-implementation grant:

<table>
<thead>
<tr>
<th>Journal</th>
<th>Top 20 Journals Ranking</th>
<th>De-Implementation Grants # Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Science</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Administration and Policy in Mental Health</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>and Mental Health Services Research</td>
<td></td>
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</tr>
<tr>
<td>Health Affairs</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Psychiatric Services</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Medical Care</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Health Services Research</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Journal of American Medical Association</td>
<td>18</td>
<td>2</td>
</tr>
</tbody>
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Seven of the top 20 D&I journals published at least one article from at least one of the de-implementation grants. Thus, while there is some overlap, many of the articles were published in more specialty journals focused on one health area (i.e., cancer; e.g., Clinical Breast Cancer, The Oncologist, Journal of Clinical Oncology) or methodological domain (i.e., statistics; e.g., Statistical Modeling, Statistics in Medicine). This distribution largely reflects the distribution of de-implementation grants, so perhaps it is not surprising that of the 37 different journals, only seven overlap with the top 20 D&I journals.

We have summarized these findings in the Results of the revised manuscript.

8. I'd like to see more discussion of the findings that 1) several studies focused on both understanding factors and testing strategies and 2) the "surprising" amount of experimental studies given the youth of the field. Can the authors comment on their perspectives on whether this is this good or bad? Is the field getting ahead of itself? Further, descriptives on if the principal investigators were already funded DI researchers moving into this de-implementation space or other disciplines would be interesting to understand the greater reliance on RCTs.

We have expanded our discussion of these findings in the revised manuscript. We note that the use of various designs—including experimental and quasi-experimental—is good to the extent
that selection of study design matches the types of research questions posed. This would reflect the overall objective of many of the grants, namely to develop and test strategies to facilitate de-implementation. We also note that experimental (i.e., RCTs or variations thereof) designs are the most common study design for testing implementation strategies (Tabak et al., 2015). We are hesitant to insert our opinion of whether one type of design is better than the other, and instead highlight the importance of selecting a study design that is best able to answer the research questions and hypotheses. This text is now embedded in the Discussion:

“Given the relatively nascent state of the field, a surprising number of grants included experimental or quasi-experimental designs. However, these findings are aligned a review of published de-implementation studies[34]. Moreover, a systematic review by Tabak and colleagues found that 95 (83%) of studies testing implementation strategies proposed to use an experimental design, and 13 (11%) proposed to use a quasi-experimental design[56]. Experimental and quasi-experimental designs are the most appropriate design for testing strategies to facilitate de-implementation, as was the overall objective of many of the de-implementation grants. The range of study designs and research methods proposed in the sample of 20 de-implementation grants is encouraging, to the extent that they reflect the best type of design needed to answer the diverse types of questions in de-implementation. Strategies proposed in the grants overlapped with multi-level classifications identified by Colla [21] and colleagues for reducing use of low-value services (e.g., patient-, provider-, system-, and policy-level strategies) [29].”

In addition, and as requested, we re-analyzed data on the Principal Investigators (PIs) of the 20 de-implementation grants to include additional descriptive characteristics (i.e., advanced degree, career stage) as well as current or past funding from the trans-NIH Dissemination and Implementation Research in Health (DIRH) funding opportunity announcement (FOA; excluding de-implementation grant funded from this FOA, where applicable and note the following in the Results:

“Four de-implementation grants were funded through the DIRH FOA, representing 2% of the 201 grants funded through this FOA across the R01, R21, and R03 mechanisms and all years the FOA was available. Interestingly, this was the first time the PIs of these four grants had been funded through the DIRH PAR.”

9. Finally, I’d like a bit more commentary from the authors on how they see de-implementation fitting within the larger space of implementation science. Do they see it as a parallel stream of research that DI researchers will naturally extend into; do they see it as a new area that will be separate, etc. There is some mention of this in the discussion but it is such a critical issue and these are the authors to be commenting on this!
We have added text in the Discussion section on recommendations to clarify how studying the phenomena of de-implementation may overlap with and be informed by other disciplines, including but not limited to implementation science, as noted below:

“A recognition of the historical roots of studying overuse, underuse, and misuse, including landmark studies and reports (e.g., [14], [59-63], as well as the contribution of other disciplines (e.g., clinical psychology, social psychology, public policy, health economics) in understanding and facilitating de-implementation, will serve efforts to advance research in this area well. Consistent with the overall tenets of implementation research, which emphasizes the use of diverse study designs (e.g., experimental, quasi-experimental, observational, modeling), research methods (e.g., qualitative, quantitative, mixed methods), partnerships, context, and generalizability, research on de-implementation may similarly seek to incorporate such perspectives.”