Evidence Report/Technology Assessment Disposition of Comments Report

Research Review Title: *Data Linkage Strategies To Advance Youth Suicide Prevention*

Draft review available for public comment from January 25, 2016 to February 22, 2016.

Research Review Citation: Wilcox HC, Wissow L, Kharrazi H, Wilson RF, Musci RJ, Zhang A, Robinson KA. Data Linkage Strategies To Advance Youth Suicide Prevention. Evidence Report/Technology Assessment No. 222. (Prepared by the Johns Hopkins University Evidence-based Practice Center under Contract No. 290-2012-00007-I.) AHRQ Publication No. 16(17)-E001-EF. Rockville, MD: Agency for Healthcare Research and Quality; October 2016. www.effectivehealthcare.ahrq.gov/reports/final.cfm.

Comments to Research Review

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The tables below include the responses by the authors of the review to each comment that was submitted for this draft review. The responses to comments in this disposition report are those of the authors, who are responsible for its contents, and do not necessarily represent the views of the Agency for Healthcare Research and Quality.

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?pageaction=displayproduct&productid=2203
Published Online: October 4, 2016

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer #1	General comments	I am not sure what you mean is the report clinically meaningful. If the recommendations are followed and used to improve research, it clearly will be. Yes to the second two questions (*Are the target population and audience explicitly defined? Are the key questions appropriate and explicitly stated?*).	Thank you for your comment.
Peer Reviewer #2	General comments	Yes- and nicely written to guide future opportunities for research and program planning	Thank you for your comment.
Peer Reviewer #3	General comments	The report is very meaningful for a public health approach to suicide prevention. The target population is clearly specified. The audience could be more explicitly defined. Presumably, the audience is public and private suicide prevention leaders, those in a position to influence policy, and researchers. The questions are appropriate and explicitly stated	Thank you for your comment.
Peer Reviewer #4	General comments	This manuscript is a systematic review of available data systems that can be linked to data from youth suicide prevention interventions and analytic approaches to advance youth suicide prevention research. The systematic review, which identified 52 studies of suicide prevention interventions and 156 unique and potentially linkable external data systems, found that only 6 intervention studies assessed outcomes by external data linkage and only 11 assessed potential moderator effects. The authors should be commended for conducting such a thorough systematic review of an issue that has high clinical and research significance. There are just a few issues that should be addressed by the authors, as summarized below.	Thank you for your comment.
TEP #1	General comments	The report covers an important concern for clinicians and researchers. The presentation and discussion and clear and well laid out	Thank you for your comment.
TEP #2	General comments	The report is very meaningful - with the target population and audience clearly defined - key questions are appropriate too.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #3	General comments	This is an important and clearly defined comprehensive report. The key questions are clearly stated and the results of the review tell us about the state of the art of research in the area of suicide prevention interventions and available data sets for linkage. The report can be used to guide the development of linked data base. If this were a report exclusively about the treatment and prevention of suicidal behavior it would need to have more specific information about interventions and a summary of key program components but that is not the goal here.	Thank you for your comment.
TEP #4	General comments	The report is meaningful for both research and programmatically in regards to suicide prevention programs (estimation of current state, current problems, and possible approaches to address). The key questions are appropriate for the effort and are explicitly stated and answered within the report.	Thank you for your comment.
TEP #5	General comments	The report is clinically meaningful as it directly identifies an objective “to identify and describe data systems that can be linked to data from youth suicide prevention interventions and to identify analytic approaches to advance youth suicide prevention research” The report does an excellent job describing target population “Studies and data systems had to be U.S.-based, include individuals between 0 and 25 years of age, and include suicide, suicide attempt or suicide ideation as an outcome.” (p. 5) The audience is clearly defined “information in this report is intended to help health care decisionnmakers —patients and clinicians, health system leaders, and policymakers, among others—make well-informed decisions and thereby improve the quality of health care services.” (p. 2) The key questions 1-3 are clearly stated and adequately addressed.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Karen Kanefield (American Psychiatric Association)	General	As a general comment, the rationale for restricting the scope of the review to youth and young adults could be stated more clearly	The questions from the nominator (and AHRQ contract) specified a focus on youth and young adult suicide. The suicide rates in adults, especially older adults, in many countries have been declining. Youth suicide rates have shown far less improvement. Suicide is now the second leading cause of death in the United States among those 10-25 years of age. We revised text in the Introduction to highlight these facts. Also, as was stated under the Scope of Project, this age range reflects a time when primary prevention may be effective.
Public Reviewer: Karen Kanefield (American Psychiatric Association)	General	The phrase "emergency room" or "ER", which is used throughout the document, has generally been supplanted with "emergency department" or "ED”.	Thank you for your comment. We reviewed the text to ensure consistency.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Gregory Simon	General	4 At the risk of being inflammatory I would mention that the current pricing model for access to National Death Index data is very problematic. The cost of population based research is simply prohibitive. It may be impolitic to point this out but I believe the current situation is deplorable.	Thank you for your comment. We addressed this under "Barriers to Data Linkage": "There are several barriers or limitations suicide prevention scientists could face regarding the linkage of prevention data to data systems: the adequate ascertainment of those affected by suicide ideation and attempts; costs associated with access to the National Death Index (NDI) and other data systems; sizeable interoperability challenges on a national level, even for routine sharing of clinical data; the lack of adequate access to data dictionaries; and, the possibility that one data system may not have all the outcomes of interest to preventive studies and the consequent need to link to multiple data systems for a more complete picture of outcomes."
Public Reviewer: Gregory Simon	General	1 I think the report would be much clearer and more helpful if there were some classification or taxonomy of data sources. My classification would be simple Vital statistics data for ascertainment of suicidal deaths Health system data for ascertainment of diagnosed or treated selfharm Survey data for ascertainment of suicidal ideation of selfharm that did not present for health care There may be other important categories. But I think its essential to clarify that selection of the right source depends on the outcome of interest.	Developing and applying such a taxonomy is outside of the scope of the project.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Gregory Simon	General	3 Having made point 2 above using health system data to evaluate suicide prevention efforts may encounter more difficulties with adequate ascertainment. Prevention interventions may be delivered in specialty mental healthcare systems while suicide attempts prevent in emergency departments and the former may often have no ability to access data from the latter. Assuring adequate ascertainment of those events may require linkage to insurer or payer data. That has been challenging in the past but the emergence of state AllPayer Claims Databases should significantly facilitate these linkages. APCDs should certainly be mentioned as a very valuable resource for future assessment of suicide attempt prevention programs.	This data source was included as one of our identified data systems, as listed in Table H1. We agree with this feedback and have added explicit mention of this type of data system in the text of the report. We have added the following text to the Introduction: "The emergence of state All Payer Claims Databases (APCD) could also significantly facilitate data linkages. APCDs are large-scale databases that systematically collect medical claims, pharmacy claims, and eligibility and provider files from private and public payers. Over the past decade, states have established state-sponsored APCD systems. APCDs will be a valuable resource for future assessment of suicide prevention programs. In addition, several states now have established Health information exchanges (HIE) involving merging healthcare data electronically from multiple healthcare systems."
Peer Reviewer #3	Clarity and usability	The report is clear and usable. More detail on how to overcome the barriers to data linkage that are described would be helpful.	We agree and have added a section to the Discussion to address your concern.
Peer Reviewer #4	Clarity and usability	This report is well-written and provides new information with relevance to health policy and suicide prevention research.	Thank you for your comment.
TEP #1	Clarity and usability	The report is well organized and helps to provide support to what is already known-namely, that there are scant data resources to inform us about suicide and suicide prevention interventions on the national or local level	Thank you for your comment.
TEP #2	Clarity and usability	The report is well structured. The main points are clear. The conclusions are relevant and contribute new information and understanding.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #3	Clarity and usability	Besides meeting inclusion criterial it would be helpful to indicate strengths and weakness of studies, barriers and important components.	Thank you for your comment. This project was not intended to evaluate programs, and we did not evaluate the strengths and weaknesses of the programs.
TEP #4	Clarity and usability	The entire report is nicely structured, well organized, and easy to read with relevant conclusions regarding the need for better data acquisition and management of data in suicide prevention programs.	Thank you for your comment.
TEP #5	Clarity and usability	The report is well structured and organized with the main points clearly presented. It is relevant for policy as well as practice decisions to show that only six studies linked suicide prevention efforts for youth with data systems and none of these published studies included effects of moderators. While there were 156 unique data systems identified, only 66 were classified as "fairly accessible" due to the availability of data dictionaries. This points out there is potential for linking existing data systems with suicide prevention programs but consistent efforts will need to be undertaken by all stakeholders to make it happen and to be able to use these systems to assess the effect of suicide prevention programs for youth. This is a new finding that will be important to disseminate.	Thank you for your comment.
Peer Reviewer #3	Intro	Excellent and concise.	Thank you for your comment.
Peer Reviewer #4	Intro	Clear and concise. The Analytic Framework for Suicide Prevention is well conceptualized. Minor technical issue: I would suggest increasing the font size in the text boxes to improve readability.	We have increased the text size in this figure.
TEP #1	Intro	The introduction frames the problem of obtaining data around suicide and prevention interventions from existing data sets quite effectively. It is clearly and effective on conveying information. This report was trying to provide information 2 areas that intersect and this was done well	Thank you for your comment.
TEP #2	Intro	The report is very meaningful - with the target population and audience clearly defined - key questions are appropriate too.	Thank you for your comment.
TEP #3	Intro	The introduction is clear and sets the goals for the review and manuscript. This is an important step in provide the field of suicide prevention with information.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #3	Intro	The reason for including the literature review and the availability of linkage data in the same paper is not clear.	To address the questions from the nominator, we needed to identify data systems (literature review, environmental scan, target geographical search) as well as studies of suicide prevention efforts (literature review).
TEP #4	Intro	A well written introduction. In fact, the entire piece is done in a well written and easy to read style that added to the excellent content.	Thank you for your comment.
TEP #5	Intro	The introduction is succinct and clearly spells out the scope and goals of the project as well as the analytic framework employed.	Thank you for your comment.
Public Reviewer: Karen Kanefield (American Psychiatric Association)	Intro	The introduction (p.8) appropriately notes the potential promise of patient registries and electronic health record data for data linkage. However, there have been sizeable interoperability challenges on a national level, even for routine sharing of clinical data.	Thank you for your feedback. We have added interoperability challenges to the Introduction (right before the Scope of Project).
Public Reviewer: Karen Kanefield (American Psychiatric Association)	Intro	The idea (also noted on p.8) that data linkage to existing databases could assess longer term outcomes of suicide prevention programs at low cost seems overly optimistic given the need for manual mapping of data dictionaries and the probable need to link from one preventive study to multiple different outcome databases for a full picture of outcomes.	Thank you. We have tempered this statement.

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Published Online: October 4, 2016

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Public Reviewer: Saundra Raynor (Raynor Properties)	Intro	Where is the acknowledgement that many suicides and causes of depression have their origins in financial instability If we all had a decent job and a little retirement security there would be fewer suicides and depression. Your recent report that suggests everyone should be screened for depression is a good one. My fear is that you wont use lay persons to handle these screenings. Instead you will use expensive medical personnel to sit down with a potential client for the screening costing billions of dollars instead of a few million. I have a BA degree and could easily help screen for depression in my community but I fear you would rather increase the income of those who already have jobs rather than make use of those who need jobs. Thats our system but it must change.saundra raynorstrugglinghomeownerssharestories.com	Thank you for your feedback. Although recent studies have linked economic factors to suicide rates, our goal was to focus on linking youth suicide prevention data with external data systems.
Peer Reviewer #1	Methods	Yes, although really there are not any statistical methods, but that is appropriate given the nature of the report.	Thank you for your comment.
Peer Reviewer #3	Methods	Inclusion and exclusion criteria are justifiable. Search criteria explicitly stated and logical definitions for outcome measures and statistical methods used appropriate	Thank you for your comment.
Peer Reviewer #4	Methods	Overall, the Methods section was excellent. One concern: it appears that secondary analyses from the same primary study (e.g., Asarnow, 2011 and Emslie, 2010 reports from the TORDIA study) were allowed. The authors should provide a rationale and justification for this approach.	The unit of analysis is a study. There may be multiple papers from one study. We have revised the text in the Results to ensure that this distinction is made.
Peer Reviewer #4	Methods	Simple descriptive statistics used; no concerns.	Thank you for your comment.
TEP #1	Methods	The methods were explained thoroughly and were an excellent approach to hashing out the facets of this challenging issue	Thank you for your comment.
TEP #2	Methods	The inclusion and exclusion criteria are justifiable with the search strategies clearly stated. The definitions for the outcome are measured appropriately. The statistical methods are appropriate.	Thank you for your comment.
TEP #3	Methods	Overall the methods are appropriate to the questions of interest.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #3	Methods	It is important to note that hospital and ICD codes are for self-harm not necessarily suicide attempts and this is an important limitation.	You are correct to note that ICD 9 codes lump together suicide and self-inflicted injury and ICD 10 focuses on intentional self-harm. We added this as a limitation in the Discussion: "Hospital and ICD codes for self-harm are not necessarily suicide attempts; this is an important limitation. Diagnoses may be underreported during hospitalizations or physician visits. The same underlying condition may also be coded in different ways depending on the clinical circumstances. Definitions of suicide-related constructs should have validity and reliability yet not all behaviors in the CDC Self-Directed Violence Surveillance have demonstrated reliability, validity and utility".
TEP #3	Methods	The inclusion exclusion chart raises some questions. If first level of exclusions were conducted properly, how did so many with excluded characteristics end up in the second level (e.g. 105 where outcome of interest not assessed).	Thank you. We reviewed titles and abstracts initially. Then we screened full-text articles. We included citations at the first screening level (title/abstract) if there was a potential that it may apply. Abstracts often do not include all information needed to assess whether a study should be included in a review. In order not to miss potentially relevant articles, we erred on the side of including articles that *might* apply at the level. In general, we do not exclude citations at the abstract level based solely on what outcomes were or were not reported in the abstract.
TEP #4	Methods	The methods section was well justified in terms of approach, decisions made, and explanation for alternatives not undertaken.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #5	Methods	This section does a good job of describing inclusion and exclusion criteria. The search strategies are explicitly described and appear to e logical. Definitions and diagnostic criteria for the outcome measures appear appropriate. Statistical methods used also appear appropriate.	Thank you for your comment.
TEP #3	Methods	The paper provides a comprehensive list of available data sets. The rationale for not including data sets such as the YRBSS is not clear and needs clarification since this is a national resource.	Thank you. We reviewed the document and confirmed that YRBSS was, in fact, included.
TEP #3	Methods	Overall, the approach to the literature review is appropriate.	Thank you for your comment.
TEP #3	Methods	The requirement of the term "prevent(ion)" in the search term may have limited the findings somewhat.	Thank you. We agree that the inclusion of this term in the search was limiting; our intention was to identify studies on suicide prevention, so we developed a search that would limit the results to prevention studies. We have included some additional studies recommended by the peer reviewers in the revision of the report.
TEP #3	Methods	The rationale for the selection of the specific counties and regions included needs explanation What were the criteria for selecting the areas- convenience, availability of data?	The scope of this contract did not allow the time or resources needed to conduct a full search for each state; therefore, we devised a strategy for selecting a smaller illustrative group based on rates, geographic location, and an active SAMHSA GLS award at the state-level. SAMHSA encourages grantees to use state data systems in their local evaluation procedures, so the data sources should not be unfamiliar to these states.

Commentator & Affiliation	Section	Comment	Response
TEP #3	Methods	In addition, P. 15 line 23: "In regards to the second criterion, in the Pacific region, Oregon has a high suicide rate (16.12/100k) while California has a low suicide rate (9.83/100k); in the Midwest region, Wisconsin has a high suicide rate (12.65/100k) while Illinois has a low suicide rate (8.76/100k); and, finally, in the Mid-Atlantic region, Delaware has a high suicide rate (11.25/100k) while Maryland has a low suicide rate (8.95/100k). Note that the national crude average rate of suicide in 2013 was 12.6 per 100,000 population.1" -How can a state have a "high rate" that is below the national average?	We used the map of rates developed by the CDC for this step. The map is provided in our report. We aimed to match bordering states with suicide rates in the lowest category to states with rates in the highest category. Additionally, in the text, we changed "high" and "low" to "higher" and "lower," respectively.

Commentator & Affiliation	Section	Comment	Response
TEP #3 (continued)	Methods (continued)		The paragraph has been revised as follows “The six states were selected based on the following criteria: (1) the state has an active Substance Abuse and Mental Health Services Administration (SAMHSA) Garrett Lee Smith state youth suicide prevention grant that should facilitate the acquisition of information about suicide data sources (as SAMHSA has provided resources to facilitate and encourage state grantees to use data systems in their local evaluation procedures so data systems including suicide, suicide attempt and suicidal ideation should be familiar to the states contacts); (2) geographic proximity; matched pairs of states with a suicide rate lower and higher than the national crude average rate of suicide in 2010-2014 (8.4 per 100,000 population among those 10-25 years olds[1]); and, to some extent, (3) familiarity of the research team experts with the data systems of those states. All of the six states match the first and second criteria (see Figure 2). In regards to the second criterion, in the Pacific region, Oregon has a higher suicide rate (10.9/100k) while California has a lower suicide rate (5.9/100k); in the Midwest region, Wisconsin has a higher suicide rate (10.4/100k) while Illinois has a lower suicide rate (6.9/100k); and, finally, in the Mid-Atlantic region, Delaware has a higher suicide rate (8.6/100k) while Maryland has a lower suicide rate (6.7/100k).”

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer #1	Results	In general the answers are yes. I cannot really comment on the completeness of coverage, but their search criteria are appropriate.	Thank you for your comment.
Peer Reviewer #3	Results	One study that was very recently published is not included but is important as it would add to the list of six studies that linked prevention activities to external data systems. While the Walrath et al (2015) study that is included linked to suicide mortality outcomes, a recently published study did the same comparison utilizing suicide attempts as measured through the NSDUH system. That study is" Effect of the Garrett Lee Smith Memorial Suicide Prevention Program on Suicide Attempts Among Youths Lucas Godoy Garraza, MA; ChristineWalrath, PhD; David B. Goldston, PhD; Hailey Reid, MPH; Richard McKeon, PhD- JAMA Psychiatry 2015	Thank you for identifying this study. We have included it in the revised version of the report.
Peer Reviewer #4	Results	Overall, the authors have done an excellent job presenting characteristics of studies and data systems. I have just a few concerns that should be addressed.	Thank you for your comment.
Peer Reviewer #4	Results	First, the flow diagram (Figure 3) should include reasons for excluding data systems.	We have added the following footnote to Figure 3: "Reasons for exclusion: no outcome information, duplicate data system, or data system/database was not eligible based on the PICOTS"
Peer Reviewer #4	Results	Second, the evidence table G-2 (Appendix G, pG-7) is confusing as currently constructed. To improve readability, the authors should consider listing author only and then provide information on treatment arms as subcategories.	The evidence tables in Appendix G have been reconfigured to be less confusing.
Peer Reviewer #4	Results	Also, some of the cells for study Ns are empty (e.g., Brent, 2009 Arms 2-4). This would seem to be information available on all subjects.	All missing data have been investigated and we added either numbers or *NR* (not reported) to the cells.
TEP #1	Results	The results were organized well. The sections made good sense and allowed for a clear understanding of what they found.	Thank you for your comment.
TEP #2	Results	The details presented in the results section are sufficient. The characteristics of the study are clear. The key messages are clear. Figures, tables and appendices are clear. I do not see that any study was overlooked.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #3	Results	The authors provide a comprehensive list of prevention studies. It would help to indicate which key questions are addressed in each study would be informative.	Thank you. Studies are identified in the tables. All studies were included in the evaluation of Key Question 1, and a smaller set were included in the evaluation of Key Questions 2 and 3; all are identified in the associated tables.
TEP #3	Results	In Table 3 the SAFETY Program is missing Asarnow JR, Berk M, Hughes JL, Anderson NL. The SAFETY Program: a treatment-development trial of a cognitive-behavioral family treatment for adolescent suicide attempters. J Clin Child Adolesc Psychol. 2015;44(1):194-203. doi: 10.1080/15374416.2014.940624. Epub 2014 Sep 25. Hughes JL, Asarnow JR. Enhanced Mental Health Interventions in Emergency Department: Suicide and suicide attempt prevention. Clinical Pediatric Emergency Medicine 03/2013; 14(1):28–34. DOI:10.1016/j.cpem.2013.01.002.	Thank you for identifying the study by Asarnow. We have included it in the revised version of the report. We determined that the Hughes article did not meet inclusion criteria for this report. This paper measured the delivery of the intervention but not the impact of the intervention on suicide ideation, suicide attempt, or suicide.
TEP #3	Results	The review of prevention programs does not indicate methodological strengths and limitations of studies	Our objective did not include an evaluation of prevention programs; thus, we did not conduct risk of bias assessments for the studies included.
TEP #3	Results	and it would also help to know how this list expands upon or differs from the list of programs on SPRC or NREPP.	We were not seeking to create a comprehensive list of all suicide prevention programs. As was noted in the Methods, we included the NREPP and SPRC in the environmental scan component of this project, which aimed to identify data systems. Prevention programs with published papers were included in the literature search component of this study. Programs listed on NREPP were included if they were published and met our inclusion/exclusion criteria.
TEP #4	Results	The results are extensive. The tables and information provided are thorough and detailed. An excellent reference as well as an excellent approach to collating such a vast amount of data regarding suicide prevention programs.	Thank you for your comment.
TEP #5	Results	This section appears to have enough details.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #5	Results	p. 22, line 26 "Of the data systems identified, 71.2 percent included data on suicide, 53.2 percent included data on suicide attempts, and 28.2 percent included data on suicide ideation."- It would have been more useful for the reader if percentages of each of these outcomes in combination with the other outcomes were included.	We have added this information to Table 4.
TEP #5	Results	p. 22, line 45 "The types of data systems identified were as follows: 49.4 percent suicide specific, 56.4 percent death records, 13.5 percent healthcare provider records (EMRs)," It is not clear to the reader what "suicide-specific means" in this context and it would be helpful if it was clarified.	Thank you. We revised the text to "were designed specifically to capture information about suicide".
TEP #5	Results	p. 23 line 22 "Research (e.g., academic, pharma)" probably should not be put together as the ability to access and utilize them might be different	We have removed this from the table.
TEP #5	Results	p. 24 Table 5 lists studies that included the linking strategies. It would be helpful for the reader for the table to have a brief summary of the findings of the studies so the linkage results can be better understood by the reader. Same with p25 table 6	We added a brief summary of the study findings in Table 5 and Table 6. Please note that these summaries are very brief and do not include all findings from the study.
TEP #5	Results	p. 37 is blank but labeled b-2	This is a blank page and was removed in the final version.
TEP #5	Results	p. 40. Unclear why Cognitive Behavioral Therapy for Late-Life Depression and PROSPECT are included in the search as they clearly do not target individuals in the age group identified but are aimed at older adults.	We have removed this from the appendix as it no longer provides useful information to the reader. In response to your comment, the programs listed in Appendix B were not necessarily limited to youth but represent the full search of NREPP.
TEP #5	Results	p. 75 It would help the reader more to not have the abbreviations at the bottom of the very large table but to just include these in the table.	Thank you for the comment. We are following the guidelines for AHRQ publications.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Karen Kanefield (American Psychiatric Association)	Results	Under Key question 1 (p. 22), the first and third paragraphs highlight several findings that are intended to show the viability of data linkage approaches. Specifically, that 1) the majority of data systems can be obtained free or for a fee and can be downloaded from the internet and 2) the majority of data systems included information at an individual patient level that was sufficient to permit linkages to other data. It would be helpful to discuss the ways in which data linkage approaches would or should protect the privacy and security of such individual information particularly when associated with other outcomes such as suicidal behaviors and suicide related risk factors.	We agree that this is an important issue and this is now included in the Discussion: “Data linkage approaches should protect the privacy and security of individual information on suicidal behaviors and suicide related risk factors. Because suicidal behaviors are relatively rare events, if a data system includes certain geographic identifiers such as county or school, it might be possible to identify a specific individual. Those carrying out linkage should use processes which ensure that individuals cannot be identified and that identifying data (e.g., name, date of birth, address) is not transferred between data sets. Data linkage procedures should be IRB approved and subject to data use policies and agreements. The legal feasibility of linkage depends on the applicability to the specific purpose of the data linkage of Federal and State legal protections for the confidentiality of health information and participation in human research, and also on any specific permissions obtained from individual patients for the use of their health information. Detailed guidelines on the technical and legal aspects of data linkage could be developed to facilitate work in this area. Data sharing agreements are needed.”
Peer Reviewer #1	Discussion/ conclusion	I though this portion was very good.	Thank you for your comment.
Peer Reviewer #3	Discussion/ conclusion	The current obstacles to more effective data linkage are clearly described. What some of the potential benefits could be of better linkage could be more thoroughly described.	Thank you. We have added a section on the potential benefits of better linkage in the Discussion.

Commentator & Affiliation	Section	Comment	Response
Peer Reviewer #4	Discussion/ conclusion	The implications of the major findings and the limitations are clearly stated. I think there should be more discussion about the NVDRS. The Restricted Access NVDRS has individual-level quantitative data as well as incident narrative reports on all suicide decedents. Currently, the NVDRS is available in only 32 states and there are calls to expand the system to all US states. These data are potentially available for linking with other external data systems, if coordinated with state public health departments.	We have added the following to the Discussion under future research needs: “Linkage of these prevention data to the Restricted Access NVDRS would provide the ability access individual-level quantitative data as well as incident narrative reports on all suicide decedents. Currently, the NVDRS is available in only 32 states with the possibility to expand the system to all US states. These data are potentially available for linking with other external data systems, if coordinated with state public health departments. Access to restricted data sources such as the Restricted Access NVDRS and state Health Information Exchange data systems are not available to individuals but are available to state and local health departments.”
TEP #1	Discussion/ conclusion	The authors did an excellent job taking the data and translating them into the key conclusions and lessons learned. They also did a good job interpreting the data in the context of current challenges to research and funding.	Thank you for your comment.
TEP #2	Discussion/ conclusion	It limitations are clear. Nothing was omitted. Future research is clearly stated in terms of future research.	Thank you for your comment.
TEP #3	Discussion/ conclusion	The discussion could be more comprehensive to meet the initial goals of the paper. That is, the paper was to provide a thoughtful review that identifies strengths and barriers rather than just presenting studies.	We have revised the Discussion to better address the strengths and barriers.
TEP #3	Discussion/ conclusion	On Page 28: Limitations section should note need for definitions shown to have validity and reliability. Not all behaviors in CDC Self-Directed Violence Surveillance have demonstrated reliability, validity and utility.	Thank you. This was added to the Limitations: “Definitions of suicide-related constructs should have validity and reliability yet not all behaviors in the CDC Self-Directed Violence Surveillance have demonstrated reliability, validity and utility.”
TEP #3	Discussion/ conclusion	This presents a comprehensive listing of prevention studies and data sets available for linkage.	Thank you for your comment.

Commentator & Affiliation	Section	Comment	Response
TEP #4	Discussion/ conclusion	I think the future research section is well written and clear though ease of translation into future research is limited - this limitation is more due to the data available and a myriad of other factors.	Thank you for your comment.
TEP #5	Discussion/ conclusion	The implications and limitations are clearly discussed. There is no important literature of which I am aware that was omitted. While the future research section is clear, it would be helpful to the reader for this to be in bulleted points like the beginning of the discussion (p. 26)	Thank you for your suggestion. We have added a few key points for Future Research Needs and Opportunities.
TEP #5	Discussion/ conclusion	It would also be worth clarifying what steps which stakeholders could take to ensure that these steps are taken—if the document is meant to inform "health care decision makers —patients and clinicians, health system leaders, and policymakers" then it would be useful, perhaps, for the discussion to focus on future steps by each of these groups. And I would also include researchers as one of those groups.)	Thank you. We considered this suggestion but felt that noting who might take on each of the next steps was moving beyond our scope.
Public Reviewer: Karen Kanefield (American Psychiatric Association)	Discussion/ conclusion	On p. 28 in discussing the limitations of the systematic review process, mention is made of databases such as hospital discharge data that has other primary purposes. It may also be useful to highlight the data-related limitations of such databases. For example, diagnoses may actually be present in an individual, yet not coded for during a hospitalization or physician visit. The same underlying condition may also be coded in different ways depending on the clinical circumstances. These types of datarelated challenges are becoming more apparent with the increasing interest in "big data" and health care analytics and may be worth highlighting further in the context of suicide related data linkage research.	Thank you, this is a very good point. Suicidal behaviors recorded in hospital visits and suicide deaths reflected in mortality data typically reflect only the tip of the iceberg of suicidal events. There are many with those outcomes not recorded as such. This has been added to the Discussion.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Gregory Simon	Discussion/ Conclusions	2 This discussion seems completely separate from a very active national discussion about integration of data from healthcare delivery systems and health insurance systems to create a national health research data infrastructure PCORnet FDA Sentinel NIH PMIetc.. I dont believe that the challenge of bringing together health system data to study suicide prevention is that different that of bringing together health system data to study cancer or CVD prevention. Putting suicide prevention in its own data ghetto could be a major barrier to progress.	We have added text to the Discussion, under Barriers to Data Linkage, noting that there is a national discussion. We agree that data linkage in suicide prevention needs to be a part of this national discussion.

Commentator & Affiliation	Section	Comment	Response
Public Reviewer: Eve Reider	Discussion/ Conclusions	It is mentioned on page 22 of the Draft Evidence Report under Future Research Needs and Opportunities that Randomized trials of prevention programs conducted in early childhood have reported reduced occurrence and severity of mental emotional and behavioral problems that increase risk for suicidal behavior later in life e.g. aggression depression substance use and deviant peer associations however with the exception of Wilcox et al. 2008 the impact of these programs on reducing suicidal behaviors is unknown at present because evaluators of these interventions have rarely followed their cohorts into the peak age of risk for suicide attempt and suicide and often did not include suicidal behavior in their outcome measures.Below are two additional studies that have longterm outcomes on suicide ideation that should be considered one that is a universal intervention Hawkins et al. 2005 and one that is a selective intervention Kerr et al 2014. Hawkins J.D. Kosterman R. Catalano R.F. Hill K.G. Abbott R.D. 2005. Promoting positive adult functioning through social development intervention in childhood Longterm effects from the Seattle Social Development Project. Arch Pediatr Adolescent Med 159 2531. Kerr D. C. R. DeGarmo D. S. Leve L. D. Chamberlain P. 2014. Juvenile Justice Girls Depressive Symptoms and Suicidal Ideation 9 Years After Multidimensional Treatment Foster Care. Journal of Consulting and Clinical Psychology. 82 684693.In addition below is an example of a study demonstrating proximal crossover effects unanticipated beneficial effects of a selective drug abuse prevention intervention on suicidal ideation. Lynn C. J. Acri M.C. Goldstein L. Bannon W. Beharie N. McKay M.M. 2014. Improving Youth Mental Health Through Family Based Prevention In Family Homeless Shelters. Child and Youth Services Review 44 243248.	Thank you for identifying these studies. We have considered the studies and included all of them in the revised version of the report.