

Medical Repatriation of Migrant Farm Workers in Ontario: Coding and Descriptive Analysis

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Complete List of Authors:	Orkin, Aaron; University of Toronto, Dalla Lana School of Public Health Lay, Morgan; University of Toronto, Dalla Lana School of Public Health McLaughlin, Janet; Wilfrid Laurier University, Health Studies Schwandt, Michael; University of Saskatchewan, Dept of Community Health, College of Medicine Cole, Donald; University of Toronto, Dalla Lana School of Public Health
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Abstract:	<p>Introduction Approximately 40,000 migrant farm workers (MFWs) are employed annually in Canada through temporary foreign worker programs. MFWs face elevated risks of adverse health outcomes. Access to health services and reporting of occupational illness are limited for this group. Health conditions preventing ongoing work normally result in repatriation to workers' home countries. Medical repatriation raises concerns for human rights and health equity, but has not been described in the epidemiological literature. This study aimed to present data describing the reasons and dominant diagnostic categories for medical repatriation among MFWs in Ontario.</p> <p>Methods This retrospective descriptive study examined medical repatriation data from Foreign Agricultural Resource Management Services, a non-profit corporation managing over 15,000 MFW contracts annually. Repatriation data from Ontario MFWs from 2001-2011 were extracted, including demographic data. Physician volunteers used a validated coding system based on ICD-10 classifications to code the reported reasons for MFW medical repatriation. Descriptive analyses of dominant reasons for repatriation and rates of repatriation were conducted.</p> <p>Results During 2001-2011, 787 repatriations occurred among 170,315 MFWs arriving in Ontario (4.62 repatriations per 1000 workers). More than two thirds of repatriated workers were aged 30-49 years. MFWs were most frequently repatriated for medical or surgical reasons (41.3%) and external injuries including poisoning (25.5%).</p> <p>Conclusions</p>

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	This study provides quantitative health data related to a unique and vulnerable occupational category. Findings reinforce existing knowledge regarding occupational hazards and health conditions among MFWs. Medical repatriation of MFW merits further examination as a global health equity concern.

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Introduction

Each year, nearly 40,000 temporary foreign worker positions are approved for employment in Canadian agriculture. These migrant farm workers (MFW) are employed through various streams of the Temporary Foreign Worker Program, primarily the Seasonal Agricultural Workers Program (SAWP). The SAWP employs workers from Mexico and the Caribbean for up to eight months each year, with workers often returning for multiple successive seasons (1). The health status of MFWs and their access to health services in Canada has come under recurrent scrutiny, including through the 2013 *Peart v. Ontario (Community Safety & Correctional Services)* Human Rights Tribunal of Ontario (HRTO) hearing into the 2002 workplace death of Jamaican farm worker Ned Peart.

Few studies exist regarding the occupational health of MFWs in Canada. Inconsistent-reporting requirements as well as short-term employment and residence may contribute to incomplete reporting on the frequency, severity and nature of occupational illness among these workers. Further, occupational health conditions among migrant farm workers may not be accurately captured in workers' compensation data or occupational surveillance systems such as the Agriculture Injury Surveillance Program (2,3).

When faced with health problems or injuries that prevent them from continuing work, MFWs in Canada under the SAWP are normally repatriated to their countries of origin. The repatriation of MFWs for health-related reasons and medical termination of their employment represents a unique form of deportation from Canada. Medical repatriation decisions cannot be appealed. While the labour policy and human rights dimensions of medical repatriations and other features of Canada's temporary foreign worker program has been examined elsewhere (4,5), the injuries leading to medical repatriation of MFWs have not previously been described in the epidemiological or occupational health literature. The primary objective of this study is to present data describing the reasons and dominant diagnostic categories for medical repatriation among MFWs in Ontario between 2001 and 2011. Secondary objectives are to (1) compute rates of dominant medical and traumatic conditions resulting in medical repatriation in this population, and (2) explore the use of Foreign Agricultural Resource Management Services (FARMS) repatriation data as a source for occupational epidemiology research in this population.

Methods

Setting

In Ontario, over 15,000 annual SAWP contracts are administered by Foreign Agricultural Resource Management Services (FARMS), a federally incorporated non-profit corporation authorized by Human Resources Skills Development Canada (HRSDC).

Design

Retrospective descriptive study.

Data

FARMS maintains administrative records of reasons for MFW repatriation. We examined FARMS medical repatriation records for the 2001-2011 calendar years. This data was part of the public record pursuant to the Ontario Freedom of Information and Protection of Privacy Act, as it was entered into evidence in the HRTO hearing concerning the death of Ned Peart, Exhibit 8,

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Tab 141, of the HRT0 file TR-0680-09 (*Peart v. Ontario (Community Safety & Correctional Services)*). Names of repatriated workers were redacted from the public record. The following variables were transcribed into a Microsoft Excel database: worker contract year, date of birth, country of origin, date of repatriation, and reason for medical repatriation.

The number of migrant farm worker arrivals in Ontario per year was obtained from FARMS through a data request to HRSDC, now Employment and Social Development Canada (ESDC).

Coding of Reasons for Repatriation

A custom-built web-based coding tool was developed using the Google Drive forms feature (Google, 2013. Google Drive, Mountain View. TX: Google Inc). Ten physician volunteers with independent medical licensure in Canada were recruited to classify the 'reason for medical repatriation'. All coders received written training regarding the coding procedure. Physician volunteers included three study investigators (AO, MS, DC). A charitable donation to an international humanitarian charity was offered as an incentive to coders.

Data on the reason for workers' repatriation were captured in a 200 character field. Each observation was categorized into one of seven mutually exclusive diagnostic categories mapped to categories of the International Categories of Diseases-10 (ICD-10) (6). Reasons for repatriation were further classified based on body region in the case of trauma; type of medical/surgical injury; and whether the reason for repatriation was a back injury, an environmental injury, or included explicit request for repatriation. In the event of uncertainty, coders could "request a consult," whereby the observation was re-examined and re-coded through a consensus procedure by a consultation team composed of two investigators (AO and MS).

The coding system was refined and validated through a series of coding tests and inter-rater reliability analyses. The final coding structure was evaluated for inter-rater reliability on a random set of 16 observations with 10 coders, and found to have a Fleiss' exact kappa value of 0.620, indicating substantial inter-rater agreement (7). This final coding structure and taxonomy of reasons for repatriation is depicted in Figure 1. Each coder was then provided with a random subset of 78-80 observations for coding, resulting in the classification of all medical repatriations in the data set.

Statistical Analysis

Univariate analysis including frequency tables and bar graphs was completed for each variable. Repatriation rates and proportions were calculated using the annual number and country of origin of workers entering Ontario each year as denominators. All statistical procedures were completed using the R Studio v 0.97.316.

Results

All medical repatriations in the data set were successfully coded (n=787). Sixty-four observations (8.1%) were reviewed and re-coded by the consultation team.

Socio-demographic characteristics of MFWs repatriated for health-related reasons between 2001 and 2011 are presented in Table 1, along with the frequency of repatriations for each of the ten years of study. More than two thirds of repatriated workers were aged 30 to 49

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years. Nearly half (48.3%) of repatriated workers returned to their home country of Mexico, and approximately a third (34.6%) returned to Jamaica.

[Insert table 1 here]

Annual rates of repatriation are presented in Figure 2. Over the ten years of study, 787 repatriations occurred among of 170,315 workers who arrived in Ontario; 4.62 (95%CI: 4.30-4.94) medical repatriations occurred for every 1,000 workers arriving. 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. The highest rate of injury-related repatriation occurred in 2003 when 7.81 (95%CI: 6.41-9.21) repatriations occurred for every 1,000 workers. Rates of repatriation dropped between 2003 and 2011 with the exception of 2008 and 2009 when rates increased to 4.33 (95% CI: 3.30-5.35) and 3.69 (95%CI: 2.73-4.66) repatriations per 1000 arrivals respectively. The lowest reported rate of repatriations occurred in 2011, with 2.22 injury-related repatriations per 1000 workers (95% CI: 1.49-2.96).

[Insert Figure 1 and 2 approximately here]

Cumulative proportions of repatriation were also examined based on the worker's country of origin (**Figure 3**). The highest proportions of repatriation occurred among workers from Barbados: over the period of study 9.62 (95%CI: 6.25-13.00) health repatriations occurred for every 1,000 arrivals. The lowest proportion of repatriation occurred among Mexican workers: 4.38 repatriations per 1,000 workers (95%CI: 3.94, 4.82). Variations in medical repatriation rates between migrant-providing countries may arise from the independent bilateral temporary agricultural worker agreements between Canada and each of the providing nations. Workers from each country work in similar but distinct contexts with varied levels of support.

The frequency of each of the seven diagnostic categories is displayed in **Figure 1**. MFWs were most frequently repatriated for medical or surgical reasons (41.3%), for external injuries including poisoning (25.5%), and for other reasons (17.0%).

Cases coded in the category of "Other" were most often cases where the reason for repatriation indicated ill-health but was too vague to categorize. Examples include comments such as "worker is ill," "worker has medical issue," or simply "injured." Seventy-two (9.1%) of repatriations were coded as "Indeterminate." These cases included varied reasons for repatriation, many non-medical: for seven cases no reason for repatriation was provided, other cases listed problems with family at home, or "disagreement with management," as the reason for repatriation. Psychiatric cases represented 3% of repatriations and included physician reports of depression, anxiety and stress, and more generally described "mental illness." Of the 15 repatriations due to pre-existing musculoskeletal injuries, 7 were back-related while the remainder pertained to varied pre-existing upper and lower extremity conditions. Only 13 (2%) of repatriations resulted from MFW requesting repatriation.

[Insert figure 3 approximately here]

Figure 1 presents the disease system affected by all medical or surgical repatriations and the body region of external injuries that led to repatriation. Over one quarter (28%) of Medical/Surgical repatriations resulted from musculoskeletal symptoms that were not identified

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as traumatic injuries, including back problems and both upper and lower limb ailments. A further quarter of Medical/Surgical cases (26%) concerned digestive and gastroenterological issues such as stomach pain, hernia operation, or appendicitis. Among the 18 cases coded as cardiovascular, circulatory or vascular-related repatriation were three reported “heart attack[s].” Three repatriations were attributed to pregnancy.

Of the 201 repatriations coded as external injuries, 59 (29%) occurred in upper extremities. These injuries included muscle strains, injured, broken or severed fingers, hands, wrists and shoulders as well as one partial amputation. The second largest category of external injuries resulting in repatriation were lower extremity injuries such as sore or broken feet, ankles or legs, as well as torn ligaments, and groin strains. Among the 35 (17%) of external injuries identified as "External and Other trauma" were six cases of tobacco poisoning, and four injuries related to motor vehicle collisions.

Interpretation:

This study adds a new dimension to the available understandings and data sources about the health of MFWs. The central strength of this study is its use of a previously inaccessible employment data set and a validated coding procedure to describe medical repatriation among MFWs. Medical repatriation has not previously been described in the Canadian medical or occupational health literature. Medical repatriation is at once an occupational health event, an international deportation, and a termination of employment. This is a phenomenon without comparators: there are perhaps no other Canadian occupational settings where workplace injuries and illnesses such as those described in this dataset result in employment termination and deportation without further medical care, income security, or right to appeal.

Our study reinforces existing Canadian and American literature regarding the range of health conditions described in association with occupational hazards among MFWs, including injury; musculoskeletal, respiratory, infectious, and dermatological disease; mood disorders; and environmental illnesses (8–11). Toxic exposures, lack of occupational health regulation and enforcement, frequent use and poor maintenance of hazardous equipment, poor housing conditions, increased occupational risk-taking, and chronic stress have been identified in this population (12–16). Our data aligns with existing studies of MFW health by identifying that injuries, musculoskeletal, and gastrointestinal problems account for the majority of illnesses in this population. Ontario data over a three-year period (n=888) revealed that the top reasons for MFWs to present to an emergency department near their workplaces include injury, gastrointestinal, musculoskeletal, respiratory, dermatological, urinary, and ophthalmological conditions (17).

Our study extends the existing literature by identifying the health conditions cited as the reason for a termination of employment and health-related repatriation. MFWs in Canada face multiple barriers to accessing health care including workers’ reluctance to seek this assistance; lack of independent transportation; language and cultural differences; lack of knowledge about the health care system; long work hours and limited clinic hours; and repatriations following illnesses or injuries (10). Fear of employers or not wanting to lose paid work hours, as well as inadequate knowledge about how to make a workers’ compensation claim have also been cited as common factors impeding access to care (4). Although farm workers are entitled to receive

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health care prior to the termination of their employment and repatriation, in practice workers are sometimes repatriated immediately, without receiving such care (18).

This study does have limitations. The medical causes of repatriation and associated rates are difficult to compare to other occupational health phenomena because repatriation is not a feature of other Canadian occupational settings. The present study should therefore be interpreted strictly as a description of medical repatriation, and profoundly underestimates the rates of general health conditions among MFWs. Many MFWs develop health concerns, but complete their contracts without being fired and prematurely repatriated. These data do not identify MFW illnesses and injuries that are directly work-related. However, the vast majority of the injuries reported are likely work-related, given that MFWs are considered to be in the workplace even when in their place of residence in Canada and when in transportation between their farming activities and residences. In addition, some workers with serious illnesses or injuries may remain in Canada because they fear they will be unable to access medical care in their home countries, and are thus identified by FARMS as being absent without leave, in breach of contract, or having undergone a change of visa status (18). Without additional information on workplace deaths or on the gender of MFW's undergoing medical repatriations, conclusions cannot be drawn regarding fatality rates or gender dimensions of this phenomenon. The data set herein was designed and maintained as an employment record, not as an epidemiological data source, health record, or surveillance tool. It may therefore face validity and reliability concerns. Despite these limitations this study's reliable coding procedure generated high-quality data illustrating a largely unexamined phenomenon.

Conclusion and Future Directions

Migrant farm workers in Canada are known to face numerous occupational health concerns, as well as systemic, occupational, and legal barriers to accessing health care services [Error! Bookmark not defined.]. This study offers new epidemiological and occupational health insights into the medical repatriation of workers employed in Ontario under the Seasonal Agricultural Workers Program. From 2001 to 2011, over 787 migrant farm workers were repatriated to their country of origin for medical reasons. The predominant medical causes for these repatriations include trauma, musculoskeletal and digestive or gastroenterological conditions. Neurological, psychiatric, cancerous, and cardiovascular conditions also figured prominently in this study.

The Canadian Labour Congress has identified medical repatriation provisions in Seasonal Agricultural Workers Program contracts as the employer's "bluntest tool to suppress workers' rights" (5). By describing the epidemiology of medical repatriation, this study provides an essential instrument to understand and address this complex occupational health phenomenon. Future research and interventions might aim to identify the health outcomes of migrant farm workers following medical repatriation, and to enhance data quality, reliability and validity in how medical repatriations are documented and coded. The medical repatriation of MFWs merits further examination as a global health equity concern.

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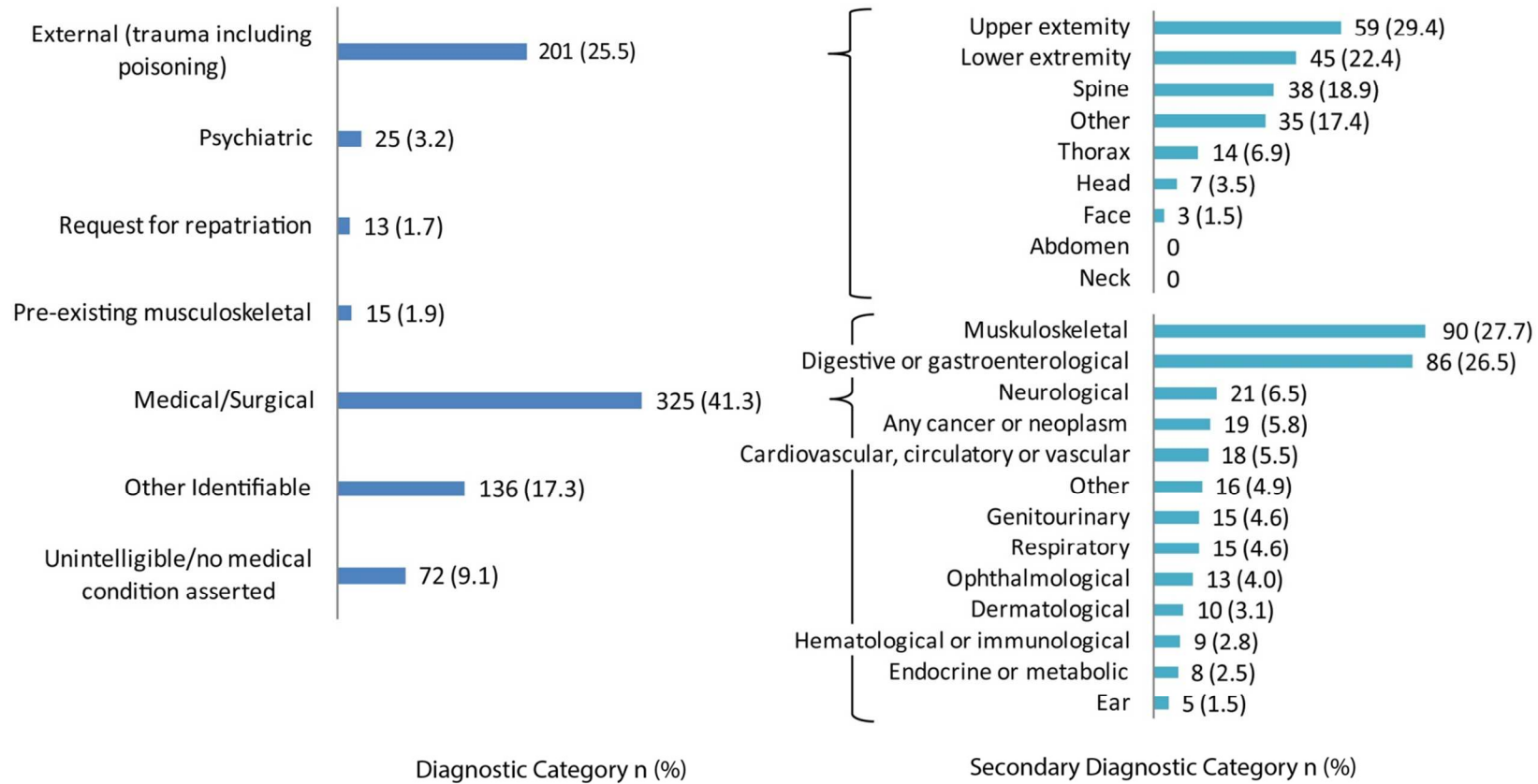
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Table 1: Socio-demographic characteristics of repatriated workers 2001-2011 (n=787)

Year	Total	Age, yr n(%)*				Country of origin n(%)				
		20-29	30-39	40-49	50+	Barbados	Eastern Caribbean	Jamaica	Mexico	Trinidad and Tobago
2001	74	8 (10.8)	21 (28.4)	21 (28.4)	7 (9.5)	7 (9.5)	3 (4.1)	27 (36.5)	24 (32.4)	13 (17.6)
2002	112	17 (15.2)	49 (43.8)	27 (17.9)	11 (9.8)	8 (7.1)	3 (2.7)	28 (25)	61 (54.5)	12 (10.7)
2003	119	24 (20.2)	43 (36.3)	40 (33.6)	11 (9.4)	5 (4.2)	0	43 (36.1)	62 (52.1)	9 (7.6)
2004	90	18 (20.0)	31 (34.4)	29 (32.2)	12 (13.3)	7 (7.8)	1 (1.1)	30 (33.3)	47 (52.2)	5 (5.6)
2005	77	19 (24.7)	31 (40.3)	19 (24.7)	8 (10.4)	3 (3.9)	4 (5.2)	30 (39)	32 (41.6)	8 (10.4)
2006	67	12 (17.9)	30 (44.8)	19 (28.3)	6 (8.9)	0	2 (3.0)	23 (34.3)	35 (52.2)	7 (10.4)
2007	51	7 (13.7)	26 (51.0)	16 (31.4)	2 (3.9)	0	2 (3.9)	14 (27.5)	33 (64.7)	2 (3.9)
2008	68	10 (14.7)	27 (39.7)	22 (32.3)	9 (13.2)	0	2 (2.9)	26 (38.2)	36 (52.9)	4 (5.9)
2009	56	8 (14.3)	24 (42.9)	19 (33.9)	5 (8.9)	0	4 (7.1)	22 (39.3)	24 (42.9)	6 (15.8)
2010	38	5 (13.2)	14 (36.8)	10 (26.3)	9 (23.7)	0	4 (10.5)	16 (42.1)	15 (39.4)	3 (7.9)
2011	35	6 (17.1)	15 (42.9)	10 (28.6)	4 (11.4)	1 (2.9)	2 (5.7)	13 (37.1)	11 (31.4)	8 (22.9)
Total	787	134 (17)	311 (39.5)	232 (29.5)	82 (10.4)	31 (3.9)	27 (3.4)	272 (34.6)	380 (48.3)	77 (9.8)

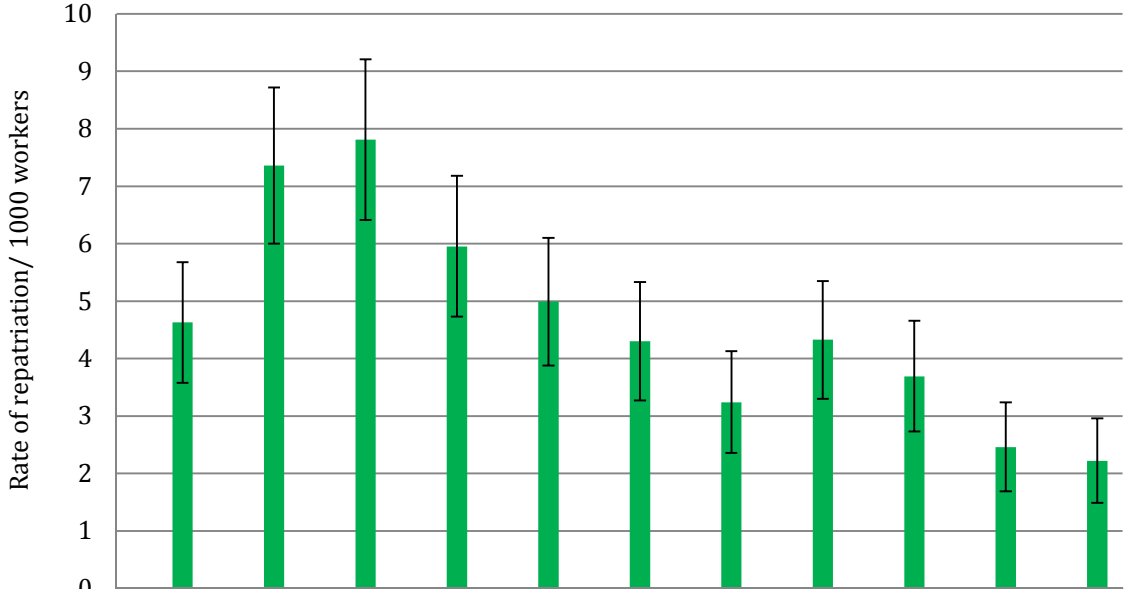
* Totals may not equal 100% due to missing data.

Figure 1: Medical repatriation diagnostic categories and sub-categories 2001-2011, n=787



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Figure 2: Annual rate of MFW health-related repatriation



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Repatriations	74	112	119	90	77	67	51	68	56	38	35
Arrivals	15,979	15,213	15,236	15,123	15,423	15,576	15,718	15,722	15,158	15,435	15,732
Rate of repatriation/ 1000 workers	4.63	7.36	7.81	5.95	4.99	4.3	3.24	4.33	3.69	2.46	2.22

Figure 3: MFW Health-related repatriations per 1000 arrivals 2001-2011, by country of origin

