UNIVERSITY OF CAPE TOWN

WORKERS' COMPENSATION CLAIMS FOR OCCUPATIONAL TUBERCULOSIS IN SOUTH AFRICAN HEALTH CARE WORKERS: A SURVEY OF PROCESS AND OUTCOMES

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A research report submitted to the Faculty of Health Sciences, University of Cape Town in partial fulfilment of the degree Master of Medicine (MMed) in Occupational Medicine.

This research report is based on independent work performed by myself and neither the whole work nor any part of it has been, is being, or is to be submitted for another degree to any other university. This work has not been published *prior to registration* for the abovementioned degree.

March 2018

DECLARATION

I, **Dr Nicholas van de Water**, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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DEDICATION

I wish to dedicate this work to my father, Dr Ronald van de Water, whose academic legacy kept me persevering and to my wife, Tanya, who has stood by and encouraged throughout the process of this work.

ABSTRACT

Background

Occupational TB is the most frequently reported occupational disease in health care workers (HCWs) in South Africa. With the emergence of drug resistant strains and their associated health risks, and the associated increased risk for contracting these strains for HCWs, it becomes increasingly important to ensure that the worker's compensation system is functioning properly for this disease.

Whilst many studies have captured the poor functioning of the compensation system for workers in general in South Africa, the closest proxy examining the compensation of HCWs compensation for occupational TB is a study reviewing practices of occupational health nurses responsible for these cases. Whilst examining occupational injuries, workers, in general, report negative experiences with workers' compensation processes.

This study aimed to investigate the experience of health care workers whose cases of occupational TB were reported via the Western Cape Government Health department (WCG:H) to the Compensation Fund of the Department of Labour for compensation claim purposes.

Methods

This study was a case series with retrospective description, with a qualitative component. Simple random sampling was done on a subset of the population of cases of occupational TB recorded on a database held by the WCG:H administrative office responsible for submitting claims on behalf of WCG:H employees to the Compensation Fund. The study aimed to interview at least 100 HCWs who had reported their occupational TB as per the above mentioned database. In anticipation of a low expected response rate, 300 cases were sampled. Claim status for this sample were evaluated.

Utilising general details obtained, an attempt was made to contact each HCW for a telephonic interview consisting of both open and close-ended (qualitative) questions. Fifty-one interviewers were completed. Interviews comprised of a structured telephonic interview carried out by one of three interviewers. The questionnaire consisted of three main sections examining (a) the experience of benefits available for people getting an occupational disease; (b) the experience of the process of reporting a case of an occupational disease to the Compensation Fund and (c) the process of having developed occupational TB as a HCW.

Results

Nearly half of the 300 cases from the provincial database had no record found on claim status check on the Compensation Fund website (*n* = 131, 46%). For claims without resolution with either acceptance or repudiation, the median waiting period from date of submission to 31 Dec 2017 was 5.8 years (IQR 3.2 - 9.2). 51 of the 144 cases for which contact attempt was made, gave consent (35% consent rate). Just under one third (*n* = 15, 31%) of the interviewees did not access occupational leave for their TB. Three quarters (*n* = 39; 75%) of employees incurred medical costs either personally or by their personal medical aid in relation to their diagnosis and treatment of TB. 21 (42%) of the participants reported ongoing medical problems and one reported being compensated for this.

HCWs' experience of contracting TB was marked by the experiences of stigma, surprise in contracting TB and financial stress as a result of their diagnosis. In addition, the experience of reporting their cases for compensation purposes was marred by poor administration and communication from all parties involved in the process.

Conclusion

The workers' compensation system, i.e. the whole process from reporting through to benefit provision, has again been found to have many deficiencies. In this instance, HCWs are not receiving compensation benefits rightfully due to them for occupational TB. The experiences of HCWs contracting TB have been described as mostly being negative. In these negative experiences remedies to the system can be sought.

The administrative components of submitting a claim, both by the claimant and by WCG:H to the Compensation Fund, have been found in this study to have a number of obstacles and gaps. Reform in communication, record keeping and timeously checking of claim status and payment of relevant compensation are required from the provincial level. Dedicated occupational health services were recommended by participants as these were expected to improve the service to potential claimants, as well as provide a source of information about the diagnosis and compensation aspects.

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LIST OF ABBREVIATIONS AND GLOSSARY OF TERMS

COID: Compensation for occupational injuries and diseases. Where "the Act" is referred to this means the Compensation for Occupational Injuries Act, No 130 of 1993.

Compensation Commissioner: The statutory head of the Compensation Fund

Compensation Fund: The Compensation Fund provides compensation to employees who are injured or contract diseases through the course of their employment. The Fund is governed by the Compensation for Occupation Injuries and Diseases Act (COIDA) of 1993 (amended in 1997)

DoL: The South African Department of Labour.

Facility OHS Unit: An occupational health clinic based at a particular facility where employees work.

Health care worker (HCW): Any worker "engaged in actions whose primary intent is to enhance health."[25]

ILO: The International Labour Organisation a United Nations agency dealing with labour problems, particularly international labour standards, social protection, and work opportunities for all.

HR: Human Resources Department

MDR: Multi-drug resistant

PILAR: Policy and Procedure on Incapacity Leave and Ill-health Retirement. This function was decentralised to provincial departments from the central Department of Public Service and Administration in 2008. It remains in place to cater for employees requiring prolonged incapacity leave.

TB: Tuberculosis

The Directorate: People Practices and Administration (PPA Directorate): the WCG:H provincial office which deals inter alia with the administration of cases of occupational injuries and diseases.

WCG:H: The Western Cape Government Department of Health.

XDR: Extremely drug resistant

SECTION A: PROTOCOL

Workers' Compensation Claims for Occupational Tuberculosis in South African Health Care Workers: A Survey of Process and Outcomes

Introduction

Background

Tuberculosis (TB) is the highest ranked infectious agent and ninth ranked overall cause of death in the top ten causes of death worldwide.[1,2] Health care workers (HCWs) are twice as likely to develop drug sensitive TB and five and seven times more likely to develop multi-drug resistant (MDR) and extremely-drug resistant (XDR) TB respectively, compared with the general population.[3,4]

Although miners with TB have been compensated since 1916 with an amendment to the Miners Phthisis Act of 1912,[5] it was only since the Compensation for Occupational Injuries and Diseases Act (COID Act) of 1993 that TB in HCWs is "presumed" to be of occupational causation.[6] In 2003 the Department of Labour (DoL) released circular instruction no. 178 which was "issued to clarify the position in regard to compensation of claims for Pulmonary TB in HCWs" where the above presumption was confirmed.[7]

Despite there being clear legislation covering the compensation of occupational injuries and diseases in general, and occupational TB in HCWs specifically, the process of compensation of workers has been shown to be inefficient and wrought with many flaws.[8] One consequence of the general malaise in the system is that HCWs with occupational TB do not receive the benefits they are entitled to as per legislation.

Overview of literature

Introduction

Toward the last quarter of 20th century, it was presumed that TB would be eradicated in the near future. While the development of effective treatment had led to a falling incidence of TB, researchers did not foresee the imminent crisis of HIV/AIDS and its effect on the incidence of TB. In the 1980s the rise in the prevalence of HIV resulted in an almost matched rise in the incidence of TB.[9] Consequently, HCWs have become a population at increased risk, as they are exposed to TB in facilities often not designed to cope with airborne bacteria.[10]

In terms of the COID Act, any worker who contracts an occupational disease which arises "out of and in the course of" their employment is be entitled to various benefits.[6] The management and compensation of infectious diseases are unique. The need to protect patients and other

employees from the infected worker and the need for accurate surveillance of incident TB in HCWs form part of facility infection prevention and control responsibilities.

The incidence of TB in HCWs

Epidemiological studies on TB incidence in HCWs in South Africa show a range in incidence from 138 to 4477 per 100 000 HCWs where the national average of the general population is estimated by the World Health Organisation to be 834 per 100 000 (2015).[3,11,12] Sampling methods, however, prevent comparability of some of the results.[10]

Drug resistant TB, in particular, has been shown to have greater impact on the health care workforce than the general population. MDR and XDR strains are approximately four and seven times more common in HCWs than non-HCW comparison groups respectively.[3,10]

The compensation system in South Africa

The COID Act provides for a "no-fault" insurance scheme for employers by which employees waive their right to a civil suit against their employer when they suffer an occupational injury or disease. The Act provides for (a) paid incapacity leave at 75% of normal wage, (b) payment of medical expenses for up to two years, and (c) compensation for permanent disability.[6]

South African provincial governments, as employers, are "exempted" as per section 84 of the COID Act. This exemption means that they do not contribute financially to the Compensation Fund and that they are liable from their own budget for compensation costs generated, whilst claims are still adjudicated by the Compensation Commissioner (the statutory head of the Compensation Fund). Another difference from other sectors is that Western Cape Government employees (which may not apply in other provinces) receive full pay on incapacity leave (rather than the statutory 75%) and can receive medication at state facilities for an occupational disease after the statutory two year maximum period.

Circular Instruction 178, states that "Pulmonary TB will be presumed to be work-related if Pulmonary TB is transmitted to an employee during the performance of health care work from a patient suffering from active open TB or analysis or testing of infected body tissues or fluid."[7] As such, it is presumed that TB contracted by any HCW, who is either knowingly or unknowingly exposed to TB in their workplace, is "occupational" in terms of the COID Act, and no further burden of proof is required. The Circular also stipulates the reporting processes for occupational TB in HCWs. Due to the possibility of ongoing medical problems related to TB, a final medical report is required with a lung function test result in order to determine residual impairment.[7]

Experience of the outcome of compensation for occupational TB

Although most TB is treatable with a six month course of treatment, long term disabling effects of the disease or treatment are well known and may be devastating, particularly for HCWs with drug resistant disease. For example, on personal communication with Practices and Administration Directorate (PPA Directorate) it was ascertained that the Western Cape Government: Health (WCG:H) has been required to pay the medical bills relating to the insertion of a cochlear implant for an employee who lost her hearing as side-effect of medication used to treat drug resistant TB.

Recognition of the work-related attribution in this case and successful access by the employee to statutory compensation, however, seems to be the exception. Much of the consequences of TB have been reported to go uncompensated.[8] Reasons at the central (Compensation Fund) level for the failure to compensate fairly include prolonged delays in various steps of the process, failure to pay medical providers, non-response to inquiries made at the DoL offices, and inadequate assessment of disability.[8,13,14]

Other factors influencing experience of compensation

Whilst the above factors relate to the Fund level outcome of compensation cases, there exist challenges at the employer and employee levels in the compensation process. Three predominant phases are the diagnosis of the disease, the reporting of the disease, and the experience during the management of the disease.

To the author's knowledge, only one study has examined compensation of HCWs for occupational TB.[19] This study evaluated compensation administration by occupational health nurses involved in receiving claims from HCWs, and found many deficiencies in the process. In other literature examining occupational disease compensation in general, the experience of financial stress and lack of knowledge of the compensation process have both shown to perpetuate negative experiences.[20–23]

Lastly, the experience of occupational TB in HCWs has been investigated in a study without reference to compensation. Experience of stigmatisation was an important feature.[24]

Study rationale

As mentioned above, a number of studies have captured the poor functioning of the compensation system for workers in South Africa. However, literature on occupational disease compensation in specific sectors (other than mining) lacks depth. The study proposed here is novel in that it would be the first to investigate the experience of the compensation process on the part of HCWs themselves. Specifically, this study will investigate the acceptability,

accessibility, and efficiency of the compensation process in a sample of HCWs whose occupational TB is reported through the WCG:H.

If the experiences of employees who have gone through the process is better understood, it can aid managers and policy makers within WCG:H to improve various systems related to the reporting and resolution of occupational diseases. It could also encourage employees and their doctors to report occupational TB and improve surveillance for facility TB risk.

Aims and Objectives

Aim

This study aims to investigate the processes of reporting cases of occupational TB via WCG:H to the DoL for compensation purposes as laid out in the COID Act. During this investigation the researcher will assess the outcomes of cases of occupational TB captured on the electronic database of held by WCG:H PPA Directorate. Furthermore, the limitations, barriers and possible enablers in the progression of these compensation cases will be identified.

Objectives

- To measure *efficiency* of the compensation process.
- To measure the *acceptability* of the compensation process of HCWs with occupational TB.
- To determine the barriers to *accessibility* of the compensation system.

In addition, a fourth objective, not specifically to do with compensation, was added.

- To determine the effect of a HCWs diagnosis of TB on their work.

Methods

Definition of terms and abbreviations

COID: Compensation for occupational injuries and diseases. Where "the Act" is referred to this means the Compensation for Occupational Injuries Act, No 130 of 1993.

DoL: Department of Labour

Health care worker (HCW): Any worker "engaged in actions whose primary intent is to enhance health."[25]

PILAR: Policy and Procedure on Incapacity Leave and Ill-health Retirement. This function was decentralised to provincial departments from the central Department of Public Service and Administration in 2008. It remains in place to cater for employees requiring prolonged incapacity leave.

The Directorate: People Practices and Administration (PPA Directorate): the WCG:H provincial office which deals inter alia with the administration of cases of occupational injuries and diseases.

WCG:H: The Western Cape Government Department of Health

Study design

The study will effectively be a case series with retrospective description of cases "registered" by the PPA Directorate of the WCG:H plus a qualitative component.

Ideally, a cohort study of all incident TB cases in healthcare workers would be performed. In a cohort study, efforts could be made to ascertain a more accurate representation of incident TB cases and shorter lead time between reporting and questioning would minimise recall bias. However, the time and effort requirements of a cohort study are beyond the resources available.

The province has recorded an average of fewer than 30 cases per annum across the province since 2003, believed to be an undercount. Reported cases cannot be considered a cross-sectional representative sample of all occupational TB cases occurring in that time period. This introduces selection bias, as the study cannot account for employees who have not reported their cases. The chosen study design, while having limitations, provides the most feasible option available to answer the research question as the cases are captured on the PPA Directorate database and are available for sampling.

Population and sampling

Simple random sampling will be done on a subset of the population of cases of occupational TB recorded on the PPA Directorate database. The subset will include cases between 1st January 2003 (coinciding with the publication of Circular No. 178 in 2003) and 31st December 2016. 475 of the 536 database entries are within the proposed timeframe.

The study aims to interview at least 100 HCWs who had reported their occupational TB as per the above mentioned database. In light of a low expected contact and response rate, 300 cases will be sampled. Statistical software will be utilised to randomly order the 475 cases falling within the timeframe, with the first 300 being sampled. A target of 100 interviews will be conducted in order of the random list.

All sampled cases who provide telephonic consent will be included as participants in the study. If a HCW does not participate in the telephonic questionnaire (e.g. cannot be traced telephonically or refusal of consent), only information extracted from the database will be used in the main sample (see below). Cases where the claim was incorrectly classified as a claim for occupational TB will be excluded.

Measurements

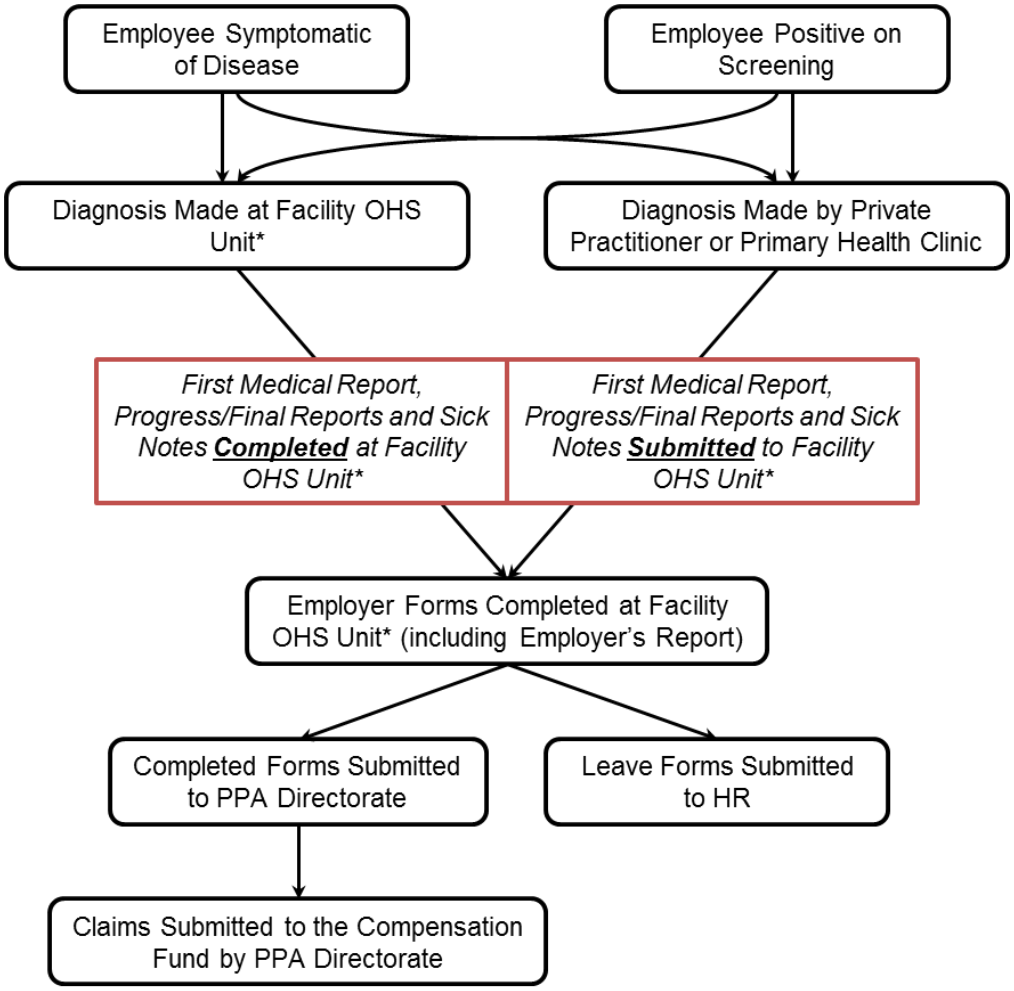
Various processes take place in order for a claim to be submitted to the PPA Directorate. The processes are summarised in Figure 1.

WCG:H has a very widespread facility base with very rural small primary healthcare units and very large urban tertiary hospitals. As such, the “Facility OHS units” are found only at central (teaching) and some district hospitals. In smaller facilities, staff report occupational TB to their facility manager. The facility managers collate the relevant medical reports and forward these to Human Resources (HR) office responsible for that facility. Initiation of the claim is in most cases done by the diagnosing doctor who would complete the first medical report, but in some cases this is done in retrospect on request from the employer who needs the forms to submit the COID case.

The data collection will be done on two levels:

1. Information available in administrative records, relating to the submission of a claim of occupational TB, will be attained by utilising the PPA Directorate database and records from the HR office.
2. Telephonic interviews will be conducted utilising an interviewer administered questionnaire to ask participants about their experience of compensation. The interviews will be conducted in order of random sample as previously described until 100 completed interviews have been captured or the data collection timeframe expires.

Figure 1: Process of submitting a COID claim as an employee of WCG:H



* Facility OHS units are only available in larger hospitals and where not available, the alternative route for diagnosis is used and employer forms are completed by the employee's relevant HR office.

Participants will be assigned a participant identification number which will be recorded on their datasheet and in the study database. The personal details of each HCW/participant will be kept in the data collection sheet in order to cross reference data. For communication with other offices, the staff identification number will be used as an identifier (see ethics).

Administrative records

The following information is available in the PPA Directorate database (unless otherwise specified), in varying completeness for each case, and will be recorded on the study database The variables to be collected and the example data collection sheet is represented in Appendix D. The following steps will be taken to assist with completion of data:

- All cases will be entered into the DoL "claim status" web portal in order to double check their claim status (https://claimstatus.labour.gov.za/)

- Types of leave utilisation will be obtained from the HR office via a request made through the PPA Directorate.

Telephonic questionnaire

Once all data for a case has been recorded, the interviewers will attempt to contact each participant telephonically via numbers obtained from the HR office (see ethics). Being the first study of this kind in this setting precludes the availability of a standard or previously validated questionnaire. Questions focused on achieving the objectives of this study will be posed in a telephonic questionnaire which will be conducted in English.

Questions within the questionnaire will be based on areas identified in the literature review. This questionnaire is shown in Appendix D.

The questionnaire is divided into three main sections with sub-headings as described below. It is important to note that participants will be asked upon taking consent if they can recall submitting their claim. While all will be questioned on sections one and three, only those that can recall reporting will be questioned on their experience of this process (second section).

1. Experience of the benefits available for people getting an occupational disease.
    a. Payment of medical expenses
    b. Incapacity leave
    c. Permanent disability
2. Experience of the process of reporting the case of an occupational disease to the Compensation Fund.
3. Experience of the process of having developed occupational TB as a HCW.

The first section of the questionnaire is designed to specifically elicit experience of the outcome of a claim submitted. Questions in this section are derived directly from the benefits available through the Compensation Fund, with some elaboration of each concept.[6]

The second section is specific to the reporting process and actors involved. It utilises both open and close ended questions to allow the participant to share the experience more freely. The close ended questions in this section start by eliciting the location where a claim was submitted and the time taken between diagnosis and claim submission. In light of known poor communication from the Compensation Fund, participants will be asked if they are aware if the claim was submitted to the PPA Directorate and Compensation Fund respectively and in what manner they became aware of this.[8] The open-ended question in this section are based on the evidence showing the influence of the employer on the submission of claims and asks specifically if participants felt victimised during the reporting process.[26–28]

Lastly, the third section explores occupational TB in HCWs more generally with a particular focus on how the diagnosis affected the participant. Participants will be asked about victimisation or whether they were made to feel bad as a result of being diagnosed with TB whilst employed as a HCW.[24,29] They will also be asked whether their diagnosis affected their work. At the end of this section, opportunity will be given to express any general thoughts on TB in general and compensation in general separately.

Close ended answers will be captured directly during the interview, while calls will be recorded using a digital recording application in order to increase the accuracy of transcription of open-ended answers. This will allow the interviewer to come back to complete a longer answer after the interview has been completed.

Pilot Study

A pilot study will be conducted, once all approvals have been obtained, with five randomly selected cases from the PPA Directorate database prior to 2003. The pilot study will be used to test the comprehensibility, acceptability, and ease of use of the telephonic questionnaire.

Multiple interviewers will be employed in addition to the researcher in order to conduct sufficient interviews within the specified data collection timeframe. Each proposed interviewer will conduct at least one interview in the pilot study. In order to ensure consistency of interviews across interviewers, an individual training session will be conducted prior to the pilot study and collectively after the pilot study. The collective training time will be utilised to elicit issues as described above and ensure that interview practices are uniform. Furthermore, monthly review sessions will be held with the interviewers in order to assess for any challenges arising.

Analysis Plan

Data management

The study will use a database to capture all data. Data obtained in the first step of the measurements section will be captured on this database. Missing data will be cross-checked with the report generated from the PPA Directorate database, the actual database, and the DoL website. The file will be password protected to prevent unwanted access to sensitive information. Electronic forms will be used in all instances where possible. An online form will be utilised (Appendix E) in order to capture all data. The aforementioned data will be captured on a form with a unique link. This link will be securely provided to the interviewer who will capture the interview data on the same form. The software utilised will automatically create a spreadsheet containing all captured form information.

Statistical analysis

Data analysis will be done using Stata statistical package version 13.[30] Exploratory data analysis will highlight general features of the variables and assess for distribution of the variables as well as any data points which might seem unexpected or erroneous.

Descriptive statistics will be calculated to summarise the data. Univariate analysis will be conducted describe the number of claims which have been accepted, the average waiting time for outstanding claims, and the compensation received by participants.

Narrative data for all open-ended questions will be initially examined as a body of answers by two separate investigators. The analysis will be done manually (without software), and themes placed under two main headings of HCW's experience of reporting their occupational TB, and their experience of having TB and its resultant effect on their work lives. The investigators will then compare analyses and together compile one set of themes.

Sources of bias

Selection bias has been described above. In addition, whilst this study seeks to understand the factors pertaining to the reporting of occupational diseases, the sample proposed contains claims submitted since 2013 and recall bias on older cases is anticipated.

Ethical and Legal Considerations

Accessing of data

The researcher occupies the role of occupational medicine registrar for WCG:H. Formal approval to perform research in the province will be sought before commencement of the study. Permission will be sought from provincial structures in order to access the information held by the PPA Directorate regarding staff with occupational TB (Appendix F). Only information regarding cases of occupational TB will be asked for.

The PPA Directorate holds neither contact details (telephonic or email) nor details regarding the utilisation of occupational leave by staff members, but can request leave information from the HR office. As such, permission will be requested from the HR office for the provision of these details as per the list of submitted staff identification numbers. It is noteworthy that some of these persons may no longer be employed by WCG:H. In order to mask the connection between the requested details, the staff identification number and the fact that the cases are of occupational TB, permission from top management will be requested with their knowledge of the full nature of this study but without divulging specific HCW staff identification details (Appendix G). However, the officer providing the specific details will be informed only that these are “for purposes of an occupational health survey” without reference to TB (Appendix H).

Interaction with HCWs

Each person will be contacted telephonically and the study will be explained by reading the uniform consent form to the study participant (Appendix A). If a person declines to partake in the study, they will be thanked for their time and marked as such in the data collection sheet. In the event that a person consents to participate in the study, the interviewer will proceed with the questionnaire which is designed in order to take approximately twenty minutes of each participant’s time (Appendix D). Regardless of consent, participants will be asked if they would like the information sheet emailed to them for their records (Appendix C).

Confidentiality

As the study will be as paperless possible, all electronic information pertaining to the study, cases, and participants will be kept on a personal device which will have access protection using password and encryption software. The interviewer will also use a device with the same protection in order to save the consent forms signed by themselves, interview answers, digital audio recordings, and transcriptions thereof. In event that paper copies of items are required; these will be scanned and stored electronically, with the original paper copies being shredded.

Personal information (name, identity number, and staff identification number) will be gained from the PPA Directorate database. This information will be kept in the study spreadsheet until all data collection is complete. This will enable researchers to keep track of the information that they have gained and correlate with other forms such as consent forms. However, once data collection is complete the columns within the spreadsheet will be removed and this new spreadsheet will be saved as a new file. The original will be individually password protected with only the principal investigator having the password.

Risks

Stigmatisation as a result of their TB diagnosis may have previously influenced participants. By contacting participants, they might feel that they are again being singled out because of their diagnosis. This will be mitigated by explaining that the intention of this study is to actually benefit those with occupational TB, both past and future. Telephone calls to participants will also be made in a private office where the call cannot be overheard.

Benefits

Participants who have not completed the process of evaluation of their occupational TB due to outstanding documentation or examinations will be informed of the steps needed to be taken in order for their case to come to completion. Current employees of WCG:H will be advised to present at their closest facility level OHS unit. The PPA Directorate will be approached by the researchers to evaluate where previously employed cases may present to have their evaluations completed at the cost of WCG:H as per policy.

As this study aims to evaluate the submission process, it is anticipated that suggestions can and will be made to assist all involved parties in the improved management of occupational diseases.

Resources

The School of Population and Public Health, University of British Columbia, Canada, has made funding available for research relating to occupational TB through a research programmatic grant from the Canadian Institutes of Health Research. These funds will cover this study's expenses. Interviewers experience in conducting similar studies requiring telephonic interviews with a psychology background are available for conducting and transcribing the interviews described in the methods section. Also, a clinical psychologist with qualitative research training will assist the researcher in understanding the thematic analysis of qualitative data.

Furthermore, other resources such as computers, copiers, stationary, internet access, etc. are available at the University of Cape Town School of Public Health and Family Medicine and at the offices of Health Impact Assessment. The use of these items will come at no cost to the study. Table 1 provides a full budget breakdown.

Table 1: Study Budget

Budget:	**Unit:**	**Value:**
Interviewers	80 Hours at R175/hr	R14000
Telephone	40 Hours @ R1 per minute	R2400
Internet	Provided by UCT	R0
Printing	Provided by UCT	R0
Digital recording device	1 Application	R200
Transcription of audio	Included in interviewer hours	
Unspecified expenses		R2500
***Publications costs (if needed)**		R25 000
TOTAL:		***R44100**

Logistics

The study will commence as soon as ethical and other approvals have been granted. It is anticipated that this will be in May 2017. Data collection is estimated to span a period of no longer than three months and write up of the report will follow which is estimated to take four months (Table 2).

Table 2: Study Logistics

Phase	Steps	Dates	Responsible
Approval	Presentation at Division Meeting	08 March 2017	Researcher
	Submission to Department Research Committee	23 March 2017	Researcher
	Submission to HREC	03 April 2017	Researcher
Pilot	Data from PPA Directorate	May 2017	Researcher
	Data from Human Resources office		Researcher
	Telephonic questionnaires		Interviewers
	Transcriptions		Interviewers
	Preliminary analysis and revision of data capture sheet, questionnaire and interview schedule.		Researcher
Data collection	Data from PPA Directorate	June-Aug 2017	Researcher
	Data from Human Resources office		Researcher
	Telephonic questionnaires (as per interview schedule (Appendix I))		Interviewers
	Transcriptions		Interviewers
Data analysis	Data cleaning	Sept-Oct 2017	Researcher
	STATA		Researcher
Write up	Introduction	Nov-Dec 2017	Researcher
	Literature		
	Methods		
	Results, Discussion, Conclusion		
Submission	Editing and Binding	Jan 2018	Researcher
	Submission for examination		
	Revisions	Mar 2018	Researcher

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SECTION B: LITERATURE REVIEW

Workers' Experience of Compensation for Occupation Injuries and Diseases – A Review of the Literature

Introduction

This review focuses on healthcare workers' (HCWs) experience of the compensation process for occupational tuberculosis (TB). As the available literature about compensation for occupational TB is limited, the search was extended to cover experience of compensation for all workers and both injuries and diseases. Medical Subject Heading (MeSH) terms were utilised where possible and Medline and Google Scholar were used to identify relevant articles. Articles were filtered to be of English language only. In a broadened search, replacing "occupational TB" with all "occupational diseases" yielded 168 results. "Workers compensation" for all workers for "occupational TB" yielded only four results. In order to examine the experience of workers with the compensation system, the keywords "enablers"; "limitations"; "barriers"; "interactions" and "experience" were utilised in the article search. The relevant searches are summarised in Table 1**Error! Reference source not found.**. From these searches, abstracts of articles with relevant titles were read. Thereafter, relevant full articles were read and references hand searched for further articles. Selection of abstracts and articles was done by the primary researcher alone.

Table 1: Combinations of Search Terms with Results

Search Terms			Number of Results
Workers Compensation	Health Personnel	Occupational TB/Tuberculosis	0
Workers Compensation	Health Personnel	Occupational Diseases	168
Workers Compensation	Health Personnel	Enablers	0
Workers Compensation	Health Personnel	Limitations	10
Workers Compensation	Health Personnel	Barriers	10
Workers Compensation	Health Personnel	Interactions	2
Workers Compensation	Health Personnel	Experiences	17
Workers Compensation	Occupational TB		4
Workers Compensation	Enablers		0
Workers Compensation	Limitations		94
Workers Compensation	Barriers		51
Workers Compensation	Interactions		19
Workers Compensation	Experiences		227

Occupational TB in HCWs

TB is the highest ranked infectious agent and ninth ranked overall cause of death in the top ten causes of death worldwide.[1,2] Healthcare workers (HCWs) are twice as likely to develop drug sensitive TB and five and seven times more likely to develop multi-drug resistant (MDR) and extremely-drug resistant (XDR) TB respectively, when compared with the general population.[3,4] Even with treatment, TB has a high morbidity rate with complications ranging from persistence of symptoms, local anatomical damage and decreased functional ability.[5] Other than the destructive effects of the mycobacterium on the lung tissue itself, the treatment also carries risk of ongoing side effects.[6] With an increased risk and extended duration of treatment, MDR TB is of increasing concern for HCWs. Newer drugs have dramatically reduced the mortality and morbidity of MDR TB.[7] However, in a study which prospectively followed 107 XDR TB patients to evaluate their long term outcomes, only 17 (16%) had favourable outcomes at 24 months after initiation of treatment. This result was shown to be independent of HIV status.[5]

In South Africa, all HCWs who develop TB while involved in patient contact are presumed under compensation statute to have occupational TB.[8] Despite the recorded increased risk for developing TB in HCWs, between April 2016 and March 2017, only 141 cases of occupational TB in HCWs from public health facilities were apparently reported to the South African Department of Labour (DoL) Compensation for Occupational Injuries and Diseases (COID) offices for adjudication.[9] Public health facilities were staffed by over 170 000 HCWs in the same period.[10] Even allowing for employees who have no contact with patients, one would expect a far higher number of cases of TB in those with such contact. The large discrepancy between the number of reported cases and the expected number of cases is cause for concern and underscores the need to examine the factors contributing to this state of affairs.

The History and Mechanics of Compensation for Occupational TB

Whilst the main focus of this review is on HCWs' experience of the compensation process, the development of occupational health policy which defines TB as an occupational disease and its comparison across different geographic settings is pertinent to the understanding of the findings of the various studies across these settings. Despite TB being recognised as an occupational disease in miners soon after the turn of the 20th century, it was not until the 1950s that it was generally accepted that HCWs were at increased risk of developing TB.[11–14] Prior to the 1950s, much debate existed on whether or not HCWs actually had an increased prevalence of TB. However, the decline in prevalence of TB in all work classes except HCWs after about 1950 solidified the evidence of an increased prevalence in HCWs.[11,15] Once a

consensus was reached, laws regarding the compensation for occupational TB became more prevalent.

Compensation legislation covering occupational TB differs between countries despite the recommendation for compensation of occupationally acquired TB in guidelines released by the International Labour Organization (ILO).[16] One of the greatest variants in the compensation of occupational TB is the burden of proof required of a HCW in attributing work causation. This burden of proof is predominantly influenced by the burden of TB in the respective country. Low burden countries like the USA have many states that recognise diagnosis of latent TB on a positive skin test or in-vitro test, or diagnosis by a suitable health professional. However, three exclusion criteria are given for recording occupational TB. The first is when there is a known household contact. The second is where the Public Health Department identifies the source as an individual outside of the workplace. The third exclusion requires a medical investigation to tie the HCW with a source patient within the institution, specifically DNA fingerprinting which would need to match in order to prove occupational causation.[17] German compensation law allows for certain high risk categories of staff to claim for compensation for occupational TB without direct source patient identification provided that no external contact to TB has been shown. Furthermore, latent TB infection is also compensable as per the above standard.[18]

South African compensation differs in that a rule of presumption is applied to HCWs who present with TB.[19] The COID Act 130 of 1993 entitles an employee to compensation for occupational TB.[20] Originally “TB of the lung” in HCWs appeared on a list of diseases in the Act for which the rule of presumption could be applied. Later, in 2004, the South African Department of Labour amended the aforementioned list of diseases to be more in line with the ILO list of occupational diseases of 2002.[8,21] This list is non-specific to TB but mentions “diseases caused by biological agents”.

The compensation system in South Africa provides for four components of compensation. Of note is that the diagnosis and management of TB in the state funded health system are free of cost. However many HCWs utilise private health care providers, where costs would be incurred for both diagnosis and management of TB. In such cases, medical expenses would be reimbursed, partially or totally. The four components are:

1. Medical expenses – for reasonable costs incurred, relating to the disease diagnosis and treatment. This is normally limited to 24 months. However, since agencies of state such as provincial health departments are liable for compensation from their own budget, i.e. do not pay premiums to the Compensation Fund (despite the adjudication of cases still being processed by the Compensation Fund), they have some power to

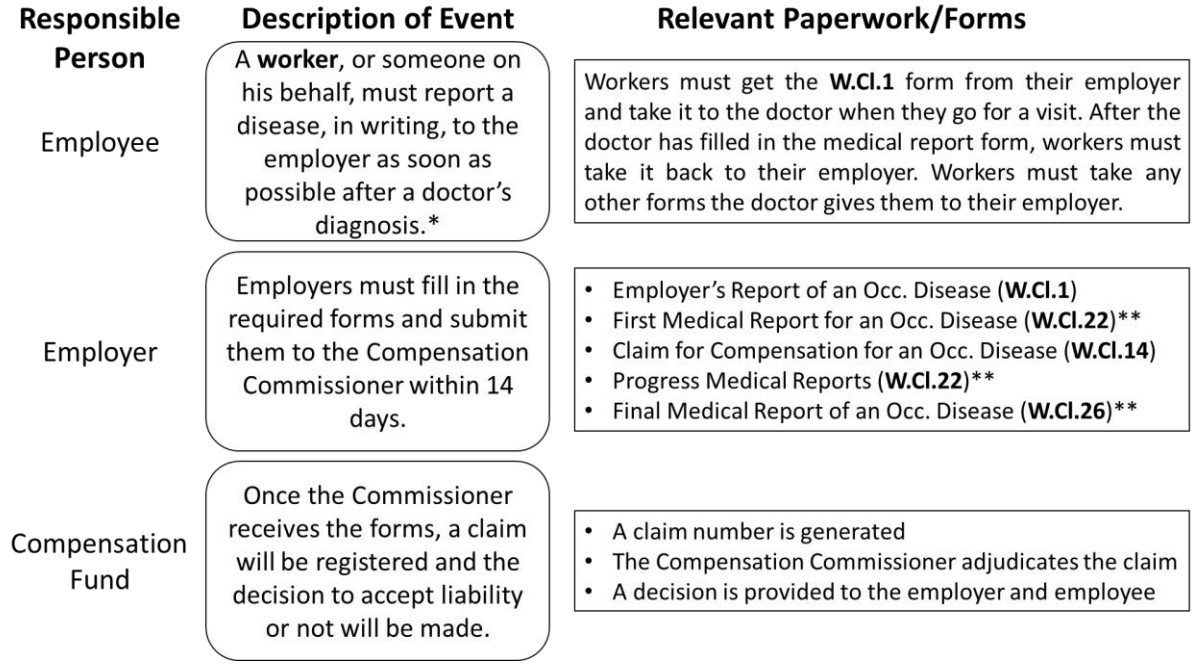
define their own benefits. The Western Cape Government Department of Health (WCG:H) thus allows medical expenses for ongoing treatment in state facilities beyond two years in some cases.

2. Earnings replacement for “temporary disablement”, i.e. special sick leave, known as “occupational leave”. The implication is that such leave is not deducted from the employee’s statutorily defined sick leave of 30 days every 3 year cycle. Other types of leave relevant in this context are annual (“vacation”) leave, unpaid leave, and incapacity and disability leave available to all public sector employees on application through a panel upon exhaustion of sick leave. Under the Compensation Fund, normally only 75% of current earnings is paid. However, the WCG pays 100% of an employee’s salary including allowances for overtime that would have been normally conducted.
3. Compensation for permanent disablement, whether total or partial. Twelve months after the completion of treatment or where the physician feels no further improvement is possible a final medical report needs to be submitted to the Compensation Fund. A medical examination, lung function test and radiological examinations where necessary are to be done and an impairment percentage is given to the case by the Compensation Fund based on these findings. Compensation is paid as per percentage assessed. Current guidelines do not give specific guidance to other examinations such as audiometric exams for drug induced hearing loss.
4. Reasonable burial expenses, widow’s and dependant’s pensions may be payable, where applicable, if the employee dies as a result of TB.

Evaluating the Steps in the Compensation Process

Research in other countries shows that many people who have been disabled at work do not receive just compensation for their injuries or diseases.[22] Multiple factors may prevent an employee who has developed an occupational disease from receiving just compensation. In an attempt to categorise these factors the process of submitting an occupational disease to the Compensation Fund in South Africa is highlighted in Figure 2.[23–25] In each of the responsibility areas, factors are present which may hinder the process. As previously noted, WCG:H is responsible for compensation pay-outs. As such the Human Resources (HR) department of WCG:H also has a specific role that would be normally covered by the Compensation Fund. This is not reflected in Figure 2.

Figure 2: Process of Submitting an Occupational Disease Claim[23]



*If a worker does not report a disease to his employer, the Fund or mutual association **within 12 months of being diagnosed**, he may lose any right to benefits.

**Medical Reports are completed by the treating physician and forwarded to the employer. If a claim number is available, a treating physician may submit directly.

Compensation Fund Related Factors

The compensation system in South Africa is administrated by the Compensation Fund, a special agency under the jurisdiction of DoL. The Fund has been shown to be chronically dysfunctional in the administration and compensation of occupational diseases,[26–28]

Documented cases of occupational diseases compensation show delays in finalisation of claims, non-response to enquiries made to the compensation offices, and inadequate assessment of disability.[26] Past attempts to rectify the situation were made via the institution of decentralised "provincial" panels for the medical assessment of occupational disease cases.[28] These panels showed an improvement in the management of the assessment process and timeframes required for case processing. However, ostensibly due to budgetary constraints, these panels were discontinued in 2008. A review of cases 6 years after the discontinuation of the panels showed that only 44% of cases which were handed back to the Commissioner by the Western Cape provincial panel at closing had progressed in some way and only 22% had been fully finalised and paid.[28]

In 2014 the Compensation Fund switched from a paper based system to an online capturing system for all occupational injuries and diseases.[29] This system aimed to improve turnaround times and provide cost and time savings for all parties involved. Whilst improvements have

been seen with the rate of progression in occupational injuries, that goal has not been realised in regard to occupational diseases.[9]

Employer related factors

Little research has been done to investigate reasons as to why an employer may fail to acknowledge a case of occupational disease and report it as such. Anecdotal evidence in HCWs is matched by evidence gained in assessing reasons for underreporting of occupational injuries in the American Bureau of Labour Statistics Survey of Occupational Injuries and Illnesses.[30] Whilst the healthcare industry was not surveyed in this aforementioned study, employers were likely to not consider an injury work related when there was late reporting of the injury; where there was belief that outside work activities had attributed to the injury; where no specific work incident could be named, and where the injury was believed to be part of a pre-existing condition. Also, when employees' injuries were assessed by company doctors they were less likely to have their case reported for compensation then when they were seen by independent medical specialists.[31] Another constraining factor expressed by employers is that they perceive that workers may feel a sense of entitlement to compensation and delay returning to work.[32] The rate of underreporting is not standard across all industries in the US with local government and state departments being more likely to report.[33]

These actions by employers have been shown to have negative consequences on the experience of workers applying for compensation with reports of secondary psychosocial harm as a result of accessing compensation for injuries.[34] No evidence was found in the literature search examining the abovementioned factors specifically for occupational diseases.

Employee related factors

Underreporting

Dual responsibility for reporting an occupational injury or disease is shared between the treating physician and the employee. The physician is responsible (in terms of compensation) for reporting to the employer to verify details, while the employee, is responsible to bring the report of diagnosis to the employer.[20] However, it has been shown that not all cases of occupational diseases are reported. Older US data correlating a general disease database, containing occupational injuries and diseases, with compensation claims data showed that between 9% and 45% of workers file for compensation benefits.[35] Multiple reasons exist as to why employees do not report their ailments.

Whilst pain severity and higher physical demands of the job have been shown to increase the rate of claims, higher job strain, increased social support at work, and higher education levels were predictors of a lower rate of claim submission.[36] The "protective" factors *against* filing a

claim are surprising and the inference may be made that higher end workers just don't feel that going through the compensation process is "worth it". Nevertheless, a well administered compensation system provides important benefits for workers with an occupational disease, which employees often are not aware of or do not fully appreciate.

Experiences of the compensation process

Many studies evaluating the experience of the compensation process for occupational injuries exist and a selection of these are summarised in Table 2. Whilst some of the studies include HCWs by default by looking at injuries occurring to all workers, only one specific study and one study within the systematic review summarised in Table 3 specifically investigated the experience of HCWs. Also, only two of the studies have some element of evaluating workers with occupational diseases.

Experiences are mostly "bimodal" in that employees were either mostly satisfied with the compensation process or mostly dissatisfied with the compensation process.[32] Furthermore, other actors can either be seen to facilitate or act as a barrier to the process depending on how they interact with the worker.[34]

The systematic review of qualitative evidence conducted by Kilgoour et al.[34] evaluated workers' experience of the compensation process. In that review the authors categorised the experiences of workers in five categories according to the different interactions of workers with different actors in the process. The categories used by the authors and related experiences have been summarised in Table 3. Other studies covering the same research question, and which were not included in the systematic review by Kilgour et al.[34] confirm what the latter found. Some factors not covered in the review include stigmatisation; lack of knowledge of the process; and financial stress, all discussed below.

Regarding stigmatisation, some workers who reported their claims felt as if they were labelled as malingerers and struggled to have the legitimacy of their ailments recognised by their colleagues and employers. These workers were led to fear negative consequences as a result of their need for time off from work to recuperate.[37,38] In one particular study on workers in hotels, one third of respondents reported that they were subjected to drug testing after reporting occupational musculoskeletal injuries and 20% of those who reported received warning letters for missing work due to their injuries.[39]

Table 2: Evaluation of Literature Examining the Experiences of Workers accessing COID.

Study	Study/data type	HCWs?	Sample population	Injury or disease	Type of injury or disease	Main outcome variable	Salient findings on worker experiences
Brines et al.[32]	Quality assessment (written surveys and interviews, focus sessions, record reviews)	No	Workers sustaining catastrophic injuries	Injuries	Various	Evaluation of case management program and return to work	Mixture of positive and negative experiences.
Dembe AE.[37]	Literature review	Yes/no	Various	Mostly injuries	Various	Social consequences of occupational injuries and illnesses	Mostly negative experiences relating to an “uncaring, unfair and adversarial” compensation system.
Elbers et al.[42]	Meta-analysis	Yes/No	Various	Various	Motor vehicle accidents / medical errors	The relationship between compensation and mental health	Whilst those accessing compensation had higher mental health complaints, this was mostly present at the start.
Kilgour et al.[34]	Systematic review of qualitative data	Yes/no	Various	Mainly injuries	Various	Experience of interaction with insurer	A majority of negative interactions with insurers and considerable psychosocial consequences for claimants.
Kirsh et al.[38]	Postal survey	Unknown	Various	Various	Various	Needs and experiences of injured workers	Overall low satisfaction with claims process.

Study	Study/data type	HCWs?	Sample population	Injury or disease	Type of injury or disease	Main outcome variable	Salient findings on worker experiences
Qin et al.[36]	Self-administered questionnaire	Yes	Various HCWs	Injuries	Low back pain	Filing of a Workers' Compensation First Report of Injury	**Protective against filing claims:** increasing job strain, social support, and education levels. **Increased filing of claims:** increased pain severity, higher physical demand, and higher safety climate.
Rudolph et al.[40]	Postal survey	Unknown	Various	Injuries	Various	Injured workers' satisfaction with their medical care	Over 20% had to pay a portion out of pocket and over 40% used their own sick leave.
Scherzer et al.[39]	Participatory action research	No	Hotel cleaners	Injuries	Musculoskeletal disorders	Barriers to Workmen's Compensation	Workers received drug tests and warnings for missing work after reporting cases.
Scherzer et al.[41]	Qualitative in-depth interviews	Yes	Homecare workers	Injuries	Musculoskeletal disorders	Barriers to Workmen's Compensation	HCWs felt committed to their "patients" and were reluctant to report as a result.

Workers' frustration with their lack of understanding of the compensation system was a prominent factor. Workers felt that they were unaware of their rights to compensation and were unaware of how to access the necessary persons in order to submit their claims.[43] Furthermore, some workers felt that due to a lack of knowledge of the systems, they were "given the run around".[41]

Table 3: Experiences of Injured Workers Accessing Insurance for Occupational Injuries

Category	Experience	Positive/Negative
System Disorganisation	Treated in a demeaning fashion	Negative
	Disrespectful treatment	Negative
	Ineffective information dissemination	Negative
	Paperwork was frequently lost	Negative
	Insufficient communication	Negative
Injured worker limitations	Feelings of helplessness and being at a disadvantage due to lack of knowledge of rules	Negative
	Concerns over confidentiality of medical information	Negative
	Feelings of deliberate information withholding by insurer.	Negative
Perceived Claims Manipulation	Feelings that that only certain treatment and rehabilitation options were available	Negative
	Forced to comply with medical assessments	Negative
Access to Treatment	Treating practitioners were less amenable to seeing compensation cases due to slow payment.	Negative
	Workers could access private healthcare and "better" services.	Positive
Co-operative Relations	Respectful and understanding claim managers helped with the process.	Positive

Modified and adapted from Kilgour et al.[34]

The experience of financial stress as a direct result of the compensation process was also mentioned. This stress came from the fact that getting and reporting the injury could mean that the employee would lose their job or time on the job.[41] Secondly, in some cases, workers endured direct financial costs by paying for some of the expenses out of pocket. Relating specifically to TB in doctors in South Africa, a study evaluating experiences of being treated for TB showed that just over a third of the participants self-referred to a private specialist for

further investigations.[44] The cost of these private specialists would be initially covered either by a medical aid or out of pocket. Another financial stressor is where workers are not given special (occupational) leave and their normal (annual, capped) sick leave was utilised.[40]

Psychosocial and mental health consequences of experiences

Workers may suffer varying psychosocial consequences as a result of their negative experience of the compensation process. Negative psychosocial impacts may also occur as a result of a diminished role in the workplace, family, and community due to a reduced level of functioning related to the injury or disease process. These changes have been shown to lead to frustration and depression.[40]

When evaluating the effect of compensation on mental health, a meta-analysis showed two main findings.[42] Firstly, in comparison to those not receiving compensation, the compensation group showed higher mental health complaints at baseline. Secondly, the same comparison groups showed that the improvement in mental health from baseline to post measurement was less in the compensation group.

Physician/Health establishment related factors

As previously mentioned, a dual onus of reporting occupational injuries or diseases is present. Factors related to the physician or health establishment may hinder diagnosing an ailment as having occupational causation. These factors may also play an important role in the experience of workers accessing compensation.

The physician as one of the actors in the compensation process may have either a positive or negative influence on the experience of the worker. This was highlighted in a systematic review which evaluated qualitative studies of the interactions between health care providers, employees, and the compensation system. In this review, the findings were summarised in five areas, with elaboration from other relevant literature.[45]

- *Legitimacy:* Healthcare providers often did not believe the claim of occupational causation. This can in part be explained by providers having limited knowledge of the benefits to workers that are accessible through the insurer and the rule of presumption where applicable.[20,34,45–47]
- *Problems with the insurer:* Healthcare providers were in some cases reluctant to deal with compensation cases as they had previously experienced difficulties in payment by the insurer and an excess burden of administrative requirements.[40,45]
- *Medical assessments:* Healthcare providers are required at times to perform routine non-therapeutic assessments as part of compliance with insurer requirements.

Workers have been reported as feeling estranged from their healthcare provider due to this impersonal relationship.[45]

- *Diagnostic difficulties:* In some cases, insurers will have preferred providers for diagnostic tests and this creates difficulties for continuity of care as well as problems arising due to conflicting information received from different providers.[45] In other cases, providers may not elicit a complete occupational history and without the worker raising the issue of work-relatedness, the diagnosis is often missed.[46]
- *Therapeutic encounters:* In general this area showed to have a positive influence on the experience of workers.[45] The encounter was enhanced where the correct diagnosis was given, worker's rights to compensation were explained, and all various treatment options were explained.[48]

Examples of the above mentioned areas were highlighted in two studies. Canadian pulmonologists were asked via postal questionnaire about recognising, diagnosing and reporting occupational asthma. French general practitioners and rheumatologists were asked on whether they would report a case vignette of a patient with occupational sciatica as an occupational disease.[47,49]

The Canadian pulmonologists were more likely to diagnose a case of occupational asthma where they had previously seen a patient from the same workplace or exposed to the same agent. They admitted to a low awareness of occupational asthma and a lack of knowledge about work environments which hindered them in making the diagnosis. Lastly, they recognised their lack of knowledge of compensation requirements. Similarly, the French doctors highlighted their lack of knowledge of compensation legislation in not being aware of the rule of presumption of occupational sciatica in France. The doctors also felt that the diagnosis should rather be made by an occupational medicine specialist.

In a 2006 South African study of reporting occupational TB, eight occupational health nurses, responsible for occupational health units in eight separate public health facilities, were interviewed to ascertain their knowledge of occupational TB and the rights of HCWs to claim for compensation.[50] Two of the nurses were unaware that TB was an occupational disease. A further two only reported such cases if they had documented proof of contact with a TB patient. The remaining four did not follow any particular protocol in reporting. Of the reasons given for not reporting were HCWs' contact with a family member with TB, previous treatment for TB, and the HCWs' request that the case not be reported.[50]

Limitations in the Literature Reviewed

While the focus of this review is the experience of healthcare workers undergoing the compensation process for occupational TB, no studies were found on this topic specifically.

The closest approximation was one study where the same process was evaluated in a small sample from the viewpoint of the occupational health nurses responsible for the reporting of the case.[50] Much of the literature and ideas presented in this review relate to occupational injuries rather than diseases, highlighting the dearth of studies examining the compensation experience with occupational diseases, TB in particular. In most cases of occupational disease, a latency between exposure and disease diagnosis exists. This creates obstacles to compensating such diseases because causation will often be questioned. Thus the experience of compensation claims for diseases will be somewhat different from that for injuries.

Furthermore, quantitative studies evaluated often measured return to work as a final outcome, which may, however, be a poor indicator of the experience of workers and of psychosocial sequelae.[43,51] Also, qualitative studies mostly assessed the compensation process through various forms of participatory research, interviews, and questionnaires with outcomes based predominantly on whether participants were satisfied with the services provided.[32,34] Participants' limited knowledge about benefits they are entitled to might actually skew the data and result in higher satisfaction scores. Rarely was the right of the worker to compensation and the worker's view thereof evaluated in any of these studies.

Conclusion

Occupational TB remains the most prevalent occupational disease amongst HCWs in South Africa. With the emergence of drug resistant strains, the associated increased risk of contracting these strains and the associated health risks; compensation for medical expenses, incapacity leave and permanent disablement are important benefits for HCWs. In order to evaluate the compensation process, experiences of workers who have already gone through this process need to be studied.

The author was not able to find research which evaluated the experience of compensation of HCWs whose occupational disease was reported for workers' compensation claim purposes. The closest proxy is the evaluation of the reporting of injuries by HCWs and other workers. Here we see that administrative, employer, employee, physician, and health establishment related factors all play a role on the experience of these workers.

In general, workers report negative experiences with worker's compensation processes for occupational injuries. There are some instances where positive experiences are reported (e.g. workers are treated with respect and understanding by various actors in the process), but this seems to be the exception rather than the rule. Physicians or health establishments have also been shown to be sceptical when dealing with occupational injuries and diseases, an attitude which is likely to further alienate workers.

Lastly, the importance of accurate reporting of occupational diseases cannot be overstated. Such reporting is needed to ensure that the extent of the hazard is known to the employer in order to take suitable preventative actions and continually evaluate and improve occupational health services. The negative experiences of workers, taken together with a number of structural barriers, as reviewed above, are important factors in such underreporting.

This review therefore concludes that there is a dearth of research measuring the efficiency, acceptability, and barriers to accessibility, of compensation for occupational diseases among HCWs. Such research is needed to advance our understanding of the relationship of these barriers and enablers, and the actors involved in the compensation process, so as to allow for policy intervention.

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SECTION C: JOURNAL ARTICLE MANUSCRIPT

This manuscript has been prepared to be submitted for publication in the American Journal of Industrial Medicine. The format of the article follows the journal's guidelines for authors (Appendix M).

Workers' Compensation Claims for Occupational Tuberculosis in South African Health Care Workers: A Survey of Process and Outcomes

Abstract

Background

Given the increased risk for tuberculosis (TB), especially drug resistant TB strains, faced by health care workers (HCWs) effective workers' compensation for occupational TB is vital. Research is needed into the efficiency, accessibility and experience of workers' compensation among HCWs in South Africa

Methods

In this case series with retrospective description, 300 claims for occupational TB in HCWs were initially sampled from an employer database. Claim status for this sample were evaluated. Utilising general details obtained, an attempt was made to contact each HCW for a telephonic interview consisting of both open and close-ended (qualitative) questions. Fifty-one interviewers were completed.

Results

Nearly half of the 300 cases contained no record of claim status on the compensation authority's database (*n* = 131, 46%). Of the 51 interviews, only one participant received all the compensation benefits they were entitled to given their particular claim circumstances. HCWs' experience of contracting TB was marked by the experiences of stigma, surprise in contracting TB and financial stress as a result of their diagnosis. In addition, the experience of reporting their cases for compensation purposes was marred by poor administration and communication from all parties involved in the process.

Conclusions

The compensation system has again been found to have many deficiencies. Whilst the consequences of HCWs contracting TB have been described as mostly being negative. In these negative experiences remedies to the system can be sought. Reform in communication, record keeping and timeously checking of claim status and payment of relevant compensation is required from the provincial level. In addition, dedicated facility based occupational health units need to be implemented with a staff complement of knowledgeable and empathic persons.

Key words

healthcare workers; compensation; TB; occupational disease; occupational health

Introduction

Occupational tuberculosis (TB) remains the most frequently reported occupational infectious disease among health care workers (HCWs) in South Africa.[1] An increasing burden of drug resistant strains of TB and co-infection in HCWs with HIV have greatly increased the morbidity and mortality associated with occupational TB.[2,3]

Epidemiological studies on TB incidence in HCWs in South Africa show a range in annual incidence from 138 to 4477 per 100 000 HCWs where the national rate of the general population is estimated by the World Health Organization to be 834 per 100 000 (2015).[4–6] Variation in sampling methods, however, limits the comparability of some of the rates.[7]

Diseases caused by biological agents where there is an established link with the workplace are deemed compensable in terms of the International Labour Organization's "List of Occupational Diseases" and the updated South African compensation legislation (revised 2004) aligned to this list.[8–10]

As per clause 66 of the South African Compensation for Occupational Injuries and Diseases Act (COID Act) of 1993 an employee shall be presumed to have occupational causation of their disease if they were employed in a work environment mentioned in Schedule 3 of the COID Act and they contracted the listed condition or disease.[11] HCWs who are diagnosed with TB and who work in a setting involving exposure to Mycobacterium TB are thus presumed to have an occupational or compensatable disease. This "rule of presumption" would in all likelihood include some cases of TB which are not of occupational causation; however, these cases will still be treated as compensatable. This represents a progressive benefit, at least on paper, for South African HCWs.

This contrasts with some low TB burden countries where the burden of proof is on the employee to confirm nosocomial infection.[12] Also, the benefit to HCWs was further extended by the amendment of Schedule 3 of the COIDA Act in 2004 whereby the original recognition of only pulmonary TB as an occupational disease was extended to include extrapulmonary TB as well.[9]

The benefits, and explanations thereof, of having a claim accepted for an occupational disease under the COID Act are summarised in Table 4.

Table 4: Benefits to employees claiming for compensation for occupational TB[11]

	Allowance as per COID Act	**Explanation of Benefit**
Temporary Disablement ("Occupational" leave)	75% of normal wage whilst convalescing and not at work*	Whilst ordinary sick leave is generally paid in full, a capped number of days are available, after which unpaid leave would have to be taken. The COID Act benefit allows for longer rehabilitation or recuperation periods away from work, as well as preservation of sick leave days available.**
Payment of Medical Expenses	Payment of reasonable medical expenses where out of pocket expenses occur*	Employees are entitled to consult either a state medical practitioner at no cost for TB diagnosis and treatment, or a private medical practitioner where they will initially be liable for costs incurred, including for medication (either personally or through medical aid schemes). Invoices can be submitted to the Western Cape Government Health department (WCG:H) for reimbursement. Whilst costs may be covered by medical aid schemes, limits on specific categories of medical service may apply, reducing the employee's cover for other medical services in that calendar year.
Compensation for Permanent Disability	Compensation based on level of disability assessed*	A case is finalised with an examination and lung function 12 months after the completion of treatment or where the physician feels no further improvement is anticipated. An impairment percentage is given to the case by the Compensation Fund based on lung function, medical report and radiological examinations where necessary. Compensation is paid as per percentage disablement assessed.[13]

*Available for two years from date of injury or diagnosis of disease. Permanent disability will be adjudicated after two years or before if the case has been closed.

**Public service employees are able to apply for prolonged incapacity leave where sick leave has been exhausted, as an extra benefit.

Employees in the service of certain employers, such as provincial spheres of government, do not receive their compensation payments from the Compensation Fund, despite the assessment of the claim being done by the Compensation Commissioner. Instead, compensation benefits are paid or financed directly by the employer.[11] Employees of the Western Cape Government Department of Health (WCG:H) are entitled to extended benefits (which may not apply in other provinces) in that they receive their full salary whilst on leave for any occupational disease or injury ("occupational leave"), including overtime pay, and are able to access medication for occupational disease within the state sector beyond the 24 month limit used by the Compensation Fund in covering medical expenses. Administration of compensation cases within the WCG:H is coordinated by the Directorate: People Practices and Administration (PPA Directorate) known as the "COID Office" by employees.

Whilst some compensation success stories, such as payment for a cochlear implant in an employee with hearing loss associated with multi-drug resistant TB (MDR) treatment, have been reported, the compensation system has been shown to be inefficient in general and wrought with many flaws.[10] One consequence is that HCWs with occupational TB do not receive the benefits they are entitled to by law.[14] Obstacles identified in previous research of the general functioning of the COIDA system include prolonged delays in various steps of the process, non-response to inquiries made at the Department of Labour offices, and inadequate assessment of disability.[14–17,19]

More local factors that have been identified to play a role in the poor functioning of the workers' compensation system include lack of awareness among HCWs and their medical attendants of the compensation process, as well as denial of work relatedness and stigma which may hinder diagnosed employees approaching their employer or, where available, the occupational health service.[18] Frustration with the system based on previous experience of reporting an occupational injury or disease, or the experience of others, may also decrease the desire to report and willingness to follow through with the process. Lastly, poor communication from the Compensation Fund or lack of confidence in the employer's administration may hinder reporting as well as the follow-through of employees to complete the submission of their documentation to finalise their compensation claim.[18]

However, there has been little research on occupational disease compensation in specific sectors other than mining. Also, to the author's knowledge, only one study has examined compensation of HCWs for occupational TB; reporting many deficiencies.[20]

This study therefore aimed to investigate the experience of HCWs whose cases of occupational TB were reported via the Western Cape Government Health department

(WCG:H) to the Compensation Fund of the Department of Labour for compensation purposes as laid out in the COID Act. The specific objectives were:

1. To measure *efficiency* of the compensation process
2. To measure the *acceptability* of the compensation process of HCWs with occupational TB.
3. To determine the barriers to *accessibility* of the compensation system.

In addition, a fourth objective, not specifically to do with compensation, was added.

4. To determine the effect of a HCW's diagnosis of TB on their work.

Materials and Methods

Study design and population

This study was a case series with retrospective description, with a qualitative component. Simple random sampling was done on a subset of the population of cases of occupational TB recorded on a database held by the WCG:H, PPA Directorate. The subset included cases dated between 1st January 2003 and 31st December 2016 in order to capture only cases reported after the implementation of the amended Schedule 3 (see above) and allow for sufficient time for a claim to have been processed. The study aimed to interview at least 100 HCWs who had reported their occupational TB as per the above mentioned database. In anticipation of a low expected response rate, 300 cases were sampled (the "main sample").

Utilising general details obtained, an attempt was made to contact each HCW for a telephonic interview consisting of both open and close-ended (qualitative) questions (the "interview sample"). All HCWs who consented telephonically to be part of the study were included. If the HCW could not be traced telephonically, their information that was available in the database was used. The same was applied for cases of refusal of consent.

Where it was discovered that a claim was incorrectly classified as occupational TB, all data were excluded.

Methods

The process, within WCG:H, in which a case of occupational TB is diagnosed and reported as an occupational disease to the Compensation Fund is shown in Figure 3. As the WCG:H is not directly responsible for processes beyond their scope, the focus of this study was on the process given in this figure.

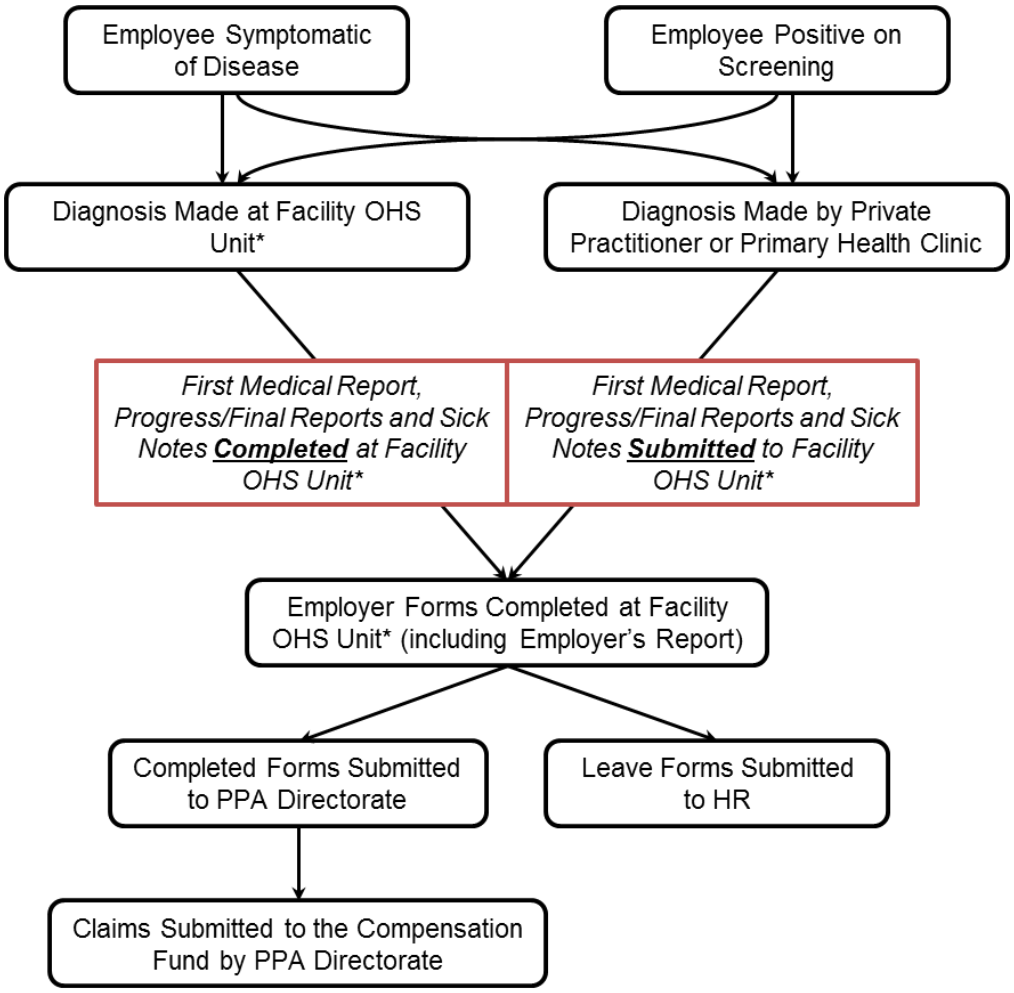
The data collection followed a two-step process:

1. General information on and claim status of the main sample were obtained from three sources: (a) the information available on the PPA Directorate database, (b) records from the WCG:H Human Resources (HR) office and (c) the Department of Labour (DoL) web portal for requesting the status of compensation claims.
2. The interviewed sample were contacted telephonically and completed an interviewer administered questionnaire.

As the general details contained within the PPA Directorate database were insufficient for the purposes of the study, the HR office was requested to provide contact information, leave utilisation according to HR records, and job title. The administrative clerk within the HR office was blinded to the purpose of the study and only employee numbers of sampled persons were

utilised to communicate and request for further details. The DOL's (Compensation Fund) web portal for assessing claims status (https://claimstatus.labour.gov.za/) is openly accessible. However, in order to assess claim status, a minimum of an identity number, claim number, or surname and date of injury (or diagnosis of disease) are needed.

Figure 3: Process for the submission of a claim for occupational TB



* Facility OHS units are only available in larger hospitals and where not available, the alternative route for diagnosis is used and employer forms are completed by the employee's relevant HR office.

Given the novel nature of the study, no pre-existing and validated questionnaires existed. Questions within the questionnaire are therefore based on areas identified in the literature review. A paper based data collection system was not used in anticipation of difficulties arising

when using multiple interviewers. As such an online capture tool was utilised. A plain text version of this can be found in Appendix E.

The first section of the questionnaire contained general information enabling specific interviewers with unique web links to each potential interviewee to access the form and contact the participant. This section was completed by the researcher and the unique web link saved in order to be later supplied to the relevant interviewer. The second section of the questionnaire related to consent from the participant. Thereafter, the questionnaire contained three main sections with the first of the three being subdivided further into another three sections. These are represented below:

- Experience of the benefits available for people getting an occupational disease.
    - Payment of medical expenses
    - Temporary disablement
    - Permanent disability
- Experience of the process of reporting the case of an occupational disease to the Compensation Fund.
- Experience of the process of having developed occupational TB as a HCW.

The four interviewers attended training on the use of questionnaire and were thereafter ordered randomly and allocated blocks of ten participants with their respective unique web links which they received from the researcher. A maximum of three attempts were made in order to contact each person telephonically. On initial contact participants were given the opportunity to schedule a new time for telephonic contact; decline to be told about the study; decline consent after being told about the study; or to continue with the telephonic interview on attainment of consent for both participation and the recording of calls. Interviews were conducted in either English or Afrikaans with direct translation being done by all interviewers fluent in both languages. Call recordings were done in order to ensure accurate capturing of long open-ended answers by utilisation of a digital recording application.

A pilot study was conducted once all approvals had been gained with five randomly selected HCWs from the PPA Directorate database prior to 2003. The pilot study showed the need for minor edits in the questionnaire and improvement of flow needed in the telephonic consent.

Statistical analysis

A descriptive analysis of the general information available from the main sample of 300 HCWs was undertaken to explore the patterns and characteristics of case demographics and claim status. The average waiting period for claims still unresolved was calculated from date of diagnosis until the final date of checking claim status (31 December 2017) whilst excluding

those cases where resolution had occurred, as information on date of resolution was not available. Information contained on the PPA Directorate database for each case was not complete in all instances and in cases with missing data, the particular case was excluded on analysis of that particular field. This data analysis was done using Stata statistical package version 13.[21]

Narrative data for all open-ended questions were initially examined as a body of answers by two members of the research team. The analysis was done manually (without software), and themes placed under two main headings: (a) HCW's experience of reporting their occupational TB, and (b) their experience of having TB and its resultant effect on their working lives. The researchers then compared analyses and together compiled one set of themes.

Results

Demographic and claim status characteristics – main sample

Most cases were women (*n* = 220, 77%), and nurses (*n* = 135, 52%). The median age was 39 years (ranging between 30 and 48 years) (Table 5). Nearly half of the main sample cases (n = 300) had no record found on Compensation Fund claim status check (*n* = 131, 46%). For cases that had not had resolution with either acceptance or repudiation of the claim, i.e. the "still waiting" cases, the median waiting period from date of submission up until 31 Dec 2017 was 5.8 years (IQR 3.2 - 9.2).

Table 5: Demographics of HCWs with submitted cases of occupational TB

	Sample not Interviewed N = 249		**Sample Interviewed N = 51**	
Variable	N	%	N	%
Sex	*n* = 237		*n* = 50	
Male	55	23	12	24
Female	182	77	38	76
Age at Diagnosis[a] (yrs)	39	30 – 47	36	32 – 45
Job Category	*n* = 209		*n* = 51	
Allied Health Professionals	16	8	5	10
Medical Doctors	25	12	7	14
Support Staff	60	29	12	24
Nurses	108	52	27	53
Claim Status[b]	*n* = 238		*n* = 50	
No Record Found	103	43	28	56
Open	12	5	5	10
Registered not Adjudicated	47	20	5	10
Claim Repudiated	4	2	0	0
Claim Accepted	72	30	12	24

[a]Median with interquartile range

[b]As per categories available from https://claimstatus.labour.gov.za/. "No record found" would imply submission of the case by WCG:H to the Compensation Fund but no claim registration at the Compensation Fund, or at least no upload onto the website.

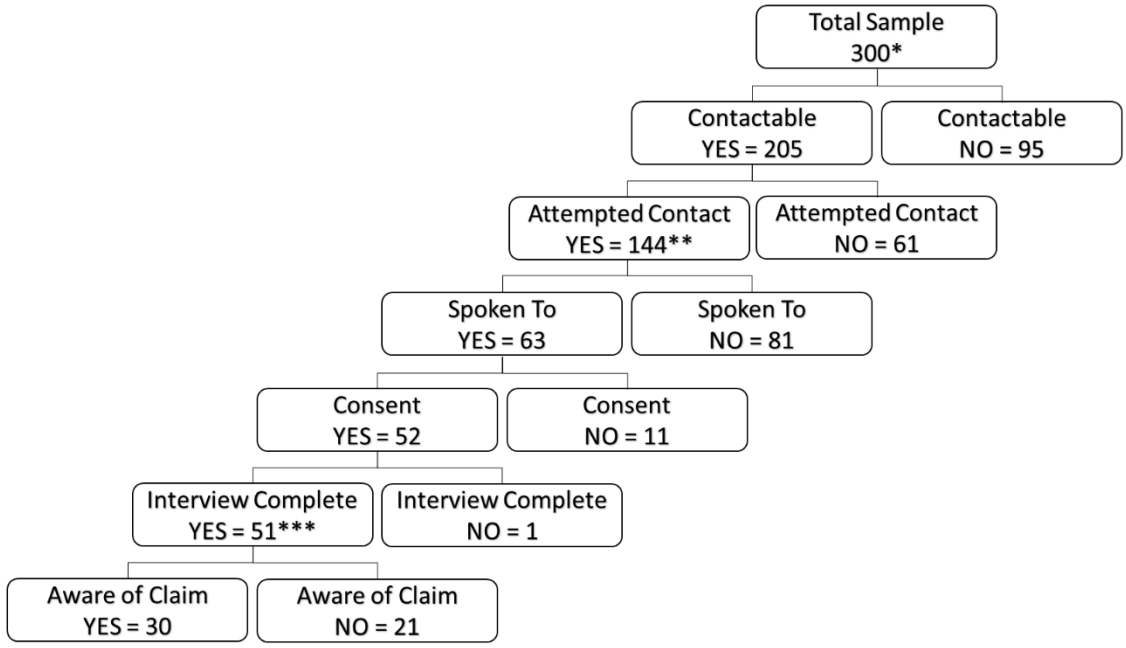
Reporting and leave - main sample

The type of TB recorded for the main sample cases revealed 2 (0.7%) cases of extra-pulmonary TB and 11 (3.7%) cases of MDR TB. Documented leave data available showed a range of 1 to 492 days with a median of 24 days leave on exclusion of the 156 cases recorded as 0 days leave. Nearly half of the cases were initially reported at central tertiary hospitals (*n* = 137, 46%) which are staffed by approximately a third of WCG:H employees.

Interview sample

Contact information received from HR was only available for 205 of the 300 main sample cases. A further 153 HCWs were not interviewed due to: interviewer time limitations (61); failed telephonic contact (81), and denial of consent (11). One interview terminated prematurely, leaving 51 completed interviews to be analysed (Figure 4).

Figure 4: Number of interviews conducted



* Main Sample
** Number of HCWs within main sample with contact details available and attempted contact by interviewers
*** Interview Sample

Interviews

Compensation – Leave

Only three (6%) participants reported not having taken leave as a result of their occupational TB (Table 6). The median reported duration of leave was 4 weeks (interquartile range (IQR) 2 - 8 weeks; range 0 - 96 weeks). Half of the participants (*n* = 25, 52%) accessed occupational leave solely. A further 9 participants (19%) used combinations of sick leave, annual leave, prolonged incapacity leave and unpaid leave in addition to their occupational leave. The rest

of the participants (*n* = 14, 29%) did not access any occupational leave and made use only of the alternative leave options. In the two cases where a full salary was not received, overtime pay was withheld during the leave period; neither of these two participants had accessed occupational leave.

Table 6: Close-ended questions on interview (Some questions paraphrased)

Variable	**Yes** **n (%)**	**No** **n (%)**
Compensation received (N = 51)		
Incapacity Leave		
Did you take sick leave?	48 (94)	3 (6)
How long was your leave? (n = 48)	4 weeks (2 – 8 weeks)[a]	
Did you receive full earnings while on leave? (n = 49)	47 (96)	2 (4)
Medical Expenses		
Did you incur cost related to your TB?	39 (76)	12 (24)
Did you pay for this on your own? (n = 39)	28 (72)	11 (28)
Did you submit these bill for reimbursement? (n = 38)	15 (39)	23 (61)
Were you reimbursed? (n = 15)	0 (0)	15 (100)
Permanent Incapacity		
Were you advised to have a final examination?	28 (55)	23 (45)
Did you have any examination after treatment?	41 (80)	10 (20)
Do you have any continuing health problems? (n = 50)	21 (42)	29 (58)
Did you receive any compensation payment? (n = 50)	1 (2)	49 (98)
Experience of reporting occupational TB (*n* = 30)		
Did you receive any communication from the province regarding your claim?	3 (10)	30 (90)
Are you aware of whether your case was actually submitted to the compensation commissioner?	9 (30)	21 (70)
Did you feel victimised in any way by having your case reported for COID purposes?	7 (23)	23 (77)

Experience of having TB as a HCW and its effect on their working lives (*n* = 51)		
Did you feel victimised in any way by having been diagnosed with TB as an HCW?	23 (45)	28 (55)
Was your work affected by your diagnosis of TB?	18 (35)	33 (65)
Are you in the same facility you were in at diagnosis?	37 (73)	14 (27)

[a]Median with interquartile range

Compensation – Reimbursement of medical expenses

Of the 39 (76%) participants who incurred personal medical expenses related to their occupational TB, 28 (72%) had expenses that were not covered by their private medical aid (Table 6). These expenses were incurred predominantly prior to diagnosis and in the work up of participants for the diagnosis of TB. Six (21%) participants purchased medication privately at their own cost and two (7%) paid for their own physiotherapy. None of the participants who had submitted bills for reimbursement to the Compensation Fund had received payment at the time of interview.

Compensation – Permanent disability payments

Most participants (*n* = 41, 80%) reported having some form of examination after the completion of their medication (Table 6). Ongoing medical problems (related to TB) reported by 21 (42%) of the participants included (in decreasing frequency): shortness of breath; malaise; chest pain; recurrent chest infections; peripheral neuropathy; ongoing cough; impaired lung functions; wheezing and haemoptysis. One participant required a partial lobectomy as part of clinical management and was receiving ongoing monthly compensation for permanent disablement under the COID Act.

Experience of reporting occupational TB

Only patients aware of their claim were questioned on the reporting process (*n* = 30, Figure 4). Most of these participants reported at a staff occupational health clinic (*n* = 15, 50%); followed by their facility or unit manager (*n* = 7, 23%); HR manager (*n* = 4, 13%); diagnosing doctor (*n* = 2, 7%) or were unable to recall (*n* = 2, 7%). Three (10%) participants received communication from the provincial office subsequent to their submission, in the form of a letter. Of the 9 (30%) who were aware that their claims had been submitted to the Compensation Fund one third had received written communication in that regard; one third had followed up on their own accord; and the rest had been assured of this by their HR practitioner.

The following themes emerged in a manual analysis of open-ended questions regarding HCWs experience of their reporting process:

"I didn't hear anything"

Participants in general felt that the communication around the compensation process was very poor. In most instances, it was felt that information was not provided as to what benefits were available when reporting ("*they just made me sign forms*"- porter - male). Others felt overwhelmed by the information and that "*being told about any type of illness is a shock*" (medical specialist – male). They suggested that information should be given in parts with follow-up sessions.

"I knew that they were useless"

Most participants expressed negative sentiments toward the compensation system. One participant mentioned that they "*just left everything*" (nurse – female). Participants found the processes and documentation "*laborious*" (medical doctor – female). The requirement to settle medical bills and submit for reimbursement also presented obstacles.

"No special place for staff"

Participants felt that there should be a designated place for staff to report their cases. Those on night duty were not able to attend the occupational health clinic. A female nurse highlighted that she did not have any access to an occupational health clinic and had to utilise a casualty department where she felt she was not given due attention (nurse – female).

Participants reported a lack of empathy from caregivers ("*They keep asking me questions as if I am the one who is stubborn*" household aid – female) *("… made me feel like criminal. Interrogate(d) me…*" nurse – female). There was an inconsistent report on the perceived quality of care between different care points. Some reported private providers "*going the extra mile*" (radiographer – female) while others reported a total neglect of care *("no nurses came to help me*" medical specialist – male). Public facilities were reported in the same mixed light.

The lack of a dedicated, knowledgeable support staff also led to strained relations with managers. Related to this, there was a perceived lack of understanding and support from managers (*"the support of my supervisors weren't there"* nurse – female).

Experience of having TB as a HCW and its effect on their working life

Just less than half (*n* = 23, 45%) of the participants confirmed having been "*victimised*" or "*made to feel bad*" by having being diagnosed with TB as a HCW. Of the 18 (35%) participants whose work had been affected by the diagnosis of TB (Table 6), 5 (28%) had changed jobs or facilities. 9 (50%) had changed job or facility despite initially stating that their work had not been affected by their diagnosis of TB, with four giving career progression as a reason.

Open-ended questions regarding HCWs' experience of having TB were also analysed manually to identify emerging themes. These themes are presented below.

"It's all my fault"

Participants had various negative emotions as a result of acquiring TB as a HCW. Many of these feelings were in reference to the responses of other people. The following quotes highlight the varying experiences:

- *"I was embarrassed and ashamed*" (emergency worker – female)
- *"I felt like I was being punished"* (radiographer – female)
- *"My people* (children/family) *looked at me differently …at home I was scared that the children would touch me"* (porter – male)
- *"But it was like when I was diagnosed people distanced themselves from me"* (nurse – female)
- *"They would say: Oohh, pass that one, because he has TB now"* (emergency worker – male)

Consequences of these emotions are highlighted by a female nurse who, out of fear of neglect from colleagues, did to not reveal her diagnosis of TB to her colleagues.

"Never expected to have TB"

Participants' surprise that they had contracted TB was a prominent emerging theme. Participants expressed that they did not know where they contracted TB (*"I wondered where I got TB"* operational manager - female), especially if they had taken precautions (*"I am still wondering how I picked it up especially being so cautious"* radiographer – female). This factor was compounded by participants' reports of some staff saying "*that they will not get TB*" (doctor – female) and a reported naivety in both the community and HCWs about TB (registrar – female).

"Sick as a dog"

Participants reported struggling to perform their duties as usual due to effects of the TB and side effects of the medication (*"I did not feel my normal self"* radiographer – female). One participant expressed that they were concerned about their own infectiousness in the ward where they worked. More consistently however, participants were concerned of their future exposure and possible re-infection (*"I do not want to get TB again so I moved…"* registrar – female). Two participants noted that they had resigned in order to protect their health. Lastly, there was a general perception that colleagues were unduly burdened by the participant's disease (*"It affected them more than me"* medical specialist - male).

Discussion

This study is the first to the author's knowledge to examine the experiences of HCWs who have been diagnosed with TB in service and have had their condition reported to the workers' Compensation Fund as an occupational disease. Reports by study participants revealed a number of deficiencies in the workers' compensation process for occupational TB which need remedying. These are discussed further below.

HCWs' experience of TB

HCWs' negative experience of contracting occupational TB is well documented.[22–24] This study demonstrates again the role of stigma perceived by HCWs who have contracted TB. This was mainly external stigma, i.e. where negative attitudes, perceptions and behaviours of others were experienced.[25] Other prominent experiences included HCWs' surprise in contracting TB and their experience of financial stress as a result of their diagnosis and management.

Stigma is known to have a negative relationship with HCWs willingness to utilise occupational health units.[26] This experience was reported on various levels in this study. First, when reporting claims, some participants reported being interrogated about whom they had been exposed to. Second, health care providers were reported to not always be empathic toward colleagues with TB; third, the behaviour of managers of HCWs with TB was interpreted as unsupportive because of the diagnosis of TB, especially considering the required leave. Finally, some participants felt as if they were ostracised by their colleagues or by their own family because of their diagnosis.

While participants were not asked about their views on ways to reduce stigma, in general, stigma reduction has been studied and implemented with varying success. Strategies have a twofold focus. Firstly, at a population level, social marketing and direct social contact with persons with the particular problem being stigmatised have shown to be beneficial.[31,32] Secondly, enhancement of individual resilience has shown to aid sufferers of stigmatisation with outcomes of their TB.[32] Non-profit organisations have emerged with the purpose of providing social marketing relating to TB stigma reduction. Support for organisations like these is needed.[33]

Participants in the study reported being surprised that they had contracted TB. In some cases, it was reported that adequate precautions had been taken leading to the surprise, but in others, participants had previously thought that they would not contract TB.

Compensation benefits relate mostly to ensuring that an employee is not unduly financially burdened as a result of occupational TB. As in previous studies employees reported out of pocket expenses for the diagnosis and management of TB, despite free treatment being

available in the state sector.[24] Furthermore, none of the participants of this study had received reimbursement for these expenses. 41% of the participants of this study reported ongoing medical problems after treatment, implying a lower level of functioning than before contracting TB. Only one of the participants reported receiving a pay-out relating to their impairment; given the high proportion of ongoing, health problems, this finding suggest system deficiency.

The finding that HCWs are being aware of their increased risk of occupational TB is an occupational health concern. Risk communication in order to promote usage of risk controls has an increasing focus in the literature. However, best approaches vary with the audience to which the communication is provided. Communication at undergraduate and job induction level would need to take into account that factual knowledge sharing alone will not significantly reduce risk avoidance behaviour.[28–30]

Reporting occupational TB

In regard to administration of workers' compensation claims, on a national level, all claims reported to the WCG:H, PPA Directorate should reflect on the DoL Compensation Fund website as being "registered not adjudicated" or "open", indicating that they have been received and were being processed, irrespective of document completeness. Assurance was given to me by the PPA Directorate that all claims received at their office are forwarded to the DoL and all compensation for accept claims is processed immediately. This study found that in 46% of the 300 sampled cases "no record found" was indicated on the DoL website. This lack of registration or capturing of claims by the DoL and the inference of poor progression of claims are similar to what has been previously reported.[15,17,34]

Given its employer responsibilities, the WCG:H should make requests to the Compensation Fund to improve their administrative processes and in turn their turnaround time for a claim. Also, this study specifically looked at cases reported after the amendment to Schedule 3 of the COID Act. It was expected that a greater number of cases of extra-pulmonary TB would have been reported. The circular instruction guiding the diagnosis of occupational TB and submission of a claim does covers neither extra-pulmonary TB nor drug resistant strains of TB. Requests should be made for the urgent updating of the circular instruction to align with latest research.

Discrepancies arose in comparing the access to occupational leave as recorded on the PPA Directorate database with verbal reports of the same persons. The database showed 51% not accessing occupational leave compared with 29% on verbal report in the interview sample.This discrepancy may be due to the fact that occupational leave is captured on the PPA Directorate database only once a claim has been accepted, despite claimants being able to provisionally access this form of leave before formal acceptance of the case by the DoL.

These deficiencies were also highlighted in the frustration expressed by participants at the lack of communication from the provincial office with regards to the progress of their claims.

The WCG:H needs to improve on its administrative processes within the province in order to ensure that claims are timeously submitted to the Compensation Fund and that queries on claims from the Compensation Fund can be efficiently handled. Also, the WCG:H should have a system of constant checking and reporting of claims status' and of payment of medical expenses of claimants. In light of the very low repudiation rate it would seem feasible for the WCH:G to consider all cases of occupational TB as "accepted" prior to confirmation from the DoL, at least in respect of occupational leave. Another multilevel recommendation would be the improvement of policies and communication relating to the prevention of occupational TB.[39]

Half of the claims of the main sample of this study were initially reported at a dedicated occupational health unit at one of the three provincial tertiary hospitals. These dedicated units only exist at central hospitals in the province and are not available at all hours. This difference in the geographic distribution of services has been previously described.[35] Participants expressed a need for dedicated units available for all shifts. While not feasible, a possible option may include an on-call occupational health practitioner. Also related to reporting at the individual level, participants, in general, felt reporting a case to be cumbersome in that many documents were required to be completed and submitted in order to have their claim processed. Associated with poor compensation related information dissemination, this left participants feeling unsupported and discouraged as evident from previous literature.[14,15,36,37]

The provision of dedicated occupational health units may seem counterintuitive in light of literature examining injuries showing that employees evaluated by company doctors are less likely to be reported as being "occupational".[40] However, literature examining HCWs' preferences for TB active case finding programs show a desire for this to be available via dedicated occupational health units.[41] Also, the pressure of dual loyalty may be less for state occupational health practitioners and this may enable their reporting of cases more freely.[42] A further supportive factor for reporting occupational TB in HCWs at a dedicated unit in particular, is the rule of presumption.[13] A strong implication of this study is that, these units need to be staffed with knowledgeable and empathic staff. The unit should thus function to support claims submission, maintain contact with the affected employees and undertake post treatment examinations as required by the compensation system.

Limitations

The aim of this study was to assess HCWs' experience of the compensation process. Some information may have been lost in the choice of study design in that the experience of those

HCWs who had chosen not to report their TB were not recorded. The two other groups not evaluated (those that declined consent and those with which no contact was made) are unlikely to have produced significant bias in the study given the relative saturation of information received with the study questionnaire.

Previous mention has been made of the incompleteness of the administrative database held by the PPA Directorate. As such, the study made few inferences based on data held there. Instead, the information found on that database enabled the contacting of participants in order to conduct the telephonic interview which contained questions more closely related to the objectives of the study. The combination of the quantitative data in the database and questionnaire with qualitative elaboration is a strength in this study.

Despite interviews been conducted by multiple interviewers and cases dating from 2003, a relative consistency was found in the reports from participants. Furthermore, there is coherence of the findings with what we know about the functioning of compensation system. It is unlikely that recall bias played a major role in the results.

The findings in this study population (specifically HCWs with TB) may not be generalizable to occupational injuries or to other occupational diseases suffered by HCWs. However, given that the compensation for occupational TB is complex, if done successfully it is likely that the improvements would be experienced in the compensation of other injuries and diseases among HCWs.

Recommendations for future research

Whilst stigma was a significant theme found in experiences of participants in this study, the study did not ask participants about remedies they felt would reduce stigma. Methods of stigma reduction have previously been researched, but more focus is needed on individual experience and perception.[25,43]

Furthermore, reasons for claims not being captured and displayed on the compensation authority's web portal were not elicited in this study. Future research should be directed at the processes within the compensation authority and at ways to remedy these.

Conclusion

The workers' compensation system, i.e. the whole process from reporting through to benefit provision, has again been found to have many deficiencies. In this instance, HCWs are not receiving compensation benefits rightfully due to them for occupational TB. The experiences of HCWs contracting TB have been described as mostly being negative. In these negative experiences remedies to the system can be sought.

The administrative components of submitting a claim, both by the claimant and by WCG:H to the Compensation Fund, have been found in this study to have a number of obstacles and gaps. Reform in communication, record keeping and timeously checking of claim status and payment of relevant compensation are required from the provincial level. Dedicated occupational health services were recommended by participants as these were expected to improve the service to potential claimants, as well as provide a source of information about the diagnosis and compensation aspects.

Authors' Contributions

Nick van de Water was responsible for all aspects.

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Ethics Approval and Informed Consent

The study protocol was reviewed and approved by the Human Research Ethics Committee of the Health Sciences Faculty, University of Cape Town (HREC REF 242/2017). Further approval was obtained from Western Cape Department of Health. Telephonic consent was obtained from each subject.

Disclosure (Authors)

The author reports no conflicts of interest.

Disclaimer

None.

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SECTION D: APPENDICES

Appendix A: Telephonic Consent Form (Per Protocol)

To be read to respondent:

My name is_____, I am calling from the Division of Occupational Medicine at the University of Cape Town. We are conducting a confidential research study on COIDA ("WCA") claims for occupational TB to determine how well the system if working for employees. We have received provincial and ethical approval to access the list of WCA TB cases submitted and captured on the COID office database.

According to the province's records you suffered from TB while employed by PGWC and your case was submitted as a case of occupational disease in ____(year).

I would first like to ask you whether you are comfortable with us proceeding with including your case in our study. If you are not comfortable with this, your name will be removed from our list and the study. There will be no consequences for you. Also, you can change your mind at any time.

If we can proceed, I would like to ask your permission to ask you questions about your claim. This will be to do with whether your claim was ever finalized, and if so when, and what you received (if anything). If it hasn't been finalized, I will ask you whether you have heard from the WCA Compensation Commissioner and what correspondence you have received. I will also ask you a few questions about your experience of reporting your case.

Your participation in this study will help us assess how the compensation system is functioning for health care workers who come down with TB. We know that your case may be finalised or you may not necessarily still work for the Western Cape Department of Health, but we are asking everyone the same questions to make sure of the information.

This questionnaire information is confidential in the same way as your other details are confidential, and is available only to the researcher team. Any new information that could benefit your COIDA ("WCA") case process will be forwarded to the provincial COIDA office in order to update your file.

After the discussion, if there are details that are missing that could be gained from you visiting an occupational clinic, we will discuss these with you and suggest the closest referral centre.

Your participation is voluntary. If you choose not to have this interview, it will not affect any future compensation and the management of your case in the COIDA office.

If you have any questions or want further information about the study, please contact:

Study Principal Investigator: Dr. Nick van de Water

Occupational Medicine Division; School of Public Health and Family Medicine; UCT.
Cell: 0832917123
Email: Nicholas.vandewater@wetserncape.gov.za

_____**Telephone consent** _____

Printed name of participant Date

_____ _____ _____

Interviewer (print) Signature Date

Appendix B: Telephonic Consent Form (Amended)

To be read to respondent:

My name is_____, I am calling from the Division of Occupational Medicine at the University of Cape Town. Is this a convenient time to tell you about a study?

We are conducting a confidential research study on COIDA ("WCA") claims for occupational TB to determine how well the system is working for employees. We have received provincial and ethical approval to access the list of COID ("WCA") TB cases submitted and captured on the COID office database.

According to the province's records you suffered from TB while employed by the Department of Health Western Cape and your case was submitted as a case of occupational disease in _____ (year).

Are you aware of this COIDA claim?

NO , (If "No", interviewer provides some explanation and then proceeds to **OPTION A**)

YES , (if "Yes" interviewer proceeds to **OPTION B**)

OPTION A: I would first like to ask two questions. For either of the questions, there will be no consequences for you. Also, you can change your mind at any time. Firstly, are you comfortable with us proceeding with including your case in our study? If we can proceed, I would like to ask your permission to ask you questions about your responses to your getting TB as an employee although you may not be aware of this claim, you may be aware of some processes related to the claim such as reimbursement of medical expenses and sick leave. I will also ask you a few questions about your experience of getting TB as an employee. If you are not comfortable with this, your name will be removed from our list and the study.

OR

OPTION B: I would first like to ask two questions. For either of the questions, there will be no consequences for you. Also, you can change your mind at any time. Firstly, are you comfortable with us proceeding with including your case in our study? If we can proceed, I would like to ask your permission to ask you questions about your claim. This will be to do with whether your claim was ever finalized, and if so when, and what you received (if anything). If it hasn't been finalized, I will ask you whether you have heard from the WCA Compensation Commissioner and what correspondence you have received. I will also ask you a few questions about your experience of reporting

your case. If you are not comfortable with this, your name will be removed from our list and the study.

Secondly, may we record this telephone call? The recordings will be used to copy your answers to our records as accurately as possible and will not be given to or used by anybody outside of the research team. If not, we will continue without recording and still do our best to capture your answers accurately.

Your participation in this study will help us assess how the compensation system is functioning for health care workers who come down with TB. We know that your case may be finalised or you may not necessarily still work for the Western Cape Department of Health, but we are asking everyone the same questions to make sure of the information.

This questionnaire information is confidential in the same way as your other details are confidential, and is available only to the researcher team. Any new information that could benefit your COIDA ("WCA") case process will be forwarded to the provincial COIDA office in order to update your file.

After the discussion, we will give you an opportunity to let us know if you would like to be contacted by one of the provincial occupational medicine registrars to discuss any outstanding or confusing matters relating to your case.

Your participation is voluntary. If you choose not to have this interview, it will not affect any future compensation and the management of your case in the COIDA office.

If you have any questions or want further information about the study, please contact:

Study Principal Investigator: Dr. Nick van de Water
Occupational Medicine Division; School of Public Health and Family Medicine; UCT.
Cell: 0832917123
Email: Nicholas.vandewater@wetserncape.gov.za

_____**Telephone consent** _____

Printed name of participant Date

_____ _____ _____

Interviewer (print) Signature Date

Appendix C: Participant Information Sheet

UNIVERSITY OF CAPE TOWN

FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH & FAMILY MEDICINE

Who are we and what is the study about?

The principle investigator is a registrar in occupational medicine and this study forms part of his requirements to attain his MMED degree. The study is looking at cases of occupational TB in healthcare workers who submitted their claims to the Western Cape Department of Health COID office. Research has shown that healthcare workers are at an increased risk for developing TB when compared to the general population and these workers should be timeously compensated for their medical bills, time off work, and any disability they may get as a result of the disease or treatment.

Purpose of the research

The study will examine the database of cases of occupational TB as reported to the Department of Labour by the Western Cape Department of Health in order to understand the actual manner in which occupational TB cases are being managed and processed. This will highlight areas where the process can be improved. With this information, attempts can be made to improve the case reporting and hopefully the compensation process and outcomes.

Why do we need your participation?

Your experience of the submission process to the COID office and eventually the Department of Labour is unique and we would thus like to hear your thoughts on the matter. By incorporating a diverse range of experiences, we can establish a comprehensive understanding of what is actually happening.

Procedure

The process of getting the information we require will involve a telephonic questionnaire. This questionnaire will be conducted at a time that is suitable to you and should take approximately twenty minutes. There will be some close ended questions about your submission and some open-ended questions focusing on your experiences.

Voluntary participation

You are free to decline to be in the study and such a decision will not affect your occupational health services or claim process. If at any time during your participation you change your mind

you are also free to withdraw from the study at that time without any negative consequences to you.

Risks and benefits of participation and outcomes

It is understandable that the experience of having TB in the workplace could have been traumatic to you. The research assistant has vast experience in doing telephonic interviews and we will try and make the interview as comfortable as possible. In the case where your COID case has not been resolved, if we identify any factors during the interview that may help you complete the paperwork, we will help you identify what steps to follow.

Confidentiality

Your participation will only be known to the researchers. The research assistant will conduct all interviews in a private office. When we obtained your details from the PERSAL office we ensured that they were only informed that it was for “an occupational health survey”. Your identity will not be divulged in any report generated from this study.

Sharing the results

The results of this study will be written up in article format and attempts will be made to submit this to relevant journals. Furthermore, the research will be presented at the Health Impact Assessment Unit meeting. All results will be anonymized and there will be no way for readers to link you to the research.

When and where will the study take place?

We plan to conduct the telephonic interviews between June and August 2017.

Contact details of the HREC

If you have any questions regarding this research study, please contact the principal investigator.

If at any time you feel that your rights as a research participant have been impinged upon, feel free to contact Professor Marc Blockman at the Human Research Ethics Committee (HREC) at the University of Cape Town on 021 404 6338 or write to HREC at UCT Room E52.23 Old Main Building, Groote Schuur Hospital Observatory.

Principle Investigator

Dr Nick van de Water
Occupational Medicine Division
School of Public Health and Family Medicine
University of Cape Town
021-483 9343

Appendix D: Telephonic Questionnaire (Per Protocol)

Que. No.	Question:	Scoring Options	Score
NB: For all questions interviewees may "prefer not to answer" in which case score = 999 In questions where "other is recorded, please use the space within that block to write details			
1	**The compensation fund provides for three areas of compensation. Namely; medical aid, sick leave and disability.**		
1.1	**Regarding Medical Aid:**		
1.1.1	Did you have any medical bills? – **If No, skip to 1.2**	0=Yes 1=No	
1.1.2	Did you submit your medical bills when your reported your case?	0=Yes 1=No 2=n/a	
1.1.3	Did You pay any costs personally?	0=Yes 1=No 2=n/a	
1.1.4	Did your medical aid reimburse you any of the costs?	0=Yes 1=No 2=n/a	
1.1.5	Have you or your medical aid been reimbursed back for your expenses?	0=Yes 1=No 2=n/a	
1.2	**Regarding Sick Leave**		
1.2.1	Did you take any sick leave as a result of your TB? – **If No, skip to 1.3**	0=Yes 1=No	
1.2.2	How many days leave did you take?	Number	
1.2.3	Sick 1 = Sick Leave 2 = COID Leave 3 = Unpaid Leave 4 = PILAR 5 = Annual Leave	All that apply	
1.2.4	Did you receive your full salary whilst on sick leave?	0=Yes 1=No 2=n/a	
1.2.5	If No for 1.2.4, Please explain what happened.	Open question, transcribe recording	
1.3	**Regarding Disablement**		
1.3.1	Do you have any lasting negative effects as a result of your TB? – **If No, skip to 1.4**	0=Yes 1=No	
1.3.2	Were you assessed for your level of impairment?	0=Yes 1=No 2=n/a	
1.3.3	What percentage of disability did the COID office give you?	Percent; **or** 2=n/a	
1.3.4	Did you receive any compensation for your impairment?	0=Yes 1=No 2=n/a	
1.3.5	How much compensation did you receive?	R lump sum **or** R/month	

Que. No.	Question:	Scoring Options	Score
1.4	**Regarding all three forms of compensation:**		
1.4.1	From your diagnosis date, how long did it take for you to get compensated	In Years and Months	
1.4.2	Do you feel your compensation was fair?	0=Yes 1=No 2=n/a	
1.4.3	Please elaborate on your answer of whether you felt your compensation was fair or not.	Open question, transcribe recording	
2	**The next few questions will look to explore your experience of compensation for occupational TB and the process of reporting your case.**		
2.1	**Regarding the reporting process**		
2.1.1	How did you know to report your case? 1=I was informed about COID on induction 2=I previously had a COID case 3= My diagnosing doctor told me about it 4=Other	See options under question	
2.1.2	How long did it take to report once knowing your diagnosis? **n/a if diagnosis made at same place as reporting**	Actual time **or** n/a	
2.1.3	Where did you report your case as a "WCA"/COID case? 1=Staff Health at my facility 2=Staff Health at another facility 3=To my manager 4=Other	See options under question	
2.1.4	How easy was it to access the place where you reported your disease?	1=Very Difficult 2=Difficult 3=Neutral 4=Easy 5=Very Easy	
2.1.5	Did you feel you privacy was maintained through the reporting process?	0=Yes 1=No	
2.1.6	Did you feel victimised by your reporting of your case?	0=Yes 1=No	
2.1.7	Did you feel stigmatised by your reporting of your case?	0=Yes 1=No	
2.1.8	Please rate how you agree with the following statement: I found the reporting process acceptable 1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree	See options under question	
2.1.9	How would you rate your reporting experience?	1=Very Poor 2=Poor 3=Average 4=Good 5=Very Good	
2.1.10	In your own words, what was your expectation of the reporting process?	Open question, transcribe recording	
2.1.11	Were your expectations about the reporting process met?	0=Yes 1=No	

Que. No.	Question:	Scoring Options	Score
2.2	**Regarding your final medical examination and lung function test**		
2.2.1	Were you advised that you are required to have a final medical examination and lung function to finalise your case?	0=Yes 1=No	
NB If no, spend time helping participant understand process and where they could present.			
2.2.2	Did you have a final medical examination?	0=Yes 1=No	
2.2.3	Did you have a final lung function test?	0=Yes 1=No	
2.3	**Regarding communication**		
2.3.1	Did you receive any communication from the province or COIDA after your submission?	0=Yes 1=No	
2.3.2	How would you rate the communication?	1=Very Poor 2=Poor 3=Average 4=Good 5=Very Good	
3.	**The last few questions are about your experience of having TB as a health care worker and ways in which the system might be improved**		
3.1	In your own words, how did your diagnosis of occupational TB affect your work in the facility?	Open question, transcribe recording	
3.1.1	(**if not covered in 3.1**) Do you still work in the same facility?	0=Yes 1=No	
3.1.2	(**if not covered in 3.1**) In your own words, what were your motivations for your decision to stay/leave?	Open question, transcribe recording	
3.2	Knowing what you know now, what recommendations would you make around the compensation processes and the reporting thereof?	Open question, transcribe recording	

Appendix E: Telephonic Questionnaire and Data Collection Form (amended)

Section A - Personal Information

To be completed by Researcher only.

Email address _____

PID _____

PERSAL number _____

First Name _____

Surname _____

Telephone number - Mobile _____

Telephone number - Landline _____

ID number _____

Job Title _____

Type of TB (on COID Database) *Mark only one oval.*

- ☐ Pulmonary
- ☐ Extra-Pulmonary
- ☐ MDR

Date of Diagnosis _____ (*Example: 15 December 2012)*

Claim Number _____

Claim Status (as per DoL) *Mark only one oval.*

- ☐ No Record Found
- ☐ Claim Registered not Adjudicated
- ☐ Submitted
- ☐ Open
- ☐ Claim Repudiated
- ☐ Claim Accepted

Number of Leave Days Taken _____

Name of Institution Where Case Was Reported _____

Area of Reporting Institution *Mark only one oval.*

- ▢ Metro
- ▢ Rural
- ▢ Central Hospitals
- ▢ GENSES

Choose Metro Substructure *Mark only one oval.*

- ▢ Eastern
- ▢ Khayelitsha
- ▢ Klipfontein
- ▢ Mitchells Plain
- ▢ Northern Southern
- ▢ Tygerberg
- ▢ Western
- ▢ n/a

Choose Rural District *Mark only one oval.*

- ▢ Cape Winelands
- ▢ Central Karoo
- ▢ Eden
- ▢ Overberg
- ▢ West Coast
- ▢ n/a

Choose Hospital *Mark only one oval.*

- ▢ Groote Schuur
- ▢ Tygerberg
- ▢ Red Cross
- ▢ n/a

Section B - Consent

The interviewer will complete from this section onward.

Sufficient information to contact participant via telephone? *Mark only one oval.*

- ☐ Yes
- ☐ No

Were we able to talk with participant? 1st Call *Mark only one oval.*

- ☐ Yes
- ☐ No

Were we able to talk with participant? 2nd Call *Mark only one oval.*

- ☐ Yes
- ☐ No

Were we able to talk with participant? 3rd Call *Mark only one oval.*

- ☐ Yes
- ☐ No

Reason for not being able to contact *Mark only one oval.*

- ☐ Invalid Number
- ☐ Voicemail - no message service
- ☐ Voicemail - with message left
- ☐ No Answer
- ☐ Other: _____

Has telephonic consent been obtained? *Mark only one oval.*

- ☐ Yes
- ☐ No *After the last question in this section, stop filling in this form.*

Has telephonic consent been obtained for call recording? *Mark only one oval.*

- ☐ Yes
- ☐ No

Is the respondent aware that a claim for occupational disease has been submitted to the COID office? (Information from consent form) *Mark only one oval.*

- ☐ Yes
- ☐ No

Would the respondent like to receive the participant information sheet? *Mark only one oval.*

- ☐ Yes
- ☐ No

What is the preferred method of delivery? *Mark only one oval.*

- ☐ Email
- ☐ Postal

Respondent Email Address _____

Respondent Postal Address _____

Section C

Interviewer: "The compensation fund provides for three areas of compensation. Namely; medical aid, sick leave and disability. I would like to continue by asking you about any medical costs or bills from your TB"

1.1.1: Did you have any medical bills or costs related to your TB? *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to Section D)

1.1.2: Did you pay any medical costs or bills for your TB out of your own money? *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to 1.1.3)

1.1.2(A) What were these payments for? _____

1.1.3: Did you submit your medical bills anywhere for reimbursement? *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to Section D)

1.1.3(A) To whom or where did you submit? _____

1.1.3(B): Were you reimbursed?

Mark only one oval.

- ▢ Yes
- ▢ No (Skip to Section D)

1.1.3(C): Did you feel the reimbursement was fair? *Mark only one oval.*

- ▢ Yes (Skip to Section D)
- ▢ No

1.1.3(C.1): Please explain why you felt your reimbursement was not fair.

_____

Section D

Interviewer: "I would now like to ask you about sick leave as a result of your TB"

1.2.1: Did you take any sick leave as a result of your TB? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to Section E)

1.2.2: How many working days leave did you take, or alternatively how many weeks or months (specify unit)? _____

1.2.3: What type of leave was used up during your time off? (Mark all that apply) *Tick all that apply.*

- ☐ Your Own Sick Leave
- ☐ COID Leave also known as occupational leave
- ☐ Unpaid Leave
- ☐ PILAR (Explained by Interviewer)
- ☐ Annual Leave

1.2.4: Did you receive your full monthly earnings, including commuted overtime if applicable, whilst on sick leave? *Mark only one oval.*

- ☐ Yes (Skip to Section E)
- ☐ No

1.2.5: Please explain what you did receive. _____

Section E

Interviewer: "I would now like to ask you about continuing health problems or "disability" as a result of your TB"

1.3.1: Were you advised that you were required to have a final medical examination after your TB treatment to "complete" your COID claim? *Mark only one oval.*

- ▢ Yes
- ▢ No

1.3.2: Did you have any sort of examination at the end of treatment? *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to 1.3.3)

1.3.2(A) Where did you have the examination? _____

1.3.3: Apart from any examination, do you feel you have; or have you been told that you have, any continuing health problems as a result of your TB? *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to 1.3.4)

1.3.3(A): Please describe these health problems. _____

1.3.4: Did you receive any "disablement" compensation payment (for these continuing health problems)? - (not UIF) *Mark only one oval.*

- ▢ Yes
- ▢ No (Skip to Section F)

1.3.4(A): Did you receive *Mark only one oval.*

- ▢ a lump sum payment pension?
- ▢ a monthly payment pension?

1.3.4(B): How much did you receive if lump sum, or how much per month if monthly payment? _____

1.3.4(C): From the date of completing treatment, how long did it take to receive such compensation (give unit, i.e. weeks, months, or years) _____

1.3.4(D): Are you aware whether you claim was assigned a “percentage disablement”?
Mark only one oval.

- ▢ Yes
- ▢ No (Skip to 1.3.4(E))

1.3.4(D.1): What was this percentage? _____

1.3.4(E): Did you feel this compensation was fair? *Mark only one oval.*

- ▢ Yes (Skip to Section F)
- ▢ No
- ▢ Other: _____

1.3.4(E.1): Please explain why not. _____

Section F

Interviewer: "I would now like to ask you about your experience of the process of having your case reported to COID as an occupational disease." - (SKIP THIS SECTION IF PARTICIPANT WAS NOT AWARE OF THE CLAIM)

2.1.1: To your knowledge, how or by whom was your case "reported to" the province for purposes of COID? *Mark only one oval.*

- ☐ Via my facility or unit manager
- ☐ Via my staff clinic
- ☐ I self-reported
- ☐ My diagnosing doctor
- ☐ Don't Know
- ☐ Other: _____

2.1.2: Are you able to say how long it took between TB diagnosis and having it reported to province? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to 2.1.3)

2.1.2(A): How long (unit in weeks, months or years)? _____

2.1.3: Did you receive any communication from the province about the COID claim? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to 2.1.4)

2.1.3(A): Please describe. _____

2.1.4: Are you aware of whether the claim was actually submitted to COID (Department of Labour) by the province? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to 2.1.5)

2.1.4(A): How did you become aware of this? _____

2.1.5: Did you feel “victimised” or “made to feel bad” in any way by having your case reported for COID purposes? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to Section G)

2.1.5(A) Please describe. _____

Section G

Interviewer: "I would like to end off by asking you of the process of having developed TB while employed."

2.2.1: More generally, did you feel "victimised" or "made to feel bad" in any way by having been diagnosed with TB as an employee of the provincial health service? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to 2.2.2)

2.2.1(A): Please describe. _____

2.2.2: Was your work affected by your diagnosis of TB? *Mark only one oval.*

- ☐ Yes
- ☐ No (Skip to 2.2.3)

2.2.2(A): Please describe how it was affected. _____

2.2.3: Are you in the same job or facility you were in at diagnosis? *Mark only one oval.*

- ☐ Yes (Skip to 2.2.4)
- ☐ No

2.2.4: Would you like to comment on the whole process, as a health care worker/professional, of being diagnosed with TB, and how it was handled in relation to work, reporting and compensation aspects? ("No comment" or Transcription)

_____

2.2.5: How could the process of handling the compensation aspects of getting TB as an employee be improved? ("No ideas" or Transcription)

_____

Section H

Contact by Registrar

Would you like to be contacted by one of the provincial occupational medicine registrars to discuss your case further? *Mark only one oval.*

- ☐ Yes
- ☐ No

Apart from the above, would you be prepared to be contacted for a longer telephonic conversation about your experience of being diagnosed with TB as a health care worker/professional? *Mark only one oval.*

- ☐ Yes
- ☐ No

Appendix F: Consent from COID Office

UNIVERSITY OF CAPE TOWN
FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH & FAMILY

Dear Sir

I am a registrar in occupational medicine and am endeavouring to perform a study as part of the requirements to attain my MMED degree. Approval has been obtained from the Human Research Ethics Committee of the UCT Faculty of Health Sciences (approval nr). The study plans to look at cases of occupational TB in healthcare workers who submitted their claims to the Western Cape Department of Health COID office. Research has shown that healthcare workers are at an increased risk for developing TB when compared to the general population and these workers should be timeously compensated for their medical bills, time off work, and any disability they may get as a result of the disease or treatment.

Purpose of the research

The study plans to examine the database of cases of occupational TB as reported to the Department of Labour by the Western Cape Department of Health in order to understand the actual manner in which occupational TB cases are being managed and processed. This will highlight areas where the process can be improved. With this information, attempts can be made to improve the case reporting and hopefully the compensation process and outcomes.

What we require from your offices

Tracking down every case of occupational TB in the province will deem this study unfeasible. In order to compensate for this, I would like to request the use of the information of occupational TB cases contained within the database held by the COID office. COIDA submissions are not confidential in the usual sense of patient–doctor confidentiality as they are processed by administrative staff. However, in my role as occupational medicine registrar and doctor I will maintain strict confidentiality of any information attained through the study processes.

Risks and benefits for employees

It is understandable that the experience of having TB in the workplace could have been traumatic to employees in the database. We plan to request contact details of the employees

from the PERSAL office and thereafter with consent, perform telephonic interviews. The research assistant performing these interviews has vast experience in doing telephonic interviews and we will try and make the interview as comfortable as possible. In the case where a COID case has not been resolved, we will identify factors during the interview that may help the employee complete the paperwork and we will tell them what steps to follow.

Confidentiality

No personal information will be made available to anybody other than those directly involved in the research. The research assistant will conduct all interviews in a private office. Identities will not be divulged in any report generated from this study.

Sharing the results

The results of this study will be written up in article format and attempts will be made to submit this to relevant journals. Furthermore, the research will be presented at the Health Impact Assessment Unit meeting. All data will be anonymized and research participants will not be identifiable to the readers or audience.

When and where will the study take place?

We plan to collect the database details in the month of May and conduct the telephonic interviews between June and August 2017.

Contact details of the HREC

If you have any questions regarding this research study, feel free to contact the principal investigator.

If at any time you feel that the rights of the research participants have been impinged upon, feel free to contact Professor Marc Blockman at the Human Research Ethics Committee (HREC) at the University of Cape Town on 021 404 6338 or write to HREC at UCT Room E52.23 Old Main Building, Groote Schuur Hospital Observatory.

Principle Investigator

Dr Nick van de Water
Occupational Medicine Division
School of Public Health and Family Medicine
University of Cape Town
021-483 9343

Appendix G: Consent from PERSAL Director

UNIVERSITY OF CAPE TOWN
FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH & FAMILY

Dear Sir

I am a registrar in occupational medicine and am endeavouring to perform a study as part of the requirements to attain my MMED degree. Approval has been obtained from the Human Research Ethics Committee of the UCT Faculty of Health Sciences (approval nr). The study plans to look at cases of occupational TB in healthcare workers who submitted their claims to the Western Cape Department of Health COID office. Research has shown that healthcare workers are at an increased risk for developing TB when compared to the general population and these workers should be timeously compensated for their medical bills, time off work, and any disability they may get as a result of the disease or treatment.

Purpose of the research

The study plans to examine the database of cases of occupational TB as reported to the Department of Labour by the Western Cape Department of Health in order to understand the actual manner in which occupational TB cases are being managed and processed. This will highlight areas where the process can be improved. With this information, attempts can be made to improve the case reporting and hopefully the compensation process and outcomes.

What we require from your offices

Tracking down every case of occupational TB in the province will deem this study unfeasible. In order to compensate for this, we have requested the use of the information of occupational TB cases contained within the database held by the COID office. COIDA submissions are not confidential in the usual sense of patient–doctor confidentiality as they are processed by administrative staff. Nevertheless, in my role as occupational medicine registrar and doctor I will maintain strict confidentiality of any information attained through the study processes.

Two elements of the study would not be able to proceed without some information from the PERSAL office. Firstly, we would like to contact employees telephonically and via email. We would like to send an information sheet to the employees via email and phone them in order to conduct a telephonic interview. Unfortunately, the COID office does not keep contact details

of employees and we request these from your office. Secondly, we would like to evaluate these employees' use of COID (occupational leave) and record this in our results. We also request this from your offices.

Lastly, in order to protect the correlation that your staff might make between the requests and the fact that the particular employees have had occupational TB, we would request that it is only yourself that is aware of the full extent of the study and staff will receive a separate request from the principal investigator with the PERSAL numbers for the employee's where information is required and that these are for an "occupational health survey".

Risks and benefits for employees

It is understandable that the experience of having TB in the workplace could have been traumatic to employees in the database. With consent we will perform telephonic interviews with the employees. The research assistant performing these interviews has vast experience in doing telephonic interviews and we will try and make the interview as comfortable as possible. In the case where their COID case has not been resolved, if we identify any factors on the interview that may help the employee complete the paperwork, we will help them know what steps to follow.

Confidentiality

No personal information will be made available to anybody other than those directly involved in the research. The research assistant will conduct all interviews in a private office. Identities will not be divulged in any report generated from this study.

Sharing the results

The results of this study will be written up in article format and attempts will be made to submit this to relevant journals. Furthermore, the research will be presented at the Health Impact Assessment Unit meeting.

When and where will the study take place?

We plan to collect the database details in the month of May and conduct the telephonic interviews between June and August 2017.

Contact details of the HREC

If you have any questions regarding this research study, feel free to contact the principal investigator.

If at any time you feel that the rights of the research participants have been impinged upon, feel free to contact Professor Marc Blockman at the Human Research Ethics Committee

(HREC) at the University of Cape Town on 021 404 6338 or write to HREC at UCT Room E52.23 Old Main Building, Groote Schuur Hospital Observatory.

Principle Investigator

Dr Nick van de Water
Occupational Medicine Division
School of Public Health and Family Medicine
University of Cape Town
021-483 9343

Appendix H: Letter to PERSAL Staff

UNIVERSITY OF CAPE TOWN
FACULTY OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH & FAMILY

Dear Sir/Madam

Thank you very much in assisting in this study. Would you kindly provide two factors for the following employees (PERSAL numbers given):

1. Telephone and email contact details
2. Number of COID (occupational) leave days utilised

List of PERSAL Numbers:

- *List of PERSAL Numbers*

Please note that the correct permissions have been attained from the Human Research Ethics Committee of the UCT Faculty of Health Sciences and all appropriate provincial channels.

Kind Regards

Dr Nick van de Water
Occupational Medicine Division
School of Public Health and Family Medicine
University of Cape Town
021-483 9343

Appendix I: Interview Schedule

The below table is an estimate and will be adjusted according to the availability of participants and the interviewers. Participants will be contacted in order of randomisation.

The following stipulations were given to interviewers:

- All interviews are to be conducted in the hours stipulated, unless a participant specifically request a call outside these hours.
- Attempted contact with cases must be made no greater than three times, each separated by at least 6 hours.
- On a third failure to contact a voice message (if available) must be left giving the person the ability to initiate a desire to participate in the study.
- Interviews are to be conducted in a private space.
- Consent must be obtained as per the consent form provided and recorded for each participant.
- A confidentiality agreement must be signed before commencing with interviews.

Day	Interview Hours	No of Calls	No of completed Interviews
Monday	08h00 – 20h00	Approx. 3 - 5	Approx. 1or 2
Tuesday	08h00 – 20h00	Approx. 3 - 5	Approx. 1or 2
Wednesday	08h00 – 20h00	Approx. 3 - 5	Approx. 1or 2
Thursday	08h00 – 20h00	Approx. 3 - 5	Approx. 1or 2
Friday	08h00 – 20h00	Approx. 3 - 5	Approx. 1or 2
Saturday	08h00 – 20h00	Approx. 3 - 5	Approx. 1 or 2
Total per week		15 - 20	10

Appendix J: Official Ethics Approval

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 404 7682 • **Facsimile** [021] 406 6411
Email: nosi.tsama@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

24 April 2017

HREC REF: 242/2017

Prof R Ehrlich
Public Health & Family Medicine
Falmouth Building

Dear Prof Ehrlich

PROJECT TITLE: EVALUATING THE COMPENSATION FOR OCCUPATIONAL TB IN HEALTH CARE WORKERS (MMeD-candidate-N van der Water)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th April 2018.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that Nicholas van de Water will be involved in this study.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval before the research may occur.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

HREC 242/2017

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI),and Declaration of Helsinki (2013) guidelines.
The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

HREC 242/2017

Appendix K: Western Cape Government: Health - Study Approval

Western Cape Government
Health

Health Impact Assessment
Health Research Sub- Directorate
Health.Research@westerncape.gov.za
Tel: +27 21 483 0866: fax: +27 21 483 9895
5th Floor, Norton Rose House,, 8 Riebeek Street, Cape Town, 8001
www.capegateway.gov.za)

REFERENCE: WC_2017RP0_427
ENQUIRIES: Dr Sabela Petros

University of Cape Town

Anzio Road

Observatory

Cape Town

7925

For attention: Dr Nick Van de Water, Prof Rodney Ehrlich

Re: Evaluating the Compensation for Occupational TB in Health Care Workers.

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research. Please contact following people to assist you with any further enquiries in accessing the following sites:

PERSAL Database	**Mr H Herbert**	**021 483 3570**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.
2. Researchers, in accessing provincial health facilities, are expressing consent to provide the department with an electronic copy of the final feedback (**annexure 9**) within six months of completion of research. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

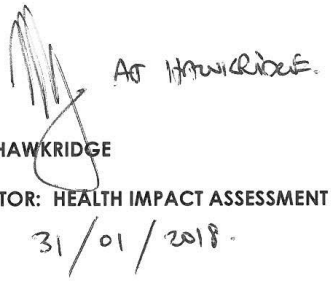
3. In the event where the research project goes beyond the *estimated completion* date which was submitted, researchers are expected to complete and submit a progress report

(**Annexure 8**) to the provincial Research Co-ordinator

(Health.Research@westerncape.gov.za).

4. The reference number above should be quoted in all future correspondence.

Yours sincerely



DR A HAWKRIDGE

DIRECTOR: HEALTH IMPACT ASSESSMENT

DATE: 31/01/2018.

Appendix L: Official Ethics Amendment Approval

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 404 7682 • **Facsimile** [021] 406 6411
Email: nosi.tsama@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

24 April 2017

HREC REF: 242/2017

Prof R Ehrlich
Public Health & Family Medicine
Falmouth Building

Dear Prof Ehrlich

PROJECT TITLE: EVALUATING THE COMPENSATION FOR OCCUPATIONAL TB IN HEALTH CARE WORKERS (MMeD-candidate-N van der Water)

Re: Occupational TB Compensation in HWCs-Participant Information Sheet

Thank you for the various communications with the HREC related to the above. We have reviewed all and are happy with all the explanations and the way forward.

Please quote the HREC REF in all your correspondence.

Yours sincerely

pp TBurgess
PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Appendix M: Author Guidelines – American Journal of Industrial Medicine

Author Guidelines
Editorial Office Contact Information: American Journal of Industrial Medicine**;** email: ajim@wiley.com
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English Language Policy. All manuscripts must be written in clear, correct English. Manuscripts not meeting the language requirement may be declined without peer review at the Editor's discretion. Authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found here. Japanese authors can also find a list of local English improvement services here. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.
Manuscript Length. There are no restrictions on the length of any article type except a Letter to the Editor or a Book Review, which cannot exceed 1000 words.

Types Of Articles

Research Article: Report the results of original quantitative or qualitative research. These papers should advance knowledge, practice, or policy and follow the standard form of scientific research writing (Introduction, Methods, Results, Conclusion). Abstract must be structured according to the standard sections. *Example:*

- *See any issue of the journal for examples of research articles.*

Brief Report: Present focused observations from limited epidemiological or international health data, or initial findings of novel research. Brief Reports generally deal with pilot data, a small dataset, or a single aspect of a larger dataset. These shorter papers should follow the standard form of scientific research writing (Introduction, Methods, Results, Conclusion). Abstract must be structured according to the standard sections. *Example:*

- *McCullagh, M. C. (2011), Effects of a low intensity intervention to increase hearing protector use among noise-exposed workers. Am. J. Ind. Med., 54: 210–215.*

Case Report: Report a single case or small series of experiences with occupational and environmental health, safety, or policy events and issues. These papers should be instructive and succinct, with a well-defined message. Use the standard form for scientific case presentation (Introduction, Case report Discussion; methods and/or findings sections as appropriate). Abstract must be unstructured. *Example:*

- *(single case) Andujar, R., et al. (2011), High eosinophil levels and poor evolution in occupational asthma due to cyanoacrylate exposure. Am. J. Ind. Med., 54: 714–718.*
- *(small series) Suojalehto, H.,et al. (2011), Occupational asthma related to low levels of airborne methylene diphenyl diisocyanate (MDI) in orthopedic casting work. Am. J. Ind. Med., 54: 906–910.*

Review: Provide systematic examination of a timely and relevant topic with critical assessment of published literature. Can be quantitative meta-analysis of studies and data sets, or present an overview and analysis of policy and practice. Abstract must be unstructured. *Example:*

- *Wong, T. W. and Wong, A. H.S. (2011), A review of statutory medical examinations in Asian-Pacific countries. Am. J. Ind. Med., 54: 78–88.*
- *Guidotti, T. L., Prezant, D., de la Hoz, R. E. and Miller, A. (2011), The evolving spectrum of pulmonary disease in responders to the World Trade Center tragedy. Am. J. Ind. Med., 54: 649–660.*
- *Osborne, A., Blake, C., Fullen, B. M., Meredith, D., Phelan, J., McNamara, J. and Cunningham, C. (2012), Prevalence of musculoskeletal disorders among farmers: A systematic review. Am. J. Ind. Med., 55: 143–158.*

Commentary: Address current events, policy and legislative issues, or the research and evaluations that inform policy. Can be short or long form. Must include an unstructured abstract.
Short form: Brief essay exploring current events or emerging trends, may offer a recommendation. *Example:*

- *Michaels, D. (2012), OSHA does not kill jobs; It helps prevent jobs from killing workers. Am. J. Ind. Med., 55: 961–963.*

Long form: Extended essay that critiques current policy or legislation and calls for change, or challenges group evaluations and recommendations that are the basis of policy creation. *Example:*

- *Ehrlich, R. (2012), A century of miners' compensation in South Africa. Am. J. Ind. Med., 55: 560–569. Cherniack, M., Henning, R., Merchant, J. A., Punnett, L., Sorensen, G. R. and Wagner, G. (2011), Statement on national worklife priorities. Am. J. Ind. Med., 54: 10–20.*
- *Infante, P. F. (2011), The IARC October 2009 evaluation of benzene carcinogenicity was incomplete and needs to be reconsidered. Am. J. Ind. Med., 54: 157–164.*

Historical Perspective: Survey the development of the occupational and environmental health field, including original historical research; critical analysis of organizations and programs, past trends, or events; or biographies of influential people and places. Must include an abstract that is unstructured or structured as appropriate for article content. *Example:*

- *Hendricks, S. A., Jenkins, E. L. and Anderson, K. R. (2007), Trends in workplace homicides in the U.S., 1993–2002: A decade of decline. Am. J. Ind. Med., 50: 316–325.*
- *Rosenthal, J., Jessup, C., Felknor, S., Humble, M., Bader, F. and Bridbord, K. (2012), International environmental and occupational health: From individual scientists to networked science Hubs. Am. J. Ind. Med., 55: 1069–1077.*

- *Greenberg, M. (2006), The last Senior Medical Inspector of Factories and his place in the history of occupational health. Am. J. Ind. Med., 49: 54–59.*

Letter: Respond to a published article or present a very short communication about a timely issue or emergent research. Letters may be sent for peer-review and so should not reveal author names. Restrictions: 1000 words maximum. *Example:*

- *Goodman, J. E. (2011), Nickel metal not associated with lung cancer risk. Am. J. Ind. Med., 54: 419.*
- *Bianchi, C. and Bianchi, T. (2011), Mesothelioma and aircraft industry. Am. J. Ind. Med., 54: 494.*

Book Review: Review of published or forthcoming book relevant to the field of occupational and environmental health and safety. Restrictions: 1000 words maximum. *Example:*

- *Shapiro, S. A. (2012), Book review: Legally poisoned: How the law puts us at risk from toxicants. By Carl F. Cranor. Harvard University Press, Cambridge, Massachusetts, 2011, 315 pp. Am. J. Ind. Med., 55: 187–188.*

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Prepare all of these documents and files for your manuscript submission:

Conflict of Interest Disclosure Form

At the time of submission of a manuscript, the journal requires that all authors submit a standard Conflict of Interest Disclosure Form (also made available within the online ScholarOne submission system). Authors must disclose any affiliations with any organizations that to any author's knowledge have a direct interest, particularly a financial interest, in the subject matter or materials discussed, The single most important piece of information to be disclosed is the source of funding for the study.

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This should be a separate, individual file, not within the main manuscript, to maintain blinded peer review. Please use this template when creating your title page: AJIM Title Page Template. The Title Page must include all of the following:

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- Institution at which the work was performed
- Indication of and complete contact information (including email address) for the corresponding author
- Author Contributions
- Acknowledgments
- Funding
- Institution and Ethics approval and informed consent
- Conflict of Interest Disclosure
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Blinded for Review. The manuscript text must be fully blinded for review (no author names or institutional information).

Please arrange your text in the following order:

Abstract and Keywords. Please begin your main manuscript document with an Abstract of 100-150 words. For Commentaries, Historical Perspectives, Case Reports and Book Reviews, the abstract should be unstructured. For Research Articles, Review Articles, and Brief Reports, the abstract should be composed of four sections, labeled Background, Methods, Results, and Conclusions. No abstract is required for a Letter to the Editor. Five to ten key words that will adequately index the subject matter should follow the abstract.

Sections and Subheadings. The text of Research Articles, Review Articles, and Brief Reports should generally use the following format: Introduction, Materials and Methods, Results, and Discussion. For Case Reports, Commentaries, Historical Perspectives, and Book Reviews, please use all appropriate sections and headings of standard scientific writing. Use subheadings and paragraph titles whenever possible. For guidance, please consult the Council of Science Editors style guide.

Methods section: Ethics Review and Approval. All manuscripts that describe biomedical studies of individual human subjects must include explicit assurance that signed informed consent was obtained from each subject or from their legal guardian and that the study protocol was reviewed and approved by the appropriate ethical committee. Any manuscript describing experimental studies with animals must include explicit assurance that animal care was humane and in accord with institution guidelines. Specify that participants signed written informed consent. If IRB approval or written informed consent was not obtaine, authors must explain why not. Keep this information blinded for review (no author names or institutional information).

References

- Use AMA style
- References should be listed in numerical order
- In listed references, the names of all authors should be given unless there are more than 6, in which case the names of the first 3 authors are used, followed by “et al.” et al. in roman.
- Do not use "and" before last author name
- No comma between surname and initial
- Author initials should be closed up without end period

Reference List Examples: Journal article (1-6 authors):

1. Hu P, Reuben DB. Effects of managed care on the length of time that elderly patients spend with physicians during ambulatory visits. Med Care. 2002;40(7):606-613.

Journal article with more than 6 authors:

2. Geller AC, Venna S, Prout M, et al. Should the skin cancer examination be taught in medical school? Arch Dermatol. 2002;138(9):1201-1203.

Journal article with no named author or group name:

3. Centers for Disease Control and Prevention (CDC). Licensure of a meningococcal conjugate vaccine (Menveo) and guidance for use--Advisory Committee on Immunization Practices (ACIP), 2010. MMWR Morb Mortal Wkly Rep. 2010;59(9):273.

Electronic Journal article: If you have a doi (preferred):

4. Gage BF, Fihn SD, White RH. Management and dosing of warfarin therapy. Am J Med. 2000;109(6):481-488. doi:10.1016/S0002-9343(00)00545-3.
If you do not have a doi:
5. Aggleton JP. Understanding anterograde amnesia: disconnections and hidden lesions. Q J Exp Psychol. 2008;61(10):1441-1471. http://search.ebscohost.com/login.aspx?direct=true&db=pbh&AN=34168185&site=ehost-live. Accessed March 18, 2010.
Journal article published online ahead of print:
6. Chau NG, Haddad RI. Antiangiogenic agents in head and neck squamous cell carcinoma: tired of going solo [published online ahead of print September 20, 2016]. Cancer. doi: 10.1002/cncr.30352.
Entire Book:
7. McKenzie BC. Medicine and the Internet: Introducing Online Resources and Terminology. 2nd ed. New York, NY: Oxford University Press; 1997.
Book Chapter:
8. Guyton JL, Crockarell JR. Fractures of acetabulum and pelvis. In: Canale ST, ed. Campbell's Operative Orthopaedics. 10th ed. Philadelphia, PA: Mosby, Inc; 2003:2939-2984.
Electronic Book:
9. Rudolph CD, Rudolph AM. Rudolph's Pediatrics. 21st ed. New York, NY: McGraw-Hill Companies; 2002. http://online.statref.com/Document/Document.aspx?DocID=1&StartDoc=1&EndDoc=1882&FxID=13&offset=7&SessionId=A3F279FQVVFXFSXQ . Accessed August 22, 2007.
Internet Document:
10. American Cancer Society. Cancer Facts & Figures 2003. http://www.cancer.org/downloads/STT/CAFF2003PWSecured.pdf. Accessed March 3, 2003.
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- Colon is used between the publisher location and the publisher name.
- Year of publication is given after the publisher name, separated by a semicolon.
- Chapter title is set in roman and sentence case.
- Book title is set in italics and title case.
- Query is raised for page range if it is not given.
- Date of last access is required for Web site citations.

Tables. Tables must be numbered in order of appearance with Roman numerals (for example, Table III, Table IV). Each Table must have a header with the number and title, and include any necessary legends at the bottom that define all abbreviations. All Tables must be referenced within the text. Tables should supplement the text, not duplicate it.
Figures. Figures should supplement the text, not duplicate it. Images must be clear and readable for review. Number figures by order of appearance (Figure 1, Figure 2).
Figure Legends. A legend must appear beneath each figure/ illustration and must define all abbreviations. Authors of accepted papers will be asked to provide a text-only list of all figure legends.
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Tables must be editable text in a text document (.doc, .docx, or .rtf file format; no images or Excel files), uploaded as a separate file, not within the main manuscript. Each table must begin on a new page.

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