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Title	**Medical repatriation of migrant farm workers in ntario: coding and descriptive analysis**
Authors	Aaron M. Orkin, Morgan Lay, Janet McLaughlin, Michael Schwandt, Donald Cole
Reviewer 1	**Chih-Hung Ku**
Institution	National Defense Medical Center, School of Public Health
General comments	The authors reported an analysis of medical repatriation of migrant farm workers in Ontario. Their objectives include to present diagnostic categories, compute rates of dominant medical and traumatic conditions, and explore the use of Foreign Agricultural Resource Management Services, etc... My major concern for the manuscript is: Only univeriate analysis was applied to assess the association of interests is not enough for an academic article. In my opinion, the authors have to apply multiple regressions to assess the association of interests, as well to adjust the potential confounders, such as gender, age, work experiences, nationality, etc…
Reviewer 2	**Jenna Hennebry**
Institution	Wilfrid Laurier University, International Migration Research Centre
General comments	This is an incredibly important contribution to scholarly knowledge of the health issues and repatriation process affecting migrant workers in Canada using data that has hitherto been unavailable and indecipherable. While recognizing the importance of examining this data and bringing it to public light, and that the use of repatriation data has moderate validity as indicator about the reasons and dominant diagnostic categories for medical repatriation, there are some inherent weaknesses to the data itself which must be recognized. FARMS is a private sector organizations made up of a conglomerate of growers association representatives, and while it was recognized that the data collected was not intended for epidemiological study, it is also important to recognize that the reliability of the data may be questionable, and also subject to manipulation by the organization which represents the interests of employers. Employers are likely to under-report causes for repatriation or to protect their own interests when reporting, and as there is no external assessment or mechanism for investigating these causes or their reporting, the database is subject to considerable error and bias. It would be valuable to note this dimension of FARMS and to reference scholarship that has talked about its role as a private actor (e.g. Hennebry, 2008). That said, while there are some limitations to the dataset pertaining to reliability and validity as it is being employed - these data are very important and are THE only indicators of medical repatriations for this vulnerable population. Further explication of the nuanced role of employers, FARMS and governments would also be valuable - including recognition of the intervening role often played by consular officials and the structural frameworks of the bilateral agreements with directly impact the repatriations. More detailed discussion of this would be valuable. While these are mentioned, their impacts on the variable rates of repatriation or on the under-reporting are not sufficiently explicated. For example, that the Mexican consulate will intervene in some cases has been documented in the literature and should be recognized for the potential impact this may have on reporting and repatriations themselves. It may be the case that more Mexicans are repatriated since the consulate and employers push them to return rather than receive care in Canada. Data on repatriations is also available via source countries - has this been explored for triangulation, and as a means to increase reliability of the study? Other scholars have interviewed medical practitioners in source countries - are these findings not also relevant here? Furthermore, it is important that the Canadian government does not monitor, assess or track these repatriations. In the context of global health equity - the paper might consider the role of states and international conventions and framewors. What role do states have in promoting global health equity, and how is it that this program seems exempt from scrutiny or adherence to provincial health acts and federal legislative frameworks? Conclusions might consider reflecting on this governance context more specifically. Further, given the consequneces that medical (and other reasons) repatriation may have on workers, which includes acute and long-term health consequences, potential loss of future participation in the program and loss of income, it would be valuable to include some reference to current findings of blacklisting by the Mexican government, or at the least, citations which point to the reality that being repatriated for whatever reason will likely result in a worker not returning in subsequent years. The Mexican government has data on the participation

	rates for workers (and # of years in the program), and it would be valuable to consider its relationship to repatriation rates.	
Author response	1. One of your secondary objectives was to explore the use of FARMS repatriation data as a source of occupational epidemiology research in this population. It is not clear how this was explored or what this exploration showed.	The final paragraph of the interpretation section now addresses this objective directly.
	2. We understand that there are limitations to the data captured in FARMS, as outlined in your manuscript and in the review by Dr. Hennebry. Please elaborate on these in the limitations section of your manuscript. a. Specifically, the editors were curious as to whether the gender was captured in the database. If so, please include this variable in your analysis. If not, please add this to the limitations section.	The limitations of the data, and the absence of sex- or gender-based information has been addressed directly in the revised interpretation section.
	b. We also wondered whether there was any evidence as to whether the injury or illness occurred on the job or as a result of occupational exposure. You note in the interpretation section that MFWs are considered to be in the workplace even when in their place of residence and when in transportation between their farming activities and residences, but this may be an interesting distinction nonetheless.	The data set does not provide any indication whatsoever about whether the injury or illness occurred "on the job". The discussion of this issue has been refined substantially in the interpretation section.
	c. Finally, it might have been interesting to look at rates of repatriation among first-time MFWs vs. returning workers, if these data are available. If so, please include this variable in your analysis. If not, please add this to the limitations section.	Our data is limited only to what we were able to obtain through our Freedom of Information request. This data did not capture whether workers were first-time or return employees.
	3. Please soften your claim that there is no opportunity for appeal, given the recent case of Eloid Drummond.	The sentence "Medical repatriation decisions cannot be appealed" has been removed (Introduction), as has the statement that repatriation is without a right to appeal (Interpretation).
	4. Please address the comments of the reviewers below.	See below.
	5. Please provide additional background information on the MFW program. What medical tests, if any, do temporary foreign workers undergo prior to acceptance in the program? What level of health coverage is made available to them during their work term?	The following statement has been added: Most SAWP workers undergo medical exams prior to their arrival in Canada, which generally include a physical exam, blood and urine tests and chest radiography. Once in Canada, they have access to provincial health coverage, although multiple practical barriers often inhibit access.
	6. You note in the interpretation section that, "Although farm workers are entitled to receive health care prior to the termination of their employment and repatriation, in practice workers are sometimes repatriated immediately, without receiving such care." This statement might be more useful to the reader in the introduction.	This statement has been moved to the introduction.
	7. Please describe the FARMS data source. Specifically, who completes the 200 character field (reason for medical repatriation)? The employer or a physician? Are standardized codes (e.g., ICD10 codes)?	We are aware that the reason for medical repatriation is entered into the dataset by FARMS clerical staff, after they receive the information from the MFWs employer. No physician or health professional is involved in communicating this information or in

		populating the data set. As we have discussed with the editors, we are aware of this through confidential conversations with reliable sources, but cannot reveal the source of this information. We have therefore not provided further details about who completes the 200-character field within the FARMS dataset. Standardized codes are not used in the original data set. The reason for repatriation is a free-form text field. This has been clarified in the manuscript's methods section. The lack of standardized coding is the reason why we undertook the development, validation, and execution of a coding procedure, which would not have been necessary if standardized codes were used. The full result of our Freedom of Information Request is now provided as Supplement 1. We believe that this provides readers with a very revealing sense of the kind of data we are working with, coding, and interpreting.
	8. Please elaborate on the refinement and validation processes used to arrive at your final coding structure.	The subsection Coding of Reasons for Repatriation has been revised substantially to elaborate on the refinement and validation process.
	9. What was the rationale for computing repatriation rates by year and by country of origin (Fig 2 and 3), but not by age? If you have access to the total number of MFWs by age, please consider including this analysis as well.	Without access to the age distribution of all workers arriving in Ontario through SAWP we are unable to calculate rates by age. We have now included in the results section the average age of those repatriated for health reasons and a brief comment on how this compares to available data on MFW demographics available from other sources.
	10. On page 4, you state: "As the annual number temporary migrant workers arriving in Canada remained stable between 2001 and 2011 the rate of injuries follow a similar pattern to the crude number of repatriations." This should likely be, "the annual number temporary migrant workers arriving in Ontario remained stable". Please clarify.	Corrected.
	11. The first paragraph of this section [interpretation] should provide a brief summary of the main findings of the study.	The first paragraph of the Interpretation section has been updated accordingly.
	12. Your results show variation in the annual rate of MFW health-related repatriation. Are you able to offer any explanation for the variation?	Our very limited dataset does not permit us to speculate on why this variation is observed. This limitation is now included in the interpretation.
	13. Please elaborate on the limitation regarding cases of illness or injury among migrant farm workers not captured in the FARMS database (i.e., those classified as 'absent without leave' or those resulting in death). If possible, please provide estimates as to the frequency of such occurrences.	We have updated the relevant passages to clarify this issue. The available data from FARMS is strictly limited to what could be procured through a Freedom of Information request for data entered into evidence in the Ontario Human Rights Tribunal hearing Peart v. Ontario. Our data does not include statistics regarding workers classified as AWOL or cases resulting in death.
	The authors reported an analysis of medical repatriation of migrant farm	This is an accurate description of our study.

	workers in Ontario. Their objectives include to present diagnostic categories, compute rates of dominant medical and traumatic conditions, and explore the use of Foreign Agricultural Resource Management Services, etc...	
	My major concern for the manuscript is: 1. Only univariate analysis was applied to assess the association of interests is not enough for an academic article. In my opinion, the authors have to apply multiple regressions to assess the association of interests, as well to adjust the potential confounders, such as gender, age, work experiences, nationality, etc… [Editor's note: While we agree that a multivariate analysis would be of interest, we understand that this may not be possible, given the limited data available]	We agree that a multivariate regression to analyze the association between variables of interest would be of interest, but such an analysis is simply not possible given the available data. Our paper is nevertheless of interest because it is the first and only data available regarding this occupational and international health phenomenon and requires substantial epidemiological and scholarly work to refine, code and analyze the available data.
	This is an incredibly important contribution to scholarly knowledge of the health issues and repatriation process affecting migrant workers in Canada using data that has hitherto been unavailable and indecipherable.	Thank you for this encouraging feedback.
	1. While recognizing the importance of examining this data and bringing it to public light, and that the use of repatriation data has moderate validity as indicator about the reasons and dominant diagnostic categories for medical repatriation, there are some inherent weaknesses to the data itself which must be recognized. FARMS is a private sector organizations made up of a conglomerate of growers association representatives, and while it was recognized that the data collected was not intended for epidemiological study, it is also important to recognize that the reliability of the data may be questionable, and also subject to manipulation by the organization which represents the interests of employers. Employers are likely to under-report causes for repatriation or to protect their own interests when reporting, and as there is no external assessment or mechanism for investigating these causes or their reporting, the database is subject to considerable error and bias. It would be valuable to note this dimension of FARMS and to reference scholarship that has talked about its role as a private actor (e.g. Hennebry, 2008). That said, while there are some limitations to the dataset pertaining to reliability and validity as it is being employed - these data are very important and are THE only indicators of medical repatriations for this vulnerable population.	More detail about the circumstances of repatriation, data limitations, and reporting issues has been added to the manuscript, especially in the introduction and interpretation sections.
	2. Further explication of the nuanced role of employers, FARMS and governments would also be valuable - including recognition of the intervening role often played by consular officials and the structural frameworks of the bilateral agreements with directly impact the	The following has been added: Under the SAWP international agreements, "the employer, after consultation with the [workers'] government agent shall be entitled for non-compliance, refusal to work, or any other sufficient reason, to terminate the worker's employment …

	repatriations. More detailed discussion of this would be valuable. While these are mentioned, their impacts on the variable rates of repatriation or on the under-reporting are not sufficiently explicated. For example, that the Mexican consulate will intervene in some cases has been documented in the literature and should be recognized for the potential impact this may have on reporting and repatriations themselves. It may be the case that more Mexicans are repatriated since the consulate and employers push them to return rather than receive care in Canada. Data on repatriations is also available via source countries - has this been explored for triangulation,and as a means to increase reliability of the study?	and so cause the worker to be repatriated." As consular officials may have different manners of intervening in such cases, this may partially explain inter-country differences in premature repatriation rates. We have not triangulated our data with data from "source countries".
	3. Other scholars have interviewed medical practitioners in source countries - are these findings not also relevant here?	We are aware of these interviews, the results of which are being prepared for publication elsewhere. We do not think that this different source of information and data has much relevance to our analysis of the FARMS medical repatriation data set.
	4. Furthermore, it is important that the Canadian government does not monitor, assess or track these repatriations. In the context of global health equity - the paper might consider the role of states and international conventions and frameworks. What role do states have in promoting global health equity, and how is it that this program seems exempt from scrutiny or adherence to provincial health acts and federal legislative frameworks?	The following statement has been added: The Canadian state does not monitor or maintain records regarding the medical repatriations of migrant workers. Our paper draws attention to the various issues for health equity and international policy raised by MFW medical repatriations. A complete discussion of the role of states in promoting health equity is beyond the scope of this paper.
	5. Conclusions might consider reflecting on this governance context more specifically. Further, given the consequences that medical (and other reasons) repatriation may have on workers, which includes acute and longterm health consequences, potential loss of future participation in the program and loss of income, it would be valuable to include some reference to current findings of blacklisting by the Mexican government, or at the least, citations which point to the reality that being repatriated for whatever reason will likely result in a worker not returning in subsequent years. The Mexican government has data on the participation rates for workers (and # of years in the program), and it would be valuable to consider its relationship to repatriation rates.	We agree that repatriation has many complex economic, health and socio-political consequences on workers. Including further discussion on these dimensions may depart from our study's objectives into the realm of premature repatrations more generally, especially around the issue of "blacklisting." This may be better left for a separate commentary piece, editorial, or international policy analysis on this issue, which would be enriched by the data and analyses presented in our paper.