The incidence of work-related ill-health as reported to The Health and Occupation Research (THOR) network by physicians in the Republic of Ireland between 2005 and 2020.

Annual Report

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GLOSSARY OF TERMS

EPIDERM - The EPIDERM scheme began in the UK in 1993 and collects reports of cases of occupational skin disease from consultant dermatologists.

EPIDERM-ROI – The EPIDERM-ROI scheme began in 2005 and collects reports of cases of occupational skin disease from consultant dermatologists within the Republic of Ireland.

HSA - The Republic of Ireland Health and Safety Authority.

HSE - The UK Health and Safety Executive.

OPRA – The Occupational Physicians Reporting Activity scheme began in the UK in 1996 and collects reports of work-related disease from occupational physicians employed in the public sector and private sector. OPRA reports are not confined to a particular disease category.

OPRA-ROI - The OPRA-ROI scheme began in 2007 and collects reports of cases of work-related ill-health from occupational physicians within the Republic of Ireland.

SWORD - The Surveillance of Work-related and Occupational Respiratory Disease scheme began in the UK in 1989 and collects reports of cases of occupational respiratory disease from consultant respiratory physicians.

SWORD-ROI - The SWORD-ROI scheme began in 2005 and collects reports of cases of occupational respiratory disease from consultant respiratory physicians within the Republic of Ireland.

THOR - The Health and Occupation Research network which runs several surveillance schemes for work-related disease including EPIDERM, SWORD and OPRA.

THOR-ROI - The Health and Occupation Research network in the Republic of Ireland, which includes EPIDERM-ROI, SWORD-ROI, OPRA-ROI and THOR-GP-ROI. THOR-ROI began in 2005.

THOR-GP – The THOR-GP scheme began in the UK in 2005 and enables general practitioners to report cases of work-related ill-health seen in a general practice setting. All THOR-GP reporters have a diploma in occupational medicine.

THOR-GP in the ROI – THOR-GP in the ROI began in 2015 and enables general practitioners with an interest in occupational medicine to report cases of work-related ill-health seen in a general practice setting.

MAIN MESSAGES

- This is the latest annual report, including data collected during 2020, summarising results from The Health and Occupation Research network in the Republic of Ireland (THOR-ROI).
- THOR-ROI comprises of four surveillance schemes collecting data on incident cases of work-related illness (WRI) in the Republic of Ireland; SWORD-ROI (chest physicians), EPIDERM-ROI (dermatologists), OPRA-ROI (occupational physicians - OPs) and THOR-GP-ROI (general practitioners - GPs).
- In 2020, 27 occupational physicians, 20 general practitioners, 12 dermatologists and 9 chest physicians participate in THOR-ROI.
- A total of 93 cases were reported in 2020 (OPs: 40, dermatologists: 23, chest physicians: 27, and GPs: 3). In total, the number of reported incident cases between 2005 and 2020 is 2761 (OPs: 1938, dermatologists: 534, chest physicians: 251, GPs: 38).
- Dermatologist reported (2005-2020) predominantly contact dermatitis (CD) cases (98%), with majority of all reported cases reports being female (56% of CD cases) and a mean age (all CD cases) of 37 years. Frequently reported industries/occupations were healthcare (nurses), personal service occupations (hairdressers and beauty therapist) and manufacturing (process operatives). Most frequently reported agents were rubber, wet work, nickel and preservatives.
- Asthma was the largest category of cases reported by chest physician (2005-2020) (38%). The majority of all reported cases reports was male (85%) and the mean age (all cases) was 57 years. Frequently reported industries/occupations were construction (labourers) and manufacturing, with isocyanates and cement/plaster/masonry dust being the most frequently reported agents.
- OP case reports (2007-2020) were predominantly mental ill-health (54%) and musculoskeletal (33%) with smaller proportions of skin (8%), respiratory (2%) and 'other' WRI (3%). The majority (77%) of cases were reported in health and social care (mainly nurses) with a significant proportion also reported in transport (bus/train drivers) (12%).
- The 20 GPs participating in THOR-GP-ROI have reported 38 cases since the scheme commenced data collection in 2015; musculoskeletal cases were reported most frequently (17 cases).
- Trend analysis in the number of OPRA-ROI case reports suggests an overall decrease in the number of case reports of total WRI of approximately 5% per year between 2007 and 2020. No trends analyses were conducted based on the other reporting schemes.

SUMMARY OF CASES REPORTED TO THOR-ROI

Disease group	Reporting physicians	Number of cases		
		2020	**2005[a]-2020**	
Skin	Dermatologists	23	534	19%
	Occupational physicians	4	170	6%
	General practitioners	0	5	<1%
Respiratory	Chest physicians	27	251	9%
	Occupational physicians	1	38	1%
	General practitioners	1	1	<1%
Musculoskeletal	Occupational physicians	20	663	24%
	General practitioners	2	17	<1%
Mental ill-health	Occupational physicians	13	1025	37%
	General practitioners	0	8	<1%
Other	Occupational physicians	4	60	2%
	General practitioners	0	7	<1%
Total cases [b]	**All physicians**	**93**	**2761**	

[a] 2007 for occupational physicians; 2015 for general practitioners

[b] a case may have been assigned to more than one disease group (for example, musculoskeletal and mental ill-health)

EXECUTIVE SUMMARY

BACKGROUND: Chest physicians, dermatologists, occupational physicians (OPs) and general practitioners (GPs) voluntarily report cases of work-related illness (WRI) to the four surveillance schemes, which comprise The Health and Occupation Research (THOR) network in the Republic of Ireland (THOR-ROI). This report describes the cases of WRI reported to THOR-ROI in the latest full calendar year (2020) and provides a summary of results based on all case reports since the commencement of the different schemes (2005 for dermatologists and chest physicians; 2007 for OPs; 2015 for GPs).

METHODS: Physicians have been and are continuously recruited to THOR-ROI with assistance from the scheme's champions and relevant societies within the ROI. Participating physicians are asked to provide anonymised information of incident cases seen during their reporting period. Cases reported to THOR-ROI were analysed by age, sex, occupation/industry, suspected causal agent and symptom onset. Incidence rates and trends in number of case reports were estimated for selected reporter groups/diagnoses, using a 'multi-level' statistical model to investigate the relative number of reported cases over time whilst taking into account other factors that might influence the trend (such as the number of physicians reporting and the number of people employed).

RESULTS: The 68 physicians enrolled in THOR-ROI in 2020 (27 OPs, 20 GPs, 12 dermatologists and 9 chest physicians) reported 93 cases (103 diagnoses). Of these, 40 cases were reported by OPs, 27 were reported by chest physicians, 23 were reported by dermatologists, and three cases of WRI were reported by GPs. This brings the total number of cases reported between 2005 and 2020 to 2761 (dermatologists: 534, chest physicians: 251, OPs: 1938, GPs: 38 case reports). Trend analysis in the number of case

reports (based on reports to OPRA-ROI) suggest an overall decrease in the number of case reports of total WRI of approximately 5% per year between 2007 and 2020.

CONCLUSION: THOR-ROI continues to provide the best overall source of data relating to medically attributed occupational disease incidence in the ROI, with 2761 cases reported since the inception of the schemes. With continued funding and increased enrolment and participation in the schemes, and the promotion of THOR in the ROI, case numbers will increase year on year. This would enable further detailed analyses of data by the various determinants of risk e.g. causal agent, precipitating event (mental ill-health) and task/movement (musculoskeletal).

1 INTRODUCTION

The Health and Occupation Research (THOR) network in the Republic of Ireland (THOR-ROI) currently comprises 4 surveillance schemes enabling different groups of physicians to (voluntarily) report cases of work-related illness (WRI).[1,2] These are SWORD (chest physicians), EPIDERM (dermatologists), OPRA (occupational physicians) and THOR-GP (general practitioners). SWORD and EPIDERM both started data collection in the ROI in 2005, whilst OPRA commenced in 2007. THOR-GP is the newest ROI scheme with data collection commencing in January 2015. The ROI schemes are based on the analogous well-established UK wide schemes.[3-7]

This report describes the cases of work-related illness (WRI) reported to SWORD, EPIDERM, OPRA and THOR-GP in the ROI during the previous calendar year (2020) and since reporting commenced. This builds on previous reports submitted annually to the ROI Health and Safety Authority (HSA) since 2006.[8-20]

2 METHODS

The methodology behind THOR has been described previously in detail. In brief, participating physicians report new cases of work-related disease seen in their clinic. All ROI physicians report via our online web form and either report every month ('core' reporters – EPIDERM; SWORD and OPRA) or for one randomly assigned month per year ('sample' reporters – THOR-GP). Reporters are requested to give information on diagnosis, age, sex, geographical location, occupation, industry and suspected agent(s). The occupation and industry are coded using the Standard Occupational Classification (SOC) and the Standard Industrial Classification (SIC), respectively.[21,22] Suspected agents are coded using in-house coding schemes developed in conjunction with the Health and Safety Executive (HSE) in the UK (Appendix 1 and 2). All coding is undertaken independently by two researchers, and any discrepancies are reconciled by a third person.

Physicians reporting to EPIDERM are requested to assign their case to one or more of the following major sub-groups: contact dermatitis (CD), contact urticaria (CU), folliculitis/acne, infection, mechanical dermatoses, nail disorders, neoplasia, and "other dermatoses" (with the ability to specify the diagnosis if the latter is chosen). Similarly, the sub-groups for chest physicians reporting to SWORD are occupational asthma, inhalation accidents, allergic alveolitis, bronchitis/emphysema, infectious disease, non-malignant pleural disease (NMPD), mesothelioma, lung cancer, pneumoconiosis, and "other respiratory disease". Physicians reporting to OPRA and THOR-GP (who can return case details for all causes of occupational ill-health) record the diagnosis which is subsequently coded using the International Classification of Disease 10th Revision (ICD-10) [23] so that comparisons can be made between reporting schemes.

Cases of occupational disease reported to EPIDERM, SWORD and OPRA by physicians in the ROI from 2005 to 2020 have been extracted from the databases and analysed using the statistical package SPSS V25.0.

Annual average incidence rates (per 100,000 employed) of dermatologist and chest physician reported WRI were estimated based on a previously published methodology.[23] In brief, numerators were adjusted for participation (the proportion of physicians participating in THOR-ROI) and response (the proportion of participants actively responding by either returning cases or declaring 'I have nothing to report this month') whilst the denominator was the total number of persons employed from 2005-2020 obtained from the ROI National Household Survey.[24] Both 'unadjusted' (no adjustment for participation and response) and 'adjusted' (adjustment for participation and response) rates are presented. Incidence rates were calculated for total work-related skin disease, CD, total work-related respiratory disease, asthma, and asbestos related diseases. The numbers of actual case reports in other diagnostic sub-groups were too low to accurately determine meaningful incidence rates. Incidence rates based on OP data were not calculated because it was not possible to accurately determine the population covered by OPs (access to an OP within the ROI is biased towards the public sector and larger employers).

However, analyses of trends in number of reported cases over time (total, mental ill-health, musculoskeletal and skin) were investigated based on reports to OPRA. The number of cases reported to other schemes and for other diagnoses was not sufficient to permit meaningful time trend analysis. The STATA software command xtnbreg was used to fit longitudinal, negative binomial (i.e. over-dispersed) Poisson models with random effects.[25] In these models, the dependent variable was the number of actual cases, including zeros, per reporter per month; the main 'covariate' is calendar time.

The aim of the analysis is to estimate the relationship between annual ROI number of reported cases and time, after adjusting for potential confounders. Numbers of cases might vary from year to year solely because of changes in the size of the ROI working population. Therefore, estimated population sizes for each year were included in the model as an 'offset'; this feature means that the model estimates change in rates, not changes in case counts. Apart from 'calendar time', the other variables included in the regression models as covariates were 'season' and 'first month as a new reporter' as these are factors that can influence the reported incidence levels.

Changes in number of reported cases were estimated in two different ways:

1) 'non-parametric' approach: the model contained separate indicator variables for different years. In the current analyses, 2020 was taken as the reference year and the percentage increase or decrease in number of reported cases to 2020 was estimated. These analyses had no in-built assumptions about the pattern of change over time.

2) 'parametric' approach with a continuous time variable measured on a scale of years. The statistical models for these analyses assumed that the percentage change from one year to the next is a constant throughout the relevant period.

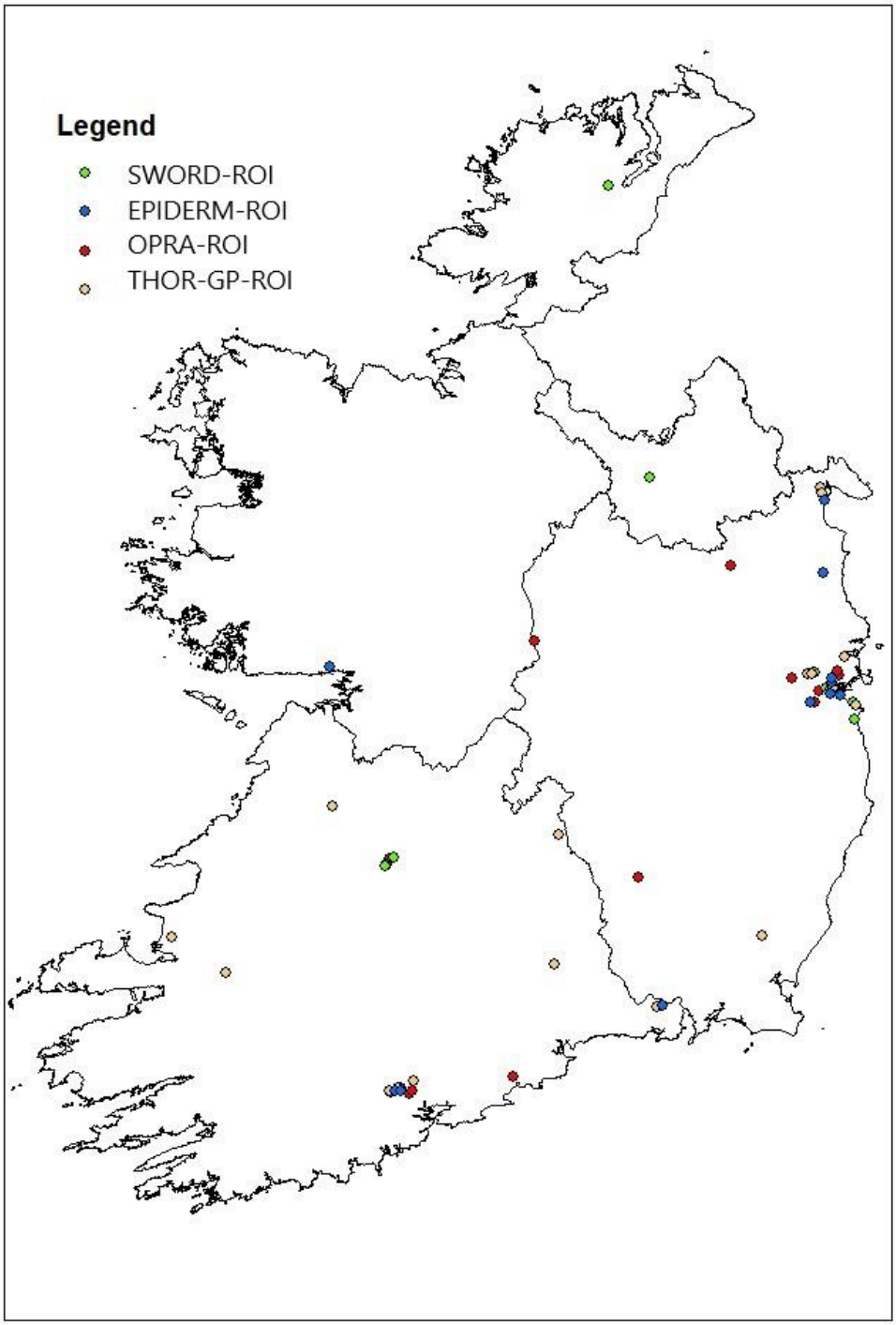
Ethics Committee approval has been given for THOR in the Republic of Ireland by the Public Health Research Ethics Committee of The Royal College of Physicians of Ireland and the Irish College of General Practitioners.

3 RESULTS

3.1 PARTICIPATION

In total, 27 OPs, 20 GPs, 12 dermatologists and 9 chest physicians were enrolled in THOR-ROI in 2020 (Figure 1). Of the 12 dermatologists, 3 (25%) actively participated in 2020 (i.e. returned a web form at least once either containing cases or declaring 'I have nothing to report this month'), with nine dermatologists actively participating (submitted at least once either a case or a nil return declaring 'I have nothing to report this month') during 2005-2020. Of the nine chest physicians, 3 (33%) actively reported in 2020. Overall, 7 chest physicians have been actively participating during 2005-2020. Of the 27 OPs enrolled in OPRA-ROI, 6 (22%) actively participated in 2020, with 22 OPs actively participating during 2007-2020. Of the 20 GPs enrolled in THOR-GP-ROI in 2020, 4 (20%) actively participated in 2020, with 14 GPs actively participating during 2015-2020.

Figure 1: Location of THOR-ROI reporters



3.2 OVERVIEW OF 2020 CASE REPORTS

Reporters to THOR-ROI returned 93 cases and 48 nil returns in 2020[1]. The number of cases, nil returns and participating physicians for 2020 compared to the 2019 are presented in Table 1.

Table 1: Number of physicians, cases and nil returns reported by scheme in 2020 and 2019.

	January – December 2020			**January – December 2019***		
	Physician	Cases	Nil	Physicians	Cases	Nil
OPRA	27	40	24	26	80	33
EPIDERM	12	23	21	13	14	18
SWORD	9	27	0	10	12	0
THOR-GP	20	3	3	20	3	3

*Totals may have increased from previous reporting due to the submission of late cases.

The 93 cases reported to THOR-ROI in 2020 comprised of 40 cases reported by OPs to OPRA-ROI, 27 respiratory cases reported by chest physicians to SWORD-ROI, 23 skin cases reported by dermatologists to EPIDERM-ROI, and 3 cases reported by general practitioners to THOR-GP-ROI (Table 2).

[1] nil return = a physician tells us that they did not see any cases of work-related ill-health in their reporting month

Table 2: Number of cases / diagnoses reported to SWORD-ROI, EPIDERM-ROI, OPRA-ROI and THOR-GP-ROI, 2020

	Diagnosis	SWORD-ROI	EPIDERM-ROI	OPRA-ROI	THOR-GP-ROI[a]
Skin disease	Contact dermatitis	/	23	4	0
	Urticaria	/	1	0	0
	Other skin	/	0	0	0
	Total skin diagnoses	/	24	4	0
	Total skin cases	/	23	4	0
Respiratory disease	Asthma	18	/	0	0
	Inhalation accidents	4	/	0	0
	Bronchitis	1	/	0	0
	Infection	0	/	0	1
	Non-malignant pleural disease	1	/	0	0
	Mesothelioma	1	/	0	0
	Lung cancer	1	/	0	0
	Pneumoconiosis	1	/	0	0
	Other respiratory disease	2	/	1	0
	Total respiratory diagnoses	29	/	1	1
	Total respiratory cases	27	/	1	1
Mental ill-health	Anxiety and depression	/	/	4	0
	Post-traumatic stress disorder	/	/	2	
	Other work stress	/	/	7	0
	Other mental ill-health	/	/	2	0
	Total mental ill-health diagnoses	/	/	15	0
	Total mental ill-health cases[b]	/	/	13	0
Musculoskeletal disorders	Upper limb	/	/	8	2
	Spine/back	/	/	8	0
	Lower limb	/	/	2	0
	Other musculoskeletal	/	/	5	0
	Total musculoskeletal diagnoses	/	/	23	2
	Total musculoskeletal cases[b]	/	/	20	2
Other work-related illness	Total other diagnosis	/	/	4	0
	Total other cases	/	/	4	0
	Total diagnoses	**29**	**24**	**47**	**3**
	Total cases[b]	**27**	**23**	**40**	**3**

[a] NB GPs report on a 'sample' basis for only 1 randomly assigned month per calendar year

[b] A case may have been assigned to more than one disease group (for example, musculoskeletal and mental ill-health)

All 23 of the cases reported to EPIDERM-ROI had a diagnosis of contact dermatitis (CD; 14 diagnosed as allergic, eight as irritant and one as allergic and irritant). One case also had a diagnosis of contact urticaria. The industry and occupation of cases were reported in:

- Health and social care (4 cases): nurse (4 cases)
- Agriculture (2 cases): farmer (2 cases)
- Manufacturing (3 cases): tool maker (1 case) and craft worker (1 case); baker (1 case)
- Wholesale and retail trade; repair of motor vehicles and motorcycles (2 cases): mechanics (2 cases)
- Transportation and storage (1 case): packing (1 case)
- Hotel and restaurants (2 cases): chef (1 case); kitchen worker (1 case)
- Professional, scientific and technical activities (1 case): laboratory technician (1 case)
- Public administration and defence (1 case): mechanic (1 case)
- Other service activities (7 cases): beautician (3 cases); hairdresser (4 cases).

In total, 14 agents were associated with the 23 reported cases. These included preservatives (9 times), water and wet work (6 times), rubber chemicals and materials (4 times), nickel and its compounds (3 times), petroleum oils (3 times), protective clothing and equipment (twice), acrylics and acrylates (twice), and the following all

cited once: dyes and pigments, cleaning materials, cosmetics, hairdressing material, formaldehyde, plants and scrubbing.

The 27 cases (29 diagnoses) reported to SWORD-ROI included the following:

- 18 cases of occupational asthma: (1 due to sensitization, 6 due to irritation and 11 due to sensitization and irritation),
- 4 cases of inhalation accidents,
- 1 case of bronchitis,
- 1 case of non-malignant pleural disease (predominantly plaques),
- 1 case of mesothelioma,
- 1 case of pneumoconiosis,
- 1 case of lung cancer,
- 2 'other' respiratory diseases (diagnosed as reactive upper-airways dysfunction syndrome and organic dust toxic syndrome)

The most frequently reported industry sectors for the 27 cases were construction (52%) followed by public administration and defence (7%). The most frequently reported occupations were general operative in construction (41%). The following 19 agents were associated with the 27 cases of work-related respiratory disease: isocyanates (11 times), paints (3 times), coal, rock and builder dust (2 times), esters (2 times), asbestos (2 times), petroleum oils (2 times), radon and other gases (2 times) and each of the following cited once – dusts, soaps and detergents, fertilisers, isopropyl alcohol, formaldehyde, aliphatic polyamines, petroleum distillates and related materials, woodchip solvents, aluminium compounds, coal, food, and anhydrides.

It should be noted that majority of the occupational asthma case reports (11 out of the 18 occupational asthma cases) reported to SWORD-ROI in 2020 were due to an

incident that happened at a single site and were reported to SWORD-ROI by a single chest physician. All 11 cases were males with a mean age of 52 years (age range 25 – 70 years) who worked as general operative in the construction sector. All 11 case reports had occupational asthma due to sensitization and irritation with exposure to isocyanate insulation compounds as the suspect agent.

The 40 cases (47 diagnoses) reported to OPRA-ROI in 2020 were predominantly cases of musculoskeletal (50%) followed by mental ill-health (33%), with smaller proportions of skin (10%), 'other' WRI (10%) and respiratory ill-health (3%).

In terms of the 20 musculoskeletal ill-health cases (23 diagnoses) reported to OPRA-ROI, upper limb and spine / neck / back problems were the most frequently reported diagnoses (35% and 35%, respectively), followed by other musculoskeletal problems (22%) and lower limb disorders (9%). Majority of these 2020 musculoskeletal cases were from the health and social care sector (95%); with frequently reported occupations within this industry sector being nurses (35%) and nursing auxiliaries (40%). The most frequently reported tasks included accidents (54%) and heavy lifting/ carrying/ pushing/ pulling (25%); while accidents (50%) and materials handling (27%) were the most frequently reported movements.

The most frequently reported industry sector for the 13 mental ill-health cases (15 diagnoses) was health and social care (85%) with frequently reported occupations within this industry sector being nurses (23%), nursing auxiliaries (15%), and doctors (15%). The types of events reported as associated with these cases included factors intrinsic to the work (44%, including workload/demand, organisational factors, and work schedule); interpersonal relationships (19%, including difficulties with co-workers/ managers etc.); traumatic events (19%, including violence at work / verbal

abuse / sexual assault, traumatic experience of other people, injury or fatality at work and disciplinary action/ accusation/ legal proceedings etc.); changes at work (13%, including reductions in staff available and relocation); and other events (6%, personal characteristics).

Four skin cases were reported by OPs in 2020 to OPRA-ROI, all diagnosed as CD. All cases were from the health and social care sector (two nurses and two midwives). The agents associated with the CD cases were cited as gloves and other protective clothing/ PPE, wet work, sterilising and disinfecting agents, and synthetic rubber. The one respiratory case reported by OPs in 2020 to OPRA-ROI was a case of 'other' respiratory disorder (post covid-19 cough) in a healthcare assistant in the health and social care sector attributed to infection with SARS-CoV-2 virus. There were four further cases of 'other' WRI reported by OPs in 2020 to OPRA-ROI. One case was diagnosed with post viral fatigue caused due to an infection with SARS-CoV-2 virus; another case had long covid-19 symptoms that included fatigue, gastrointestinal upset, loss of appetite, nausea and diarrhoea due to prior infection with SARS-CoV-2 virus; and another case was diagnosed with tuberculosis acquired by clinical contact. These three cases were all working in the health and social care sector as nurses. The fourth reported case was diagnosed as skull fracture and epidural hematoma due to a fall in a mechanic working in the transport industry.

General practitioners reported three cases of WRI in 2020. The one respiratory case was reported as 'other' respiratory disorder (cough, and shortness of breath) in a GP practice manager in the health and social care sector attributed to infection with SARS-CoV-2 virus. The two other cases were reported under the musculoskeletal category, and specified as forearm and wrist pain in a general operative attributed to packaging

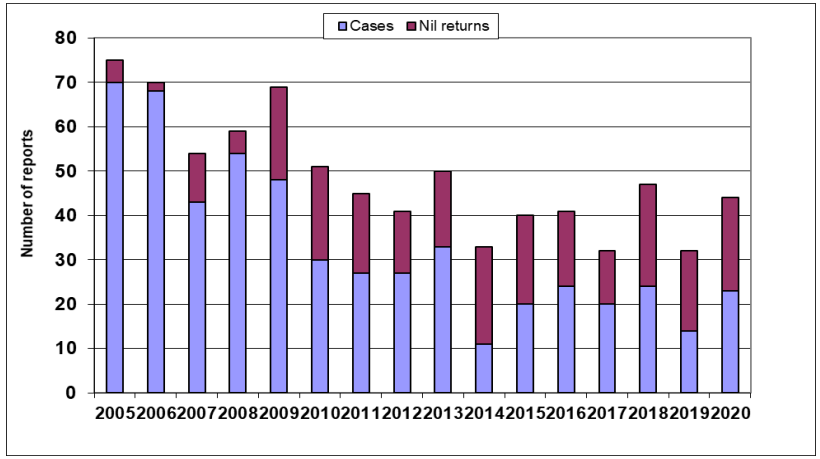
or sorting involving fine hand; as well as shoulder injury in a receptionist attributed to heavy lifting /carrying /pushing / and pulling involving materials handling.

3.3 INCIDENCE RATES AND TRENDS IN INCIDENCE RATES

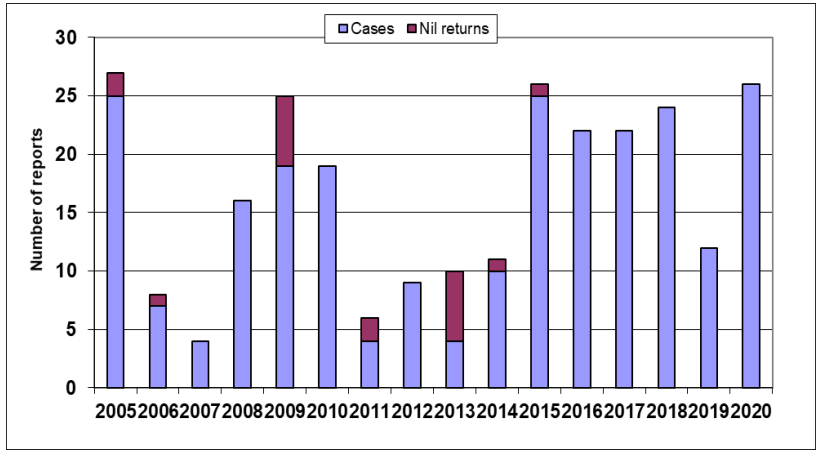
The number of reports received for EPIDERM-ROI, SWORD-ROI, OPRA-ROI and THOR-GP-ROI by year are shown in Figure 2, whilst Figure 3 shows the cases per active reporter per year.

Figure 2: Reports (cases and nil returns) in a) EPIDERM-ROI (2005-2020) b) SWORD-ROI (2005-2020) c) OPRA-ROI (2007-2020) and d) THOR-GP-ROI (2015-2020)

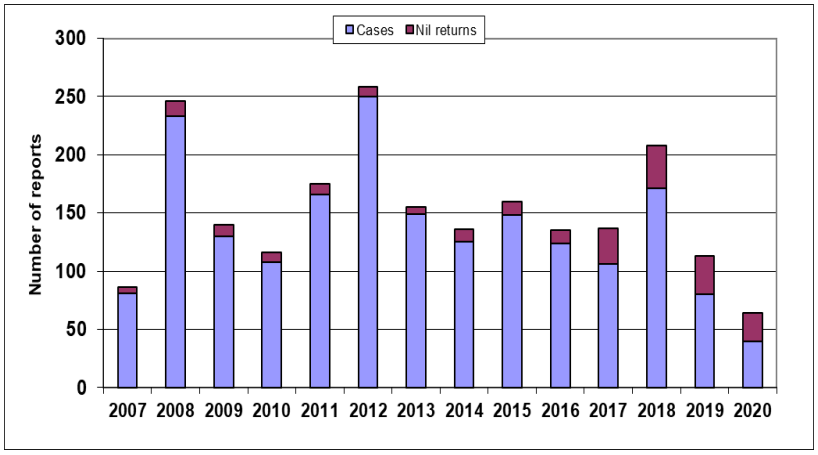
a) EPIDERM-ROI (Dermatologists)



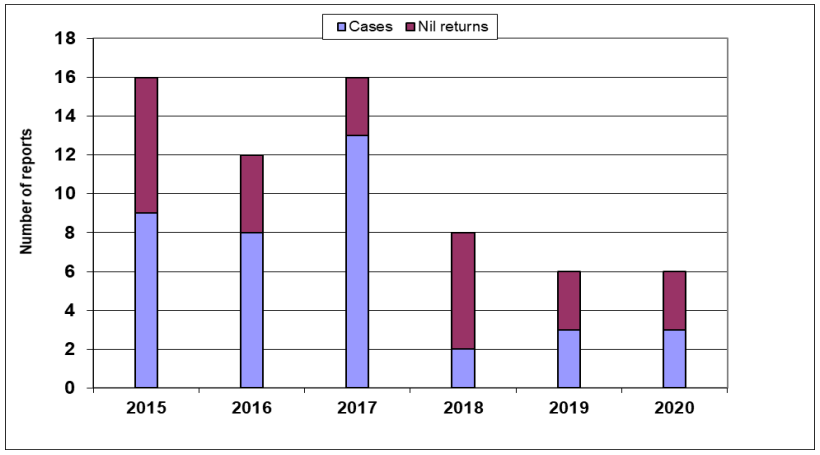
b) SWORD-ROI (Chest physicians)



c) OPRA-ROI (Occupational physicians)

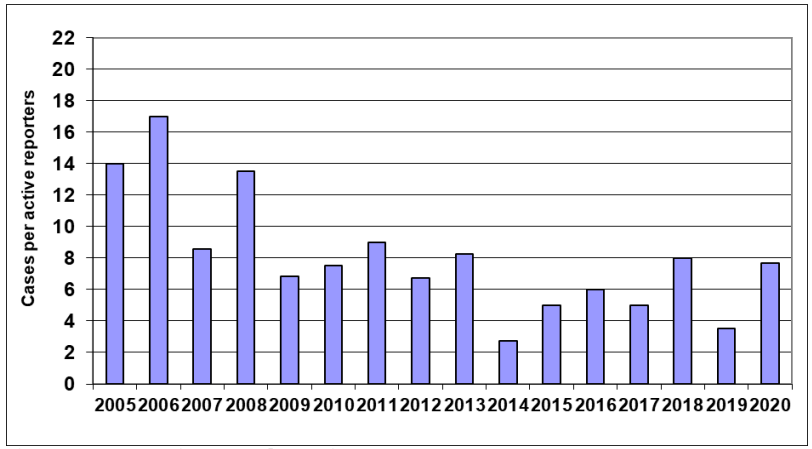


d) THOR-GP-ROI (General practitioners)

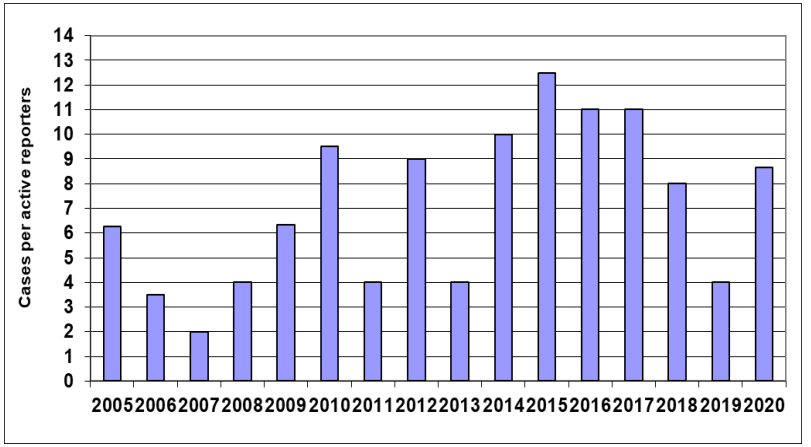


NOTE: Scale differences

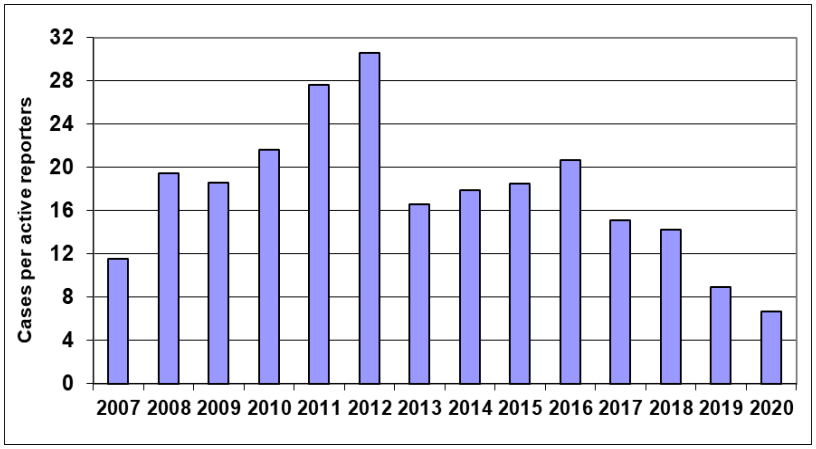
Figure 3: Cases per active reporter* in a) EPIDERM-ROI (2005-2020) b) SWORD-ROI (2005-2020) c) OPRA-ROI (2007-2020) and d) THOR-GP-ROI (2015-2020)



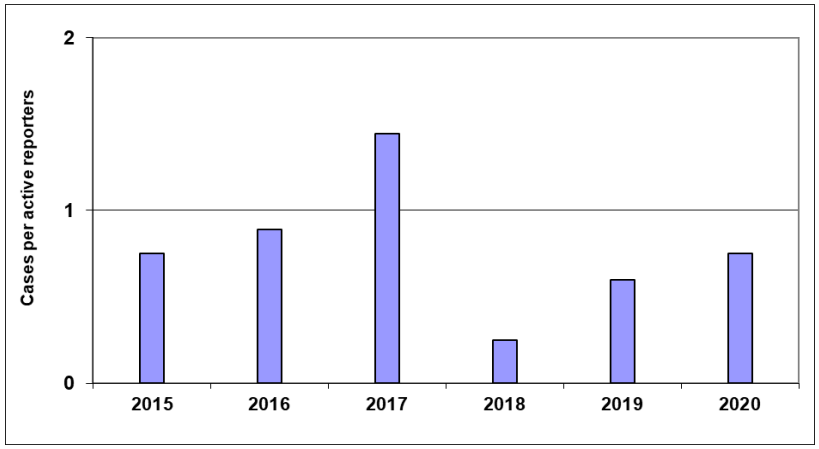
a) EPIDERM-ROI (Dermatologists)



b) SWORD-ROI (Chest physicians)



c) OPRA-ROI (Occupational physicians)



d) THOR-GP-ROI (General practitioners)

***An active reporter is defined as someone who returns a case report or responds 'I have nothing to report' in a calendar year. ** The number of cases per active reporters can be less than one when the number of active reporters, that is reporters who reported cases or nil returns ('I have nothing to report' responses), is greater than the number of cases. NOTE: Scale differences.**

The annual average incidence rate for dermatologist reported skin disease in the ROI was 1.7 per 100,000 employed, per year (Table 3). After adjusting for 'non-participation' and 'non-response', this increased to an estimate of 16.1 per 100,000 employed.

For chest physicians in the ROI, the annual average incidence rate of total respiratory disease was 0.8 per 100,000 employed per year, rising to 20.8 per 100,000 employed, per year, after adjusting for 'non-participation' and 'non-response'.

Analyses of trends in number of reported cases based on OP reports to OPRA-ROI suggest an (overall) statistically significant decrease in number of reported cases for total WRI, mental ill-health, musculoskeletal disease, and skin disease between 2007 and 2020 (Table 4). The graphs showing relative rates by year (Figure 4) suggest that there may not be an overall declining trend in the incidence of work-related disease over time and that the number of reported cases in total work-related disease appears to be stable between 2017 and 2019.

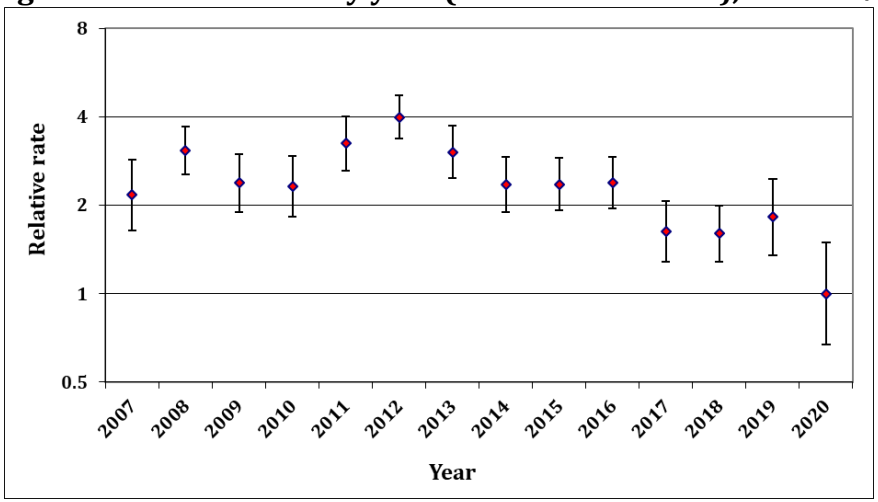
Table 3: Annual average 'crude' and 'adjusted' incidence rates per 100,000 persons employed of work-related skin and respiratory disease reported by dermatologists and chest physicians to SWORD and EPIDERM in the Republic of Ireland (2005-2020)

	Annual, average incidence rate per 100,000 employed	
	'Crude'	**'Adjusted'**
Respiratory (chest physicians)		
All	0.8	20.8
Asthma	0.3	7.1
Asbestos related	0.2	6.6
Skin (dermatologists)		
All	1.7	16.1
Contact dermatitis	1.6	15.5

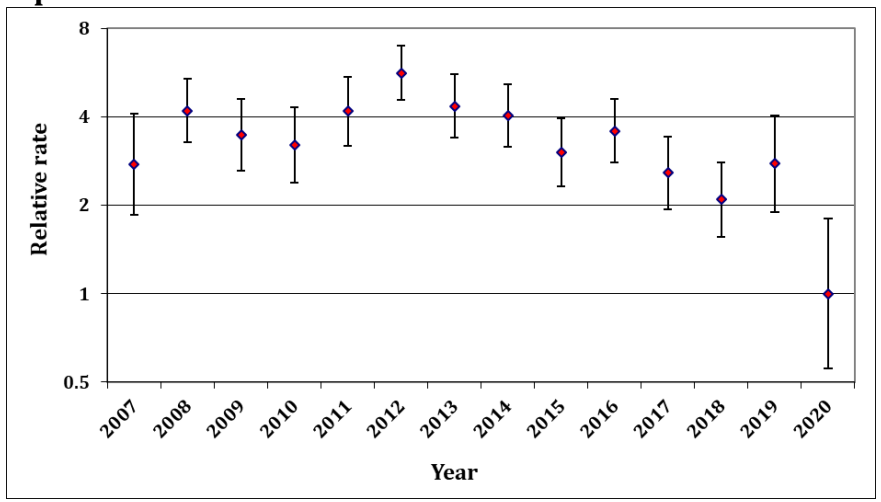
Table 4: Average annual percentage change in reported cases in work-related illness as reported by occupational physicians to OPRA, 2007-2020

	ESTIMATED % CHANGE (95% CONFIDENCE INTERVAL)
Total work-related	-4.8 (-6.4, -3.1)
Mental ill-health	-4.5 (-6.6, -2.4)
Musculoskeletal	-5.7 (-8.3, -3.1)
Skin	-5.7 (-10.1, -1.1)

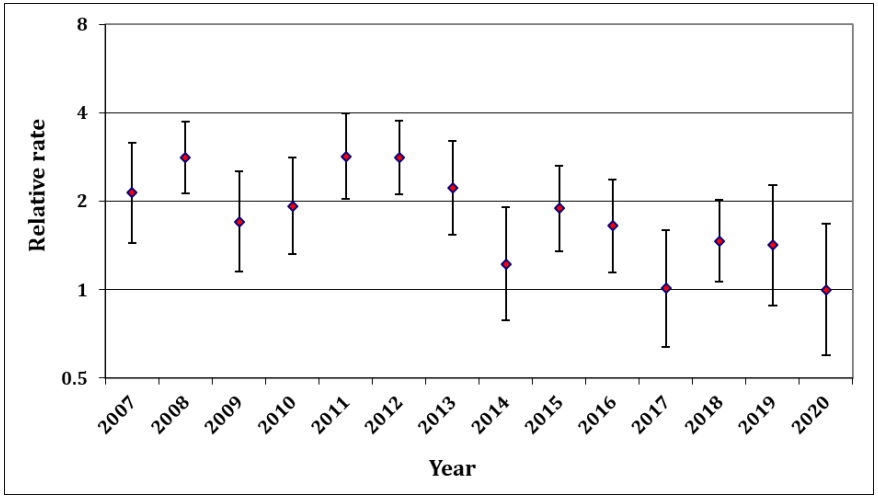
Figure 4: Relative risk by year (2020 estimate = 1), with 95% comparison intervals



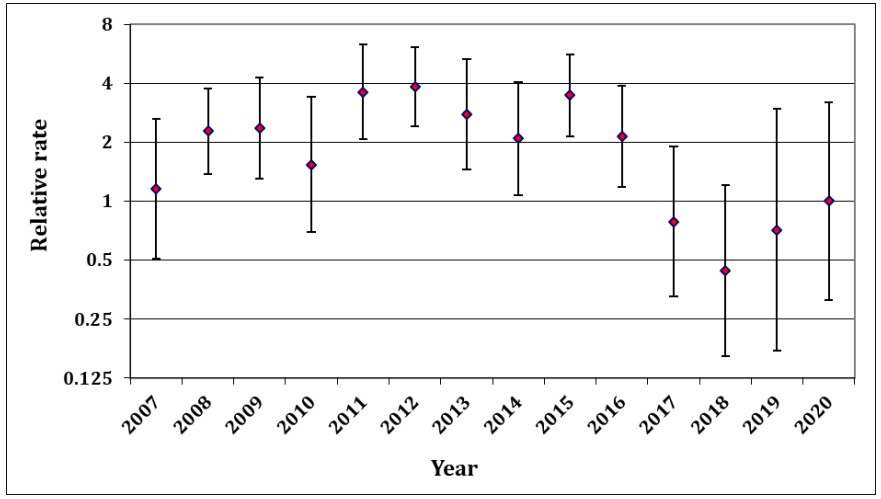
a) Total work-related illness



b) Mental ill-health



c) Musculoskeletal



d) Skin

***Note change in y-axis scale to the logarithmic scale and scale differences**

3.4 OCCUPATIONAL SKIN SURVEILLANCE (EPIDERM): 2005-2020

3.4.1 DIAGNOSES

In total, 534 case reports were reported by dermatologists to EPIDERM-ROI between January 2005 and December 2020. These 534 case reports produced 526 diagnoses; 13 cases were not assigned a diagnosis (however, information on occupation, industry and suspected agent were provided). The most frequently reported skin diagnosis in the ROI was CD (98%) (Table 5).

Table 5: Number and type of diagnoses reported by dermatologists to EPIDERM-ROI (2005-2020)

	Number (%)
Contact Dermatitis	515 (98%)
• **Allergic**	• 292 (57%)
• **Irritant**	• 180 (35%)
• **Mixed**	• 42 (8%)
• **Unclear**	• 1 (<1%)
Contact urticaria	6 (1%)
Folliculitis/acne	0
Infective	1 (<1%)
Mechanical	0
Nail	3 (<1%)
Neoplasia	0
Other dermatoses	1 (<1%)
Total cases	**534**
Total diagnoses	**526* (100%)**

*13 cases were not assigned a diagnosis. However, information on occupation, industry and suspected agent was provided

3.4.2 AGE AND SEX

Overall (2005-2020) cases of CD in the ROI were most frequently reported in the 25-34 year age group for both males and females (Figure 5). More cases with reported CD

were females (56%), and females were younger than males (mean age; females 35 years, males 40 years) (Table 6).

Figure 5: Proportion of cases of contact dermatitis reported to EPIDERM-ROI by age group and sex (2005-2020)

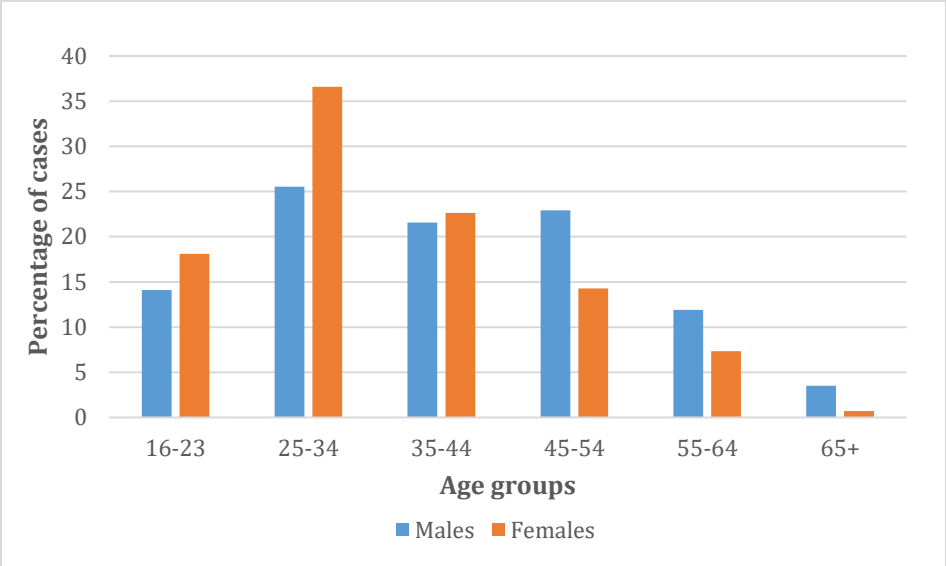


Table 6: Age and sex of contact dermatitis diagnoses in EPIDERM-ROI (2005-2020)

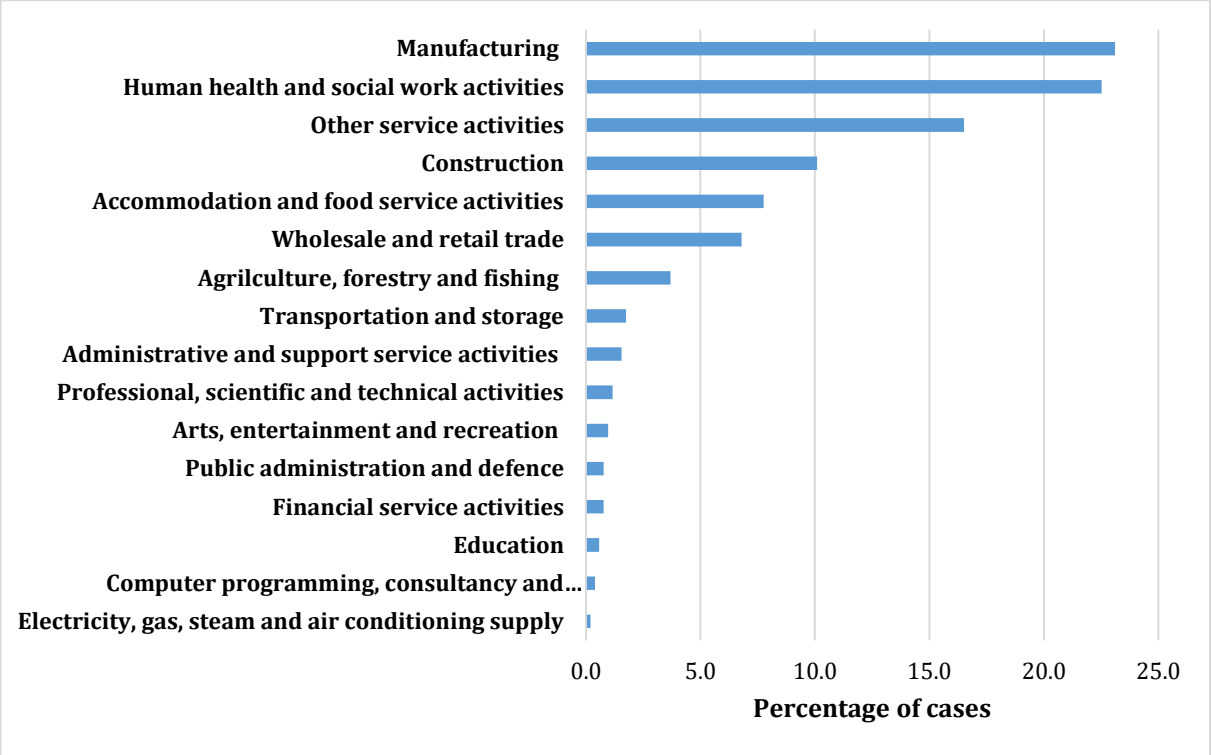
DIAGNOSIS	MALES	FEMALES	ALL
Allergic CD			
Number of diagnoses (%)	143 (49%)	149 (51%)	292 (100%)
Mean age (years)	41	36	39
Age range (years)	15-81	17-64	15-81
Irritant CD			
Number of diagnoses (%)	67 (37.2%)	112 (62.2%)	180 (100%)*
Mean age (years)	37	33	34
Age range (years)	16-65	19-77	16-77
Mixed CD			
Number of diagnoses (%)	17 (39.5%)	26 (60.5%)	43 (100%)**
Mean age (years)	40	40	40
Age range (years)	19-54	17-65	17-65
All CD			
Number of diagnoses (%)	227 (44.1%)	287 (55.7%)	515 (100%)*
Mean age (years)	40	35	37
Age range (years)	15-81	17-77	15-81

*1 diagnosis had no sex assigned.
**Including one case that is unclear which type of CD it is.

3.4.3 INDUSTRY AND OCCUPATION

The most frequently reported industrial sector for cases of CD reported to ROI was manufacturing followed by health and social care and 'other service activities', which includes hairdressing and other beauty treatments (Figure 6).

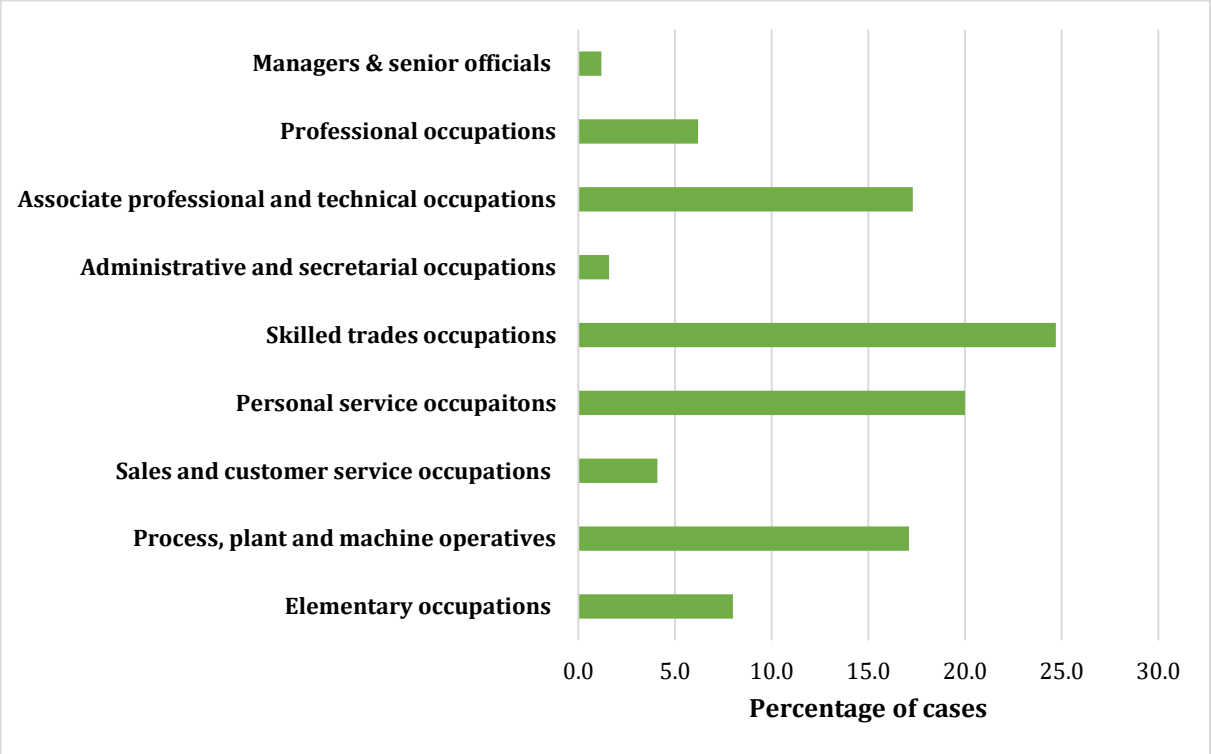
Figure 6: Proportion of cases of contact dermatitis reported to EPIDERM-ROI by Standard Industrial Classification (SIC), 2005-2020



The most frequently reported occupations for cases of CD reported to EPIDERM-ROI were nurses (11.7% of the 515 CD cases) which fall under SOC group 3 'Associate professional and technical occupations' (Figure 7), hairdressers (7.8%) and beauty therapists (7.4%) which fall under SOC group 6 'Personal service occupations', and chemical and related process operatives (7.4%) which fall under SOC group 8 'Process, plant and machine operatives'.

Of the 11 non-CD cases reported to EPIDERM-ROI, six cases of contact urticaria were reported in a nurse, a cleaner, a carpenter, a dental student, a baker and a chef. Three cases of nail disorder (a case with a co-diagnosis of oncholysis of fingernails) were reported in two beauticians and a nail technician; and one case of (unspecified) infective disease was reported in an agricultural student.

Figure 7: Proportion of cases of contact dermatitis reported to EPIDERM-ROI by Standard Occupational Classification (SOC), 2005-2020



3.4.4 SUSPECTED AGENTS

Up to six suspected agents may be cited for each case report, and the agents most frequently associated with CD are shown in Table 7. The most frequently reported agents for the ROI were rubber chemicals and materials, wet work, nickel and preservatives.

For allergic contact dermatitis (ACD) rubber chemicals and materials were the agents most often associated with case reports in the ROI, for irritant contact dermatitis (ICD) the agent most frequently reported was wet work, while for mixed contact dermatitis, nickel was most frequently reported.

Table 7: Most frequently reported agents* for contact dermatitis, reported by dermatologists to EPIDERM-ROI (2005-2020) – number of cases and (percentage of total cases)

	Number	(%)
Rubber chemicals & materials	121	23
Wet work	77	15
Nickel & its compounds	69	13
Preservatives	66	13
Chromium & its compounds	45	9
Acrylics & acrylates	41	8
PPE	29	6
Cobalt & its compounds	28	5
Resins	27	5
Plants	26	5
Hairdressing chemicals	25	5
PPD	21	4
Drugs & medicaments	20	4
Perfumes/fragrance	18	3
Soaps & detergents	17	3
Food, additives and flavourings	16	3
Number of cases	**515**	

*Each case can have more than one reported agent. Therefore, the percentage of cases with each agent may equal more than 100

The suspected agents associated with the six cases of contact urticaria reported to EPIDERM-ROI were latex, wood shavings, fish, cobalt chloride, and nickel sulphate. The (unspecified) infective case was associated with 'coming into contact with infected animals' and the 3 nail cases were attributed to methacrylate nail series, nickel, plants, and acrylics and acrylates.

3.5 SURVEILLANCE OF WORK-RELATED AND OCCUPATIONAL RESPIRATORY DISEASE (SWORD): 2005-2020

3.5.1 DIAGNOSES

The addition of the 27 cases reported in 2020 brings the total number of cases reported by chest physicians to SWORD-ROI (2005-2020) to 251. These produced 285 diagnoses, with 6 cases not being assigned a diagnosis (involving a labourer exposed to silica, a dentist exposed to adhesive/bonding agents, a machine operator exposed to urea formaldehyde, a labourer exposed to acid anhydrides, and a labourer and a tunnel worker - both exposed to asbestos). Diagnoses of asthma comprised the largest proportion of cases (38%) and the most of all diagnoses (33%) reported to SWORD-ROI (Table 8).

Table 8: Number and type of diagnoses reported by chest physicians to SWORD (2005-2020) in the Republic of Ireland

	Number	(%)
Asthma	95	33%
Inhalation accidents	21	7%
Allergic alveolitis	5	2%
Bronchitis/ emphysema	27	9%
Infectious disease	1	<1%
Non-malignant pleural disease	53	19%
Mesothelioma	10	4%
Lung cancer	10	4%
Pneumoconiosis	42	15%
Other respiratory	21	7%
Total cases	**251**	
Total diagnoses	**285***	**100%**

*six cases were not assigned to a diagnosis. However, information on occupation, industry and suspected agent was provided.

3.5.2 AGE AND SEX

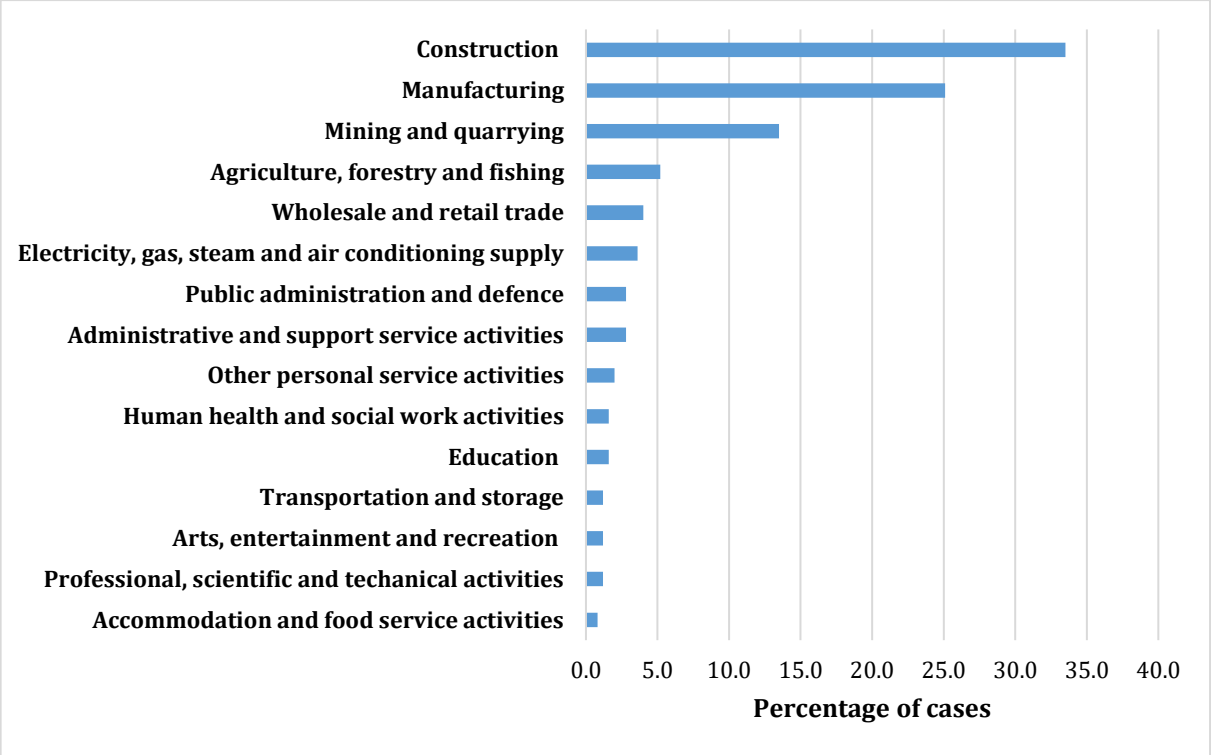
Case reports to SWORD-ROI were predominantly male (85%), with a mean age (male plus female combined) of 57 years (age range 19 - 87 years). Of these, 36 of the case reports were in the 75+ age group (all males), with 43 diagnoses: 23 non-malignant pleural disease, 9 pneumoconiosis, 3 asthma, 3 lung cancer, 2 mesothelioma, 1 bronchitis/emphysema and 2 'other' (diagnosed as asthma overlap syndrome and pleural effusion). The majority of these cases (28 out of 36) were attributed to asbestos exposure, with the remaining attributed to silica (4 cases), coal dust (3 cases) and animals.

Of all asthma cases reported 73% were males with a mean age (male plus female combined) of 47 years (age range 19 - 79 years).

3.5.3 INDUSTRY AND OCCUPATION

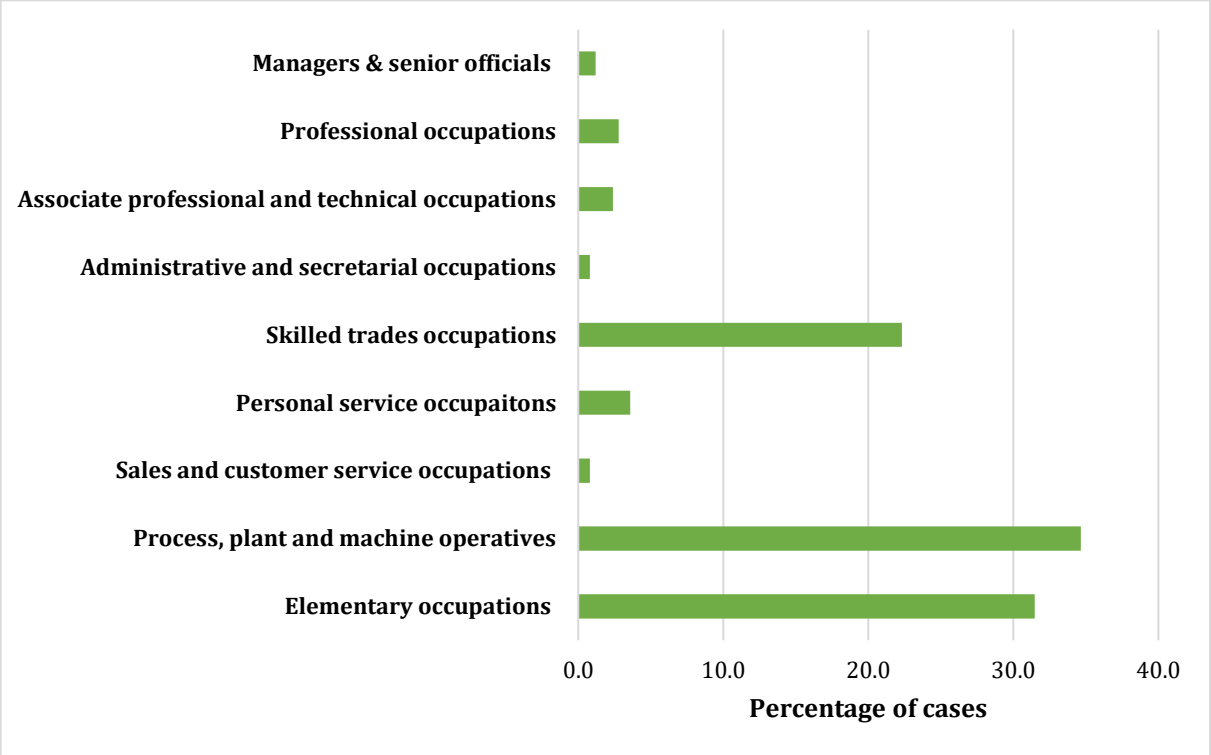
Cases of work-related respiratory disease were most frequently reported in the construction and manufacturing sectors (Figure 8). Within the manufacturing sector, cases were most frequently reported in the manufacturing of non-metallic mineral products (for example, cement), fabricated metal products, chemicals and chemical products, and pharmaceutical products and preparations.

Figure 8: Proportion of cases of respiratory disease reported to SWORD-ROI by Standard Industrial Classification (SIC), 2005-2020



The most frequently reported occupations for cases reported in the ROI were labouring in building and woodworking trades (which fall under the major category of "Elementary occupations") and coal mine operatives (which fall under the major category of "Process, plant and machine operatives") (Figure 9).

Figure 9: Proportion of cases of respiratory disease reported to SWORD-ROI by Standard Occupational Classification (SOC), 2005-2020



3.5.4 SUSPECTED AGENTS

The agents associated with the respiratory diagnoses reported to SWORD-ROI are presented in Table 9. A total of 62 agents were associated with the 95 diagnoses of occupational asthma, with isocyanates, cement, fumes/gases, glues and adhesives and hypochlorites being the most frequently reported.

Asbestos and silica were the most frequently reported agents (cited 13 and 12 times, respectively) for cases of pneumoconiosis. In total, 88 diagnoses were reported as being associated with asbestos; 53 of non-malignant pleural disease, 13 of pneumoconiosis, 10 of mesothelioma, 9 of lung cancer, 1 of bronchitis/emphysema,1 of asthma, and 1 of "other".

Table 9: Suspected agents associated with cases of work-related respiratory disease most frequently reported to SWORD-ROI, (2005-2020)

DIAGNOSIS	SUSPECTED AGENTS (as recorded by the physician)
Asthma	Isocyanates, toluene diisocyanate and di-phenyl methane di isocyanate (15 cases); cement, plaster & masonry (8 cases); fumes/gases (7 cases); glues and adhesives, hypochlorites; exposure to dust/fumes/smoke; wood/wood dust; coal; hairdressing products; soaps and detergents; ammonia and bleaches; other gases; paints, dyes and pigments, inks; oil/diesel fuel; other ethers; acetic acid; zinc; drugs & medicaments; epoxy resins and other polymers; biological substances including food, fungi/moulds/yeast, and other creatures e.g. mites, ticks.
Inhalation accidents	Other gases (3 cases); cleaning materials (2 cases); sterilising agents & disinfectants (2 cases); other esters (2 cases); and ammonia (2 cases).
Allergic alveolitis	Dusts; pathogens & micro-organisms; other veg, fungal agents & pollen; food; and fungi/moulds/yeast.
Bronchitis/emphysema	Coal (14 cases); cement, plaster & masonry (12 cases); exposure to dust/fumes (9 cases); fumes/gases; wood/wood dusts; smoking; oils; fungi/moulds/yeast.
Infectious disease	Toxoplasma.
Benign pleural disease	Asbestos.
Mesothelioma	Asbestos.
Lung cancer	Asbestos and radon.
Pneumoconiosis	Asbestos (13 cases); silica (12 cases); coal (11 cases); cement, plaster & masonry; exposure to dust/fumes; fumes/gases; Other metals; oils; other silicates.
Other respiratory	
Rhinosinusitis / sinusitis	Urea, formaldehyde, ammonia, mix of damp fungi, wood dust, aspartame, oil mist.
Rhinitis (2 cases)	Toluene di-isocyanate (1 case), and 'multiple possible agents' (1 case).
Rhinorrhoea	A specified histamine H2-receptor antagonist (1 case).
Hyposmia	Exhaust fumes (1 case).
Hard metal lung disease	Tungsten (1 case).
Sick building syndrome	Agent not cited (1 case).

Emphysema/focal bronchiectasis	Coal and blast fumes (1 case).
bronchiolitis obliterans organising pneumonia (BOOP)	Mixed brick dust, cement dust, fungi, styrene beads and glues (1 case).
Nasopharyngeal malignancy	Wood dust / varnishes (1 case).
Asthma overlap syndrome	Coal dust / fungal antigen (1 case).
Pleural effusion	Asbestos (1 case).
Organic dust toxic syndrome	Mushrooms (2 cases).

3.6 Occupational Physicians Reporting Activity (OPRA): 2007-2020

3.6.1 DIAGNOSES

A total of 1938 case reports (2089 diagnoses) were reported to OPRA-ROI between January 2007 and December 2020. A breakdown of the cases by major diagnostic group is provided in Table 10. The largest proportion of cases was for mental ill-health (54%), followed by musculoskeletal disorders (33%), with smaller proportions of skin (8%) and respiratory diagnoses (2%).

Work-related stress was the most frequently reported mental ill-health diagnosis reported to OPRA-ROI (58% of the 1132 diagnoses), whilst the most frequently reported musculoskeletal disorder was spine / neck / back disorders (55% of the 686 diagnoses). Diagnoses reported under 'other mental ill-health' included adjustment disorder, burnout, fatigue, overload, traumatic event, social phobia and mixed affective disorder. Whilst 'other' musculoskeletal diagnoses were primarily injuries.

CD was the most frequently reported skin diagnosis to OPRA-ROI (87% of the 171 diagnoses) and 'other' respiratory disease was the most frequently reported respiratory diagnosis (40% of the 40 diagnoses). These diagnoses included sinusitis (5 diagnoses), respiratory rhinitis (2 diagnoses), tuberculosis (2 diagnoses), smoke inhalation, 'upper respiratory tract irritation' / 'acute respiratory tract irritation', reactive airways / bronchial hyper-reactivity, persistent / dry cough, and post-covid cough.

Table 10: Number and type of cases / diagnoses reported by occupational physicians to OPRA-ROI (2007-2020)

	Number	(%)
Skin	**171**	**8**
• **Contact dermatitis**	148	87
• **Other dermatoses**	23	13
Respiratory	**40**	**2**
• **Asthma**	12	30
• **Inhalation accidents**	7	18
• **Infectious disease**	2	5
• **Bronchitis/emphysema**	3	8
• **Other respiratory**	16	40
Musculoskeletal	**686**	**33**
• **Upper limb**	248	36
• **Spine / neck / back**	374	55
• **Lower limb**	40	6
• **Other musculoskeletal**	24	3
Mental ill-health	**1132**	**54**
• **Anxiety and depression**	283	25
• **Adjustment disorder**	128	11
• **PTSD**	28	2
• **Psychotic episode**	1	<1
• **Other work stress**	655	58
• **Other mental ill-health**	37	3
Total other cases/diagnoses	**60**	**3**
Total cases	**1938**	
Total diagnoses	**2089**	**100%**

Note: A case can have more than one diagnosis so the sum of the sub-categories may be greater than the total cases (both by category and overall)

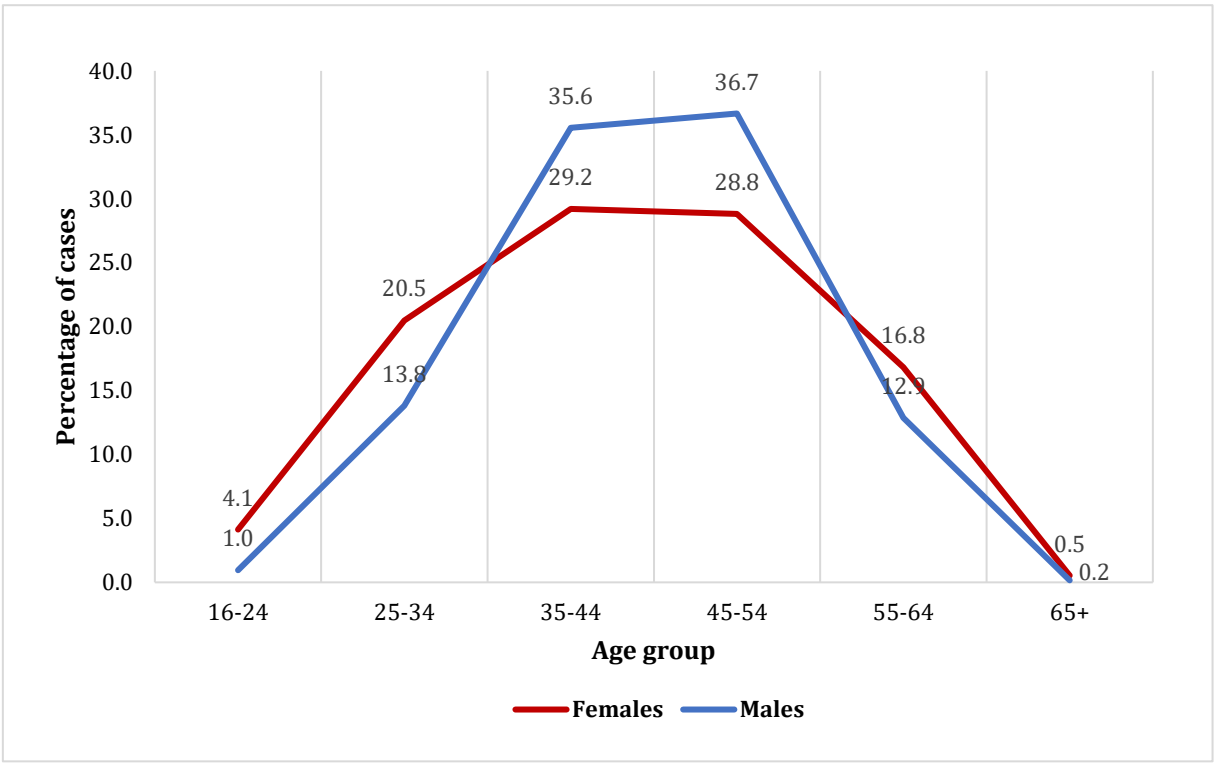
The 60 diagnoses in the 'other' category (OPRA-ROI) were reported as 'assault' (15 cases); noise induced hearing loss (7 cases); sleep problems (5 cases); eye injury (4 cases); latex allergy (2 cases); needle stick injury (2 cases); dry eyes (2 cases); and tinnitus (2 cases). In addition, each of the following diagnoses were reported once: blindness, bladder neck injury, ethanol sensitivity, eye irritation, lead toxicity, chemical splash, conjunctivitis, ear pain, hepatitis C, chest pain, hernia, concussion, well-being

affected by commute, headache, sleep problems, influenza A, 'shift work disorder', epidural hematoma, post viral fatigue, tuberculosis, and long-covid symptoms (which included fatigue, gastrointestinal upset, nausea, diarrhoea, loss of appetite, and brain fog).

3.6.2 AGE AND SEX

The proportions of cases reported to OPRA-ROI by age and sex are shown in Figure 10. Cases were most frequently reported in the 35-44 years of age group for females and 45-54 for males.

Figure 10: Proportion of cases of work-related ill-health reported to OPRA-ROI by age and sex, 2007-2020



3.6.3 INDUSTRY AND OCCUPATION

The majority of the cases reported to OPRA-ROI were reported in health and social care (77%; Figure 11) with cases also frequently reported in transport and storage (12%). These data need to be interpreted cautiously. Some industry sectors such as health and social care may have better provision of occupational health services than other industry sectors in general. A relatively large proportion of physicians participating from one sector may therefore bias the results. The most frequently reported occupations (Figure 12) were nurses (23%) which fall under the major category of 'Associate professional and technical occupations', nursing auxiliaries and assistants (9%) which fall under the major category of 'Personal service occupations', and bus drivers (6%) which fall under the major category of 'Process, plant and machine operative occupations'.

Figure 11: Proportion of cases of work-related ill-health reported to OPRA-ROI by Standard Industrial Classification (SIC), 2007-2020

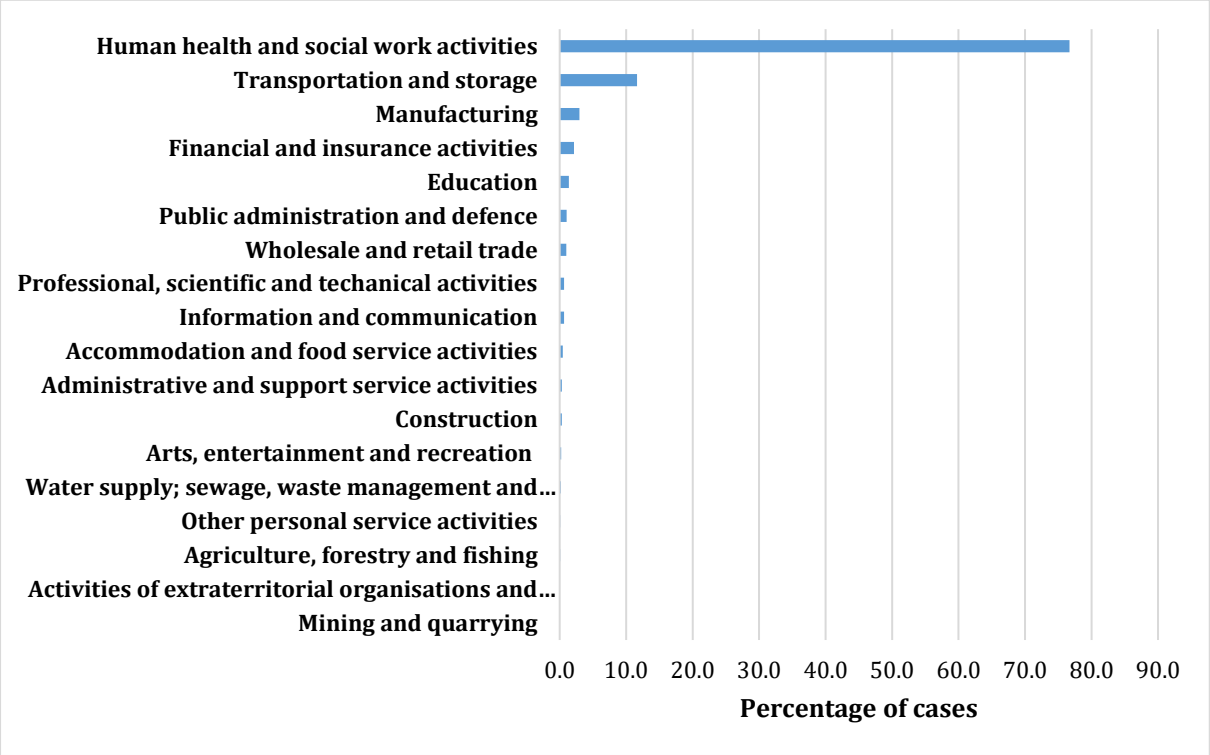
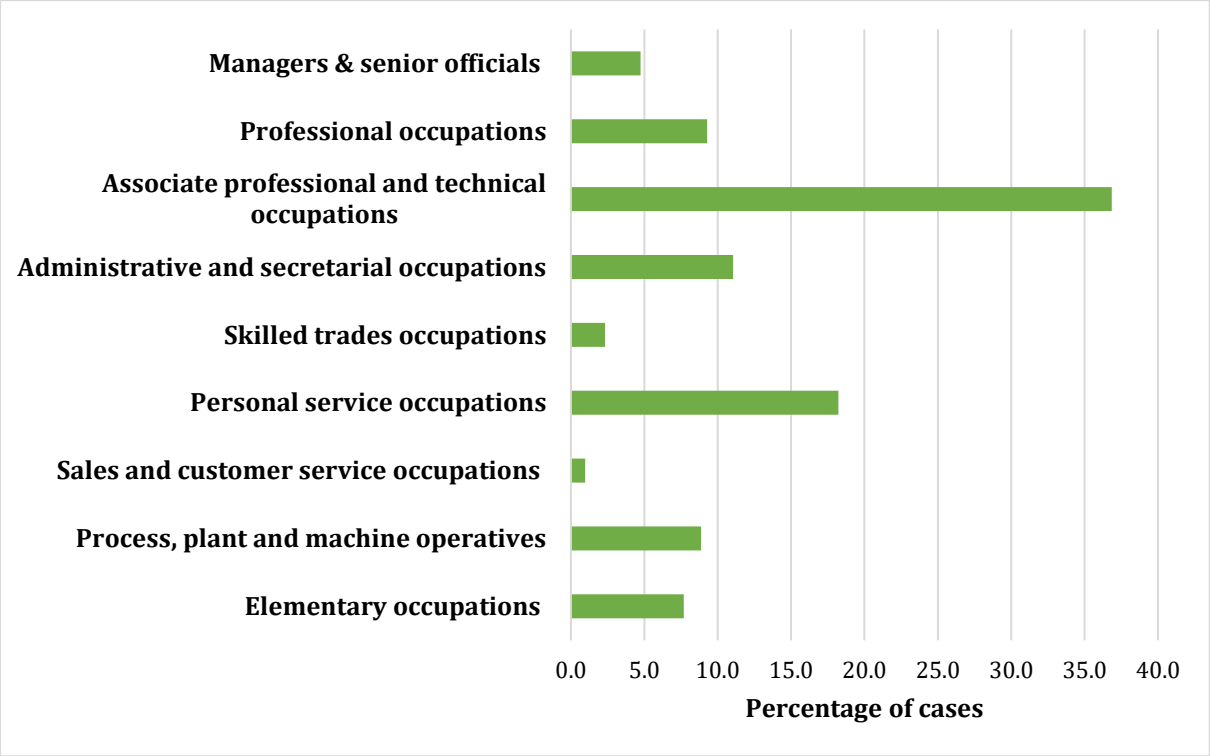


Figure 12: Proportion of cases of work-related ill-health reported to OPRA-ROI by Standard Occupational Classification (SOC), 2007-2020



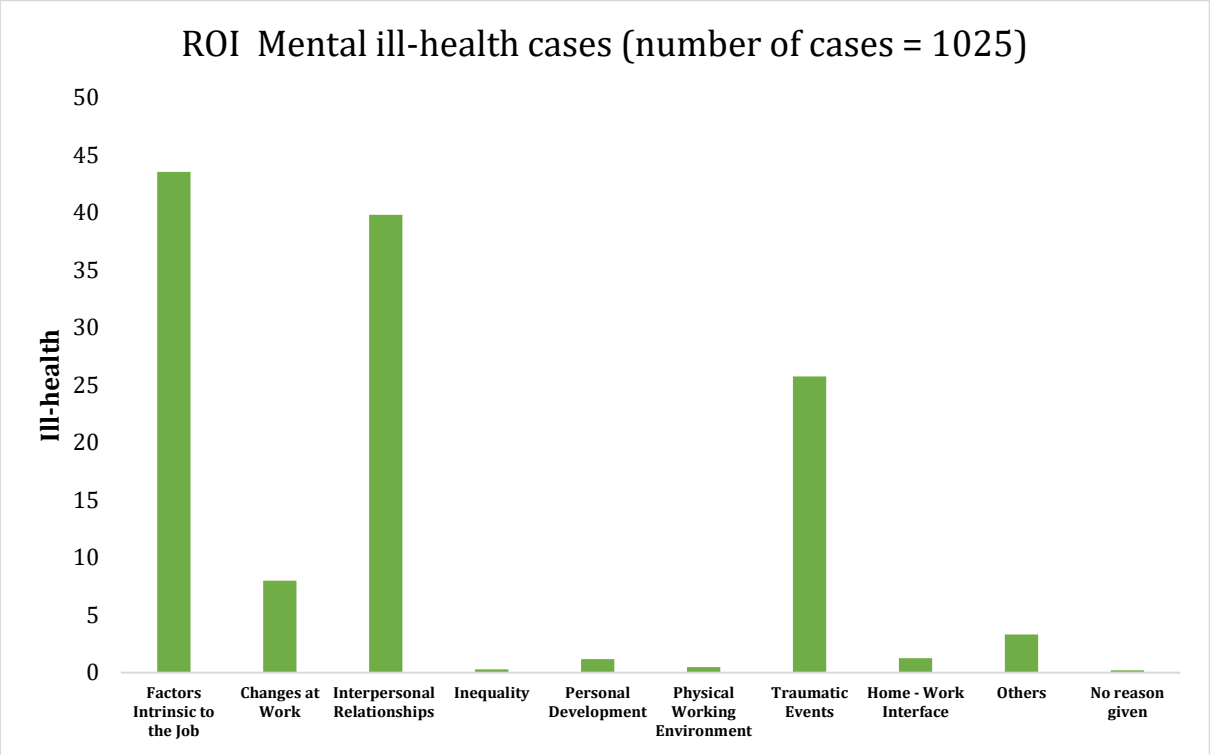
3.6.4 SUSPECTED AGENTS

The most frequently associated precipitating events associated with the 1025 mental ill-health case reports were classified as 'factors intrinsic to the job' (44%) which included 'workload', 'travel', and 'organisational factors'; and 'interpersonal relationships' (40%) which included perceived bullying and difficulties with manager/staff/clients etc. (Figure 13). Other precipitating events reported to OPRA-ROI included 'traumatic events' (26%), for example, assaults at work / verbal abuse at work / witnessing of suicides on railway tracks; and 'changes at work' (8%), for example changes in work content and reduction of resources.

The most frequently associated tasks for the 663 musculoskeletal cases reported to OPRA-ROI were 'lifting/carrying/pushing/pulling' (33%) and accidents (33%), whilst

the most frequently associated movement was 'materials handling' (45%), with a further 34% of cases reported as 'accidents' (Table 11).

Figure 13: Proportion of actual cases of mental ill-health reported to OPRA-ROI by precipitating event, 2007-2020



The most frequently reported agents associated with the 170 skin cases reported to OPRA-ROI were wet work (44%), protective clothing (26%), sterilising and disinfecting agents (22%), soaps and detergents (12%), and rubber chemicals and materials (9%). The agents associated with the 38 respiratory cases included dusts, cleaning materials, sterilising agents & disinfectants, smoke, sick building syndrome, hot work, isopropyl alcohol/ industrial methylated spirit (IPA/IMS), acetic acid and other acids, chromium, chlorine, other biocides, pathogens & micro-organisms, enzymes, wood dust, grain and flour.

Table 11: Proportions of musculoskeletal cases reported to OPRA-ROI (2007-2020) by task and movement

Task / movement	Number	(%)
TASK		
Keyboard work	70	11%
Screwing, cutting	2	<1%
Hammering, chopping, sawing	0	0
Guiding or holding tool	15	2%
Meat boning or filleting	0	0
Packing or sorting	2	<1%
Assembly	2	<1%
Materials manipulation	124	19%
Machine operation	13	2%
Lifting/carrying/pushing/pulling	218	33%
Coordinated whole body movement	1	<1%
Driving	5	1%
Accidents	219	33%
Other	31	5%
Not stated/non-codable	16	2%
MOVEMENT		
Fine hand	19	3%
Forceful upper limb/grip	24	4%
Torque upper limb	2	<1%
Lifting	31	5%
Carrying	3	<1%
Pushing	1	<1%
Pulling	7	1%
Forceful leg movement	1	<1%
Overhead work	5	1%
Materials handling n.e.c.	295	45%
Bending	1	<1%
Sitting	4	1%
Standing/walking	6	1%
Kneeling	2	<1%
Twisting	2	<1%
Postural n.e.c.	74	11%
Accidents	222	34%
Other	45	7%
Not stated/non-codable	16	2%
Total cases	**663**	

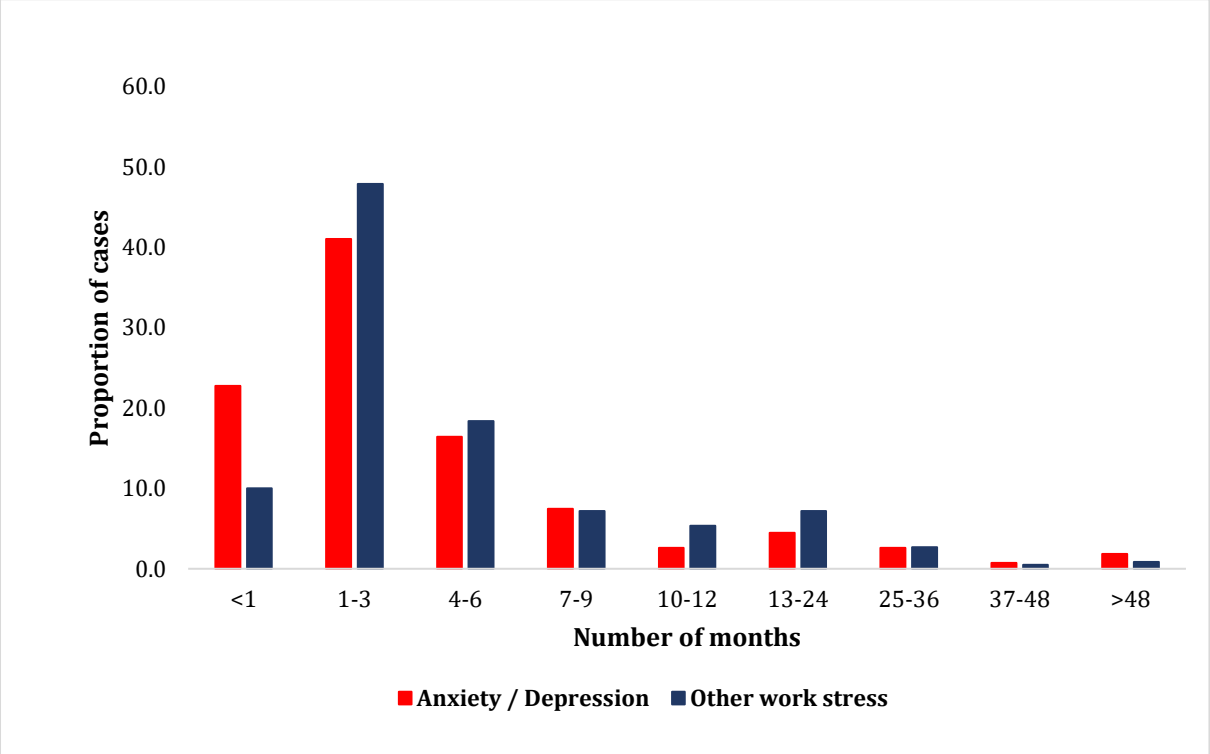
3.6.5 SYMPTOM ONSET

Physicians can report the month and year of the onset of symptoms for each case reported. Within the OPRA data, 93% of case reports included information on symptom onset.

In ROI, for cases of anxiety and depression, 64% of cases were most frequently seen by OPs reporting to OPRA-ROI within the first 3 months after the onset of symptoms. The proportion is slightly less for other work stress with 58% of cases seen within the first 3 months of symptom onset (Figure 14). The median number of months in ROI was 2 for anxiety and depression and 3 for other work stress.

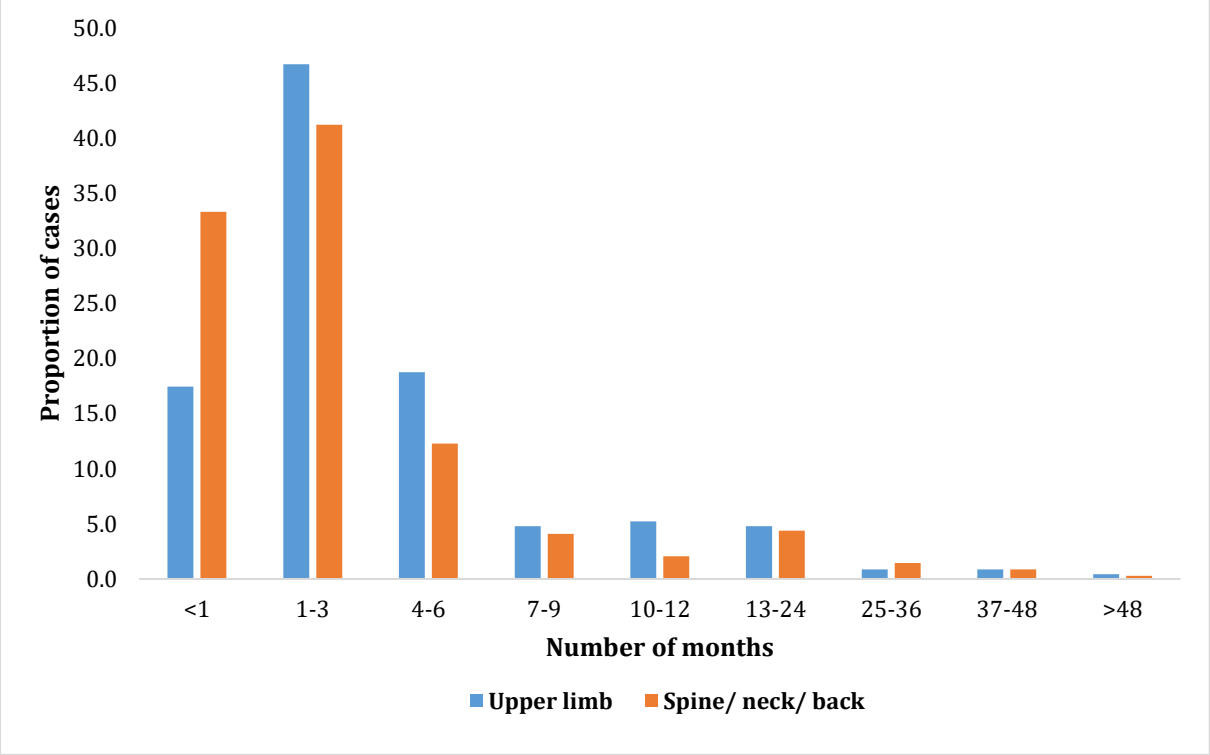
For the musculoskeletal cases reported in the ROI, the majority of upper limb disorders (64%) were reported within the first 3 months after symptom onset, with a median of 2 months (Figure 15). For spine / neck / back disorders a slightly different pattern was observed with cases in the ROI reported slightly sooner (median of 1 month).

Figure 14: Time lapse between month of symptom onset and reporting month for actual cases of work-related anxiety / depression and other work stress reported to OPRA-ROI (2007-2020)



***NB Physicians can provide full (month, year) or part (year only) data for symptom onset.**

Figure 15: Time lapse between month of symptom onset and reporting month for actual cases of work-related upper limb disorders and spine / neck / back disorders reported to OPRA-ROI (2007-2020)



***NB Physicians can provide full (month, year) or part (year only) data for symptom onset.**

3.7 THE HEALTH AND OCCUPATION RESEARCH NETWORK IN GENERAL PRACTICE (THOR-GP): 2015-2020

3.7.1 OVERVIEW

General practitioners have reported 38 cases (38 diagnoses) of WRI since the scheme commenced data collection in 2015: 17 (45%) musculoskeletal, 8 (21%) mental ill-health, 6 (16%) 'other' WRI, 5 (13%) skin disease, 1 respiratory and 1 hearing loss (Table 12). 58% of the cases were reported in females with a mean age of 43 years (all cases; age range 19-79 years). The sectors reported for these were as follows: accommodation and food service (8 cases); retail trade (7 cases); manufacturing (5 cases); health and social care (4 cases); construction (3 cases); land transport, agriculture and education (2 cases each); electricity, gas and water supply, real estate activities, information and communication, public administration and defence, and other service activities (1 case each).

The suspected agents recorded for the skin diseases reported by GPs in ROI were wet work, cleaning agents, trauma to skin, hairdressing and micro-organisms. The tasks associated with the musculoskeletal cases reported were heavy lifting /carrying /pushing /pulling and other (cited 4 times); prolonged standing (cited 3 times); activities guiding or holding tools, accidents, and materials handling (all cited twice); and packaging or sorting, assembly of small parts, light lifting and keyboard work (once each). The precipitating events for the mental ill-health cases reported were workload/pressure of work (cited 5 times), bullying (cited twice); unspecified work stress (cited twice); and shift work, interpersonal difficulties and inequality (once each). The agents reported for the cases of 'other' WRI reported were accidents (cited 3 times),

noise; assault, foreign object in eye, and dog bite. The agent reported for the case with respiratory disorder was micro-organisms (SARS-CoV-2 virus).

Table 1 Number and type of diagnoses reported by general practitioners to THOR-GP-ROI (2015-2020)

	Number	(%)
Skin	**5**	**13%**
• **Contact dermatitis**	4	80%
• **Other dermatoses**	1	20%
Respiratory	**1**	**<1%**
Musculoskeletal	**17**	**45%**
• **Upper limb**	10	59%
• **Neck / spine / back**	3	18%
• **Lower limb**	3	18%
• **Other musculoskeletal**	1	6%
Mental ill-health	**8**	**21%**
• **Anxiety and depression**	3	38%
• **Other work stress**	5	63%
• **Other mental ill-health**	1	13%
Other cases/diagnoses	**7**	**18%**
• **Hearing loss**	1	14%
• **Lacerations**	4	57%
• **Bites**	1	14%
• **Other**	1	14%
Total cases	**38**	
Total diagnoses	**38**	**100%**

4 DISCUSSION

This is the latest report providing an overview of the incidence of WRI in the ROI, based on case reports by participating physicians to the THOR-ROI surveillance scheme. In total, 93 cases (103 diagnoses) were added to the THOR-ROI database during 2020. Of these, 40 cases were reported by OPs to OPRA-ROI, 27 were reported by chest physicians to SWORD-ROI, 23 were reported by dermatologists to EPIDERM-ROI, and three cases of WRI were reported by GPs. In comparison, 109 cases (121 diagnoses) were reported in 2019 (OPRA-ROI: 80 cases; SWORD-ROI: 12; EPIDERM-ROI: 14; THOR-GP-ROI: 3). A total of 2761 incident cases have now been reported to THOR-ROI between 2005-2020, of which 71% were reported by OPs (2007-2020) with smaller proportions from dermatologists (19%), chest physicians (9%) and GPs (1%).

In total, 68 physicians (27 OPs, 20 GPs, 12 dermatologists and 9 chest physicians) were enrolled in THOR-ROI in 2020, with numbers remaining fairly stable since the inception of the schemes. The rates of physicians actively participating (the total number of cases and nil returns divided by the number of active reporters who have reported at least one case or one nil return) in THOR-ROI in 2020 are as follows: 33% of ROI chest physicians, 25% of dermatologists, 22% of OPs and 20% of GPs.

The COVID-19 pandemic crisis and the interruptions it caused made 2020 a challenging year. Following the relaxation of the first lockdown in July 2020 there was an increase in THOR-ROI reporter activity, though case numbers remained slightly below normal. SARS-CoV-2 virus was attributed in three OPRA-ROI reports and one THOR-GP ROI report, all in the health and social care sector. Two cases presented with respiratory disorders ('post-covid cough' and 'cough and shortness of breath'), while two cases presented with long-covid symptoms ('post-viral fatigue' and 'fatigue, gastrointestinal upset, loss of appetite, nausea and diarrhoea'). It is clear that the current pandemic emphasizes the importance of occupational health in terms of managing and

reducing the risk of infections in the workplace. In addition to the risk of infection with SARS-CoV-2 virus, the pandemic also impacts on the health and wellbeing of the workforce due to changing patterns of work and increasing uncertainties. Finally, occupational health will play an important role in managing and facilitating return to work of workers who have been on sick-leave due to infection with SARS-CoV-2 virus and long-Covid.

Following on from the report submitted to HSA in previous years, this report again contains estimates of incidence rates for ROI. As before, this comparison is restricted to SWORD and EPIDERM data. The addition of a further year of data (2020) has had little impact on the overall rates (the number of cases reported in the ROI is currently too small to permit the calculation of incidence rates based on a single year of data). Previously the estimated ROI incidence rates have been compared with skin and respiratory rates for GB and NI and have been shown to be generally similar, or slightly lower in the ROI compared to GB and NI.

Two different rates are again presented: 'adjusted' and 'unadjusted'. In the former, the numerator is adjusted for participation (the proportion of the total dermatologists or chest physicians in the ROI participating in THOR) and response (the proportion of participating physicians actively responding each month).[26] However, this makes the assumption that non-participating or non-responding physicians would behave in the same way as participating or responding physicians, which may not be accurate. In addition, adjusting for non-response assumes that non-responders had cases to report but did not, rather than the absence of reportable cases during their reporting month. In this latter case, reporters are encouraged to respond with 'I have no cases to report'. As such the two rates provided in Table 3 ('unadjusted' and 'adjusted') might be considered as the possible upper and lower bounds of estimated incident cases of WRI.

The trend analysis in OPRA-ROI case reports first provided in last years' report has been repeated here with the addition of another full calendar year of data. In the present analyses, trends were estimated based on reports from OPs to OPRA-ROI and for total WRI, mental ill-health, musculoskeletal and skin only (numbers for other reporter groups and other diagnoses are currently too few to permit meaningful analysis). The results suggest an overall, annual average decrease in number of case reports of total WRI of approximately 5% with a slightly larger decrease observed for musculoskeletal disorders and skin disease (~6%) compared to mental ill-health (~5%). However, it appears that between 2017 and 2019 the incidence of total WRI has remained more or less the same. It should be noted that these results should be interpreted with caution. Since some industry sectors such as health and social care may have better provision of occupational health services than other industry sectors the observed trends may be more reflective of some industries compared to others.

Case reports by dermatologists in the ROI continued to be almost exclusively CD. The most frequently reported industrial sectors were manufacturing, and health and social care. Restricting the analyses to diagnoses of CD, frequently reported industries included the health and social care sector, manufacturing and other service activities (which includes hairdressing), whilst frequently reported occupations included nurses and hairdressers. The most frequently suspected agents reported by dermatologists in ROI for CD were rubber, wet work, nickel, preservatives and chromium.

Asthma is the most frequently reported diagnosis by chest physicians in the ROI with the most frequently reported industries being manufacturing and construction. The asthma cases reported were also predominantly males, and isocyanate and cement are the most frequently reported agents. SWORD in ROI continues to report proportionally less asbestos-related diseases, and this is consistent with the explanation that there may have been less exposure to asbestos in the ROI historically.[27]

The case mix reported by OPs in ROI continues its pattern noted in previous annual reports with the largest proportion being mental ill-health diagnoses, followed by musculoskeletal, with fewer skin and respiratory diagnoses. Health and social care sector continues to be the industry sector from which most cases are reported by OPs.

Information provided by OPs in OPRA regarding the length of time between onset of symptoms and consultation with an OP was again included in this report. The overall pattern observed for the main diagnostic categories reported was similar to that reported on last year and showed that most cases were reported within the first 3 months after onset of symptoms.

In conclusion, to our best knowledge, THOR-ROI continues to provide the best overall source of data relating to medically attributed occupational disease incidence in the ROI with nearly 2800 cases reported since the inception of the schemes. With continued funding and increased enrolment/participation in all of the THOR-ROI schemes, aided by steps such as the introduction of THOR-CPD, and a renewed focus from the HSA, case numbers are likely to increase, enabling both comparisons with UK data and analyses that are, in general, more sophisticated. Similarly, as the number and types of cases reported to THOR-ROI increases overall, the various determinants of risk e.g. causal agent, precipitating event (mental ill-health) and task/movement (musculoskeletal) will continue to be analysed and reported upon.

APPENDIX

Appendix 1: EPIDERM substance codes

Epiderm substance codes.pdf

Appendix 2: SWORD substance codes

SWORD Substance Codes.pdf

Dissemination

Due to a number of circumstances including the COVID-19 pandemic crisis and the interruptions it caused, as well as personnel changes in the THOR Project team, we were not able to hold the 2020 Annual Advisory Committee meeting or attend any national or regional meeting/conferences to disseminate ROI data and promote participation in any of the four schemes of THOR-RIO. However, we are planning to hold the Annual Advisory Committee meeting in the last quarter (September – December) of 2021. Furthermore, we will engage with reporting physicians to encourage them to continue to report work-related ill-health cases to THOR-ROI.

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http://www.coeh.man.ac.uk/u/ire-sword

http://www.coeh.man.ac.uk/u/ire-epiderm

http://www.coeh.man.ac.uk/u/ire-opra

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