THOR

The Health and Occupation Research network

(Incorporating specialists' and THOR-GP reports)

http://www.medicine.manchester.ac.uk/oeh/research/thor

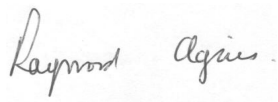
Dear colleague,

Thank you for your continuing support of THOR. As this report and previous ones show, your data are helping in the provision of very useful information on the risks to health from work in the UK. This year we have had two meetings / workshops with our counterparts in the Health and Safety Executive to show how our data can and do support the HSE strategies in the three priority areas that they have selected namely: respiratory, musculoskeletal and mental disorders. Currently SWORD fulfils its function admirably. We are exploring how, with HSE support, OPRA and THOR-GP data can continue to support their strategy. Moreover we took the opportunity of restating the use of EPIDERM data in demonstrating current, as well as emerging risks in occupational skin disease. Our report below and the publications list illustrate these valuable outputs.

As stated below, our EELAB resource available for reporters such as yourself, is accredited up to 5 CPD points by the Faculty of Occupational Medicine (RCP London). Moreover, if you require material to assist you in a presentation you might consider giving, please contact Dr Melanie Carder (melanie.carder@manchester.ac.uk) or myself (Raymond.agius@manchester.ac.uk)

We are going through various staff changes this year. Dr Louise Hussey (who worked on THOR-GP) is now working in academic primary care; Prof Martie van Tongeren has joined us as a proleptic chair in Occupational and Environmental Health, whilst I shall be becoming an Emeritus in September. I hope that you will have a good holiday this summer, but also that you will continue to report new cases to THOR whilst you are at work.

Best wishes



Raymond Agius
Professor of Occupational and Environmental Medicine

2016 ANNUAL REPORT

This combined THOR and THOR-GP annual report covers cases received in the most recent year for which we have a full set of data, namely, January to December 2016. Additional information relating to the period January to March 2017 (i.e. information that you would have received in your 'usual' quarterly report) is provided in Appendix 1. A list of recent publications is provided in Appendix 2.

If you have any comments or suggestions on the type or presentation of information that you would like to see included in future reports then please contact THOR's Manager, Dr Melanie Carder at melanie.carder@manchester.ac.uk or phone 0161 275 5636. We look forward to hearing from you.

LEVEL OF PARTICIPATION

Approximately 1000 physicians currently participate in THOR / THOR-GP (as of June 2017).

Physicians can report either on a 'core' (reporting each month) or a 'sample' (reporting for one randomly selected month each year) basis. A total of 1386 actual cases, (5995 estimated cases) were reported during 2016, with 'estimated' cases being those reported by sample reporters multiplied by 12 and added to the 'core' cases.

The actual and estimated cases by major category and diagnostic group, for clinical specialists (chest physicians, dermatologists, occupational physicians (OPs) and general practitioners (GPs)) are shown in Table 1 (NB. only actual cases are provided for THOR-GP; methods for calculating estimated totals based on GP reports are being reviewed).

Table 1 Estimated diagnoses* by major category and diagnostic group – January to December 2016

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	%
RESPIRATORY DISEASE	Asthma	91	124	*9*	6	50	*36*	1	20
	ascribed to sensitisation	*82*	*115*	-	-	-	-	-	-
	ascribed to irritation/RADS	*9*	*9*	-	-	-	-	-	-
	Unspecified	-	-	-	-	-	-	-	-
	Inhalation accidents	4	37	*3*	1	1	*1*	0	0
	Allergic alveolitis	10	10	*1*	0	0	*0*	0	0
	Bronchitis/emphysema	6	28	*2*	1	12	*9*	1	20
	Infectious disease	1	12	*1*	2	13	*9*	0	0
	Non-malignant pleural disease	143	484	*37*	1	12	*9*	0	0
	predominantly plaques	*121*	*385*	-	-	-	-	-	-
	predominantly diffuse	*20*	*64*	-	-	-	-	-	-
	Unspecified/other	*9*	*53*	-	-	-	-	-	-
	Mesothelioma	47	300	*23*	0	0	*0*	0	0
	Lung cancer	8	74	*6*	0	0	*0*	0	0
	Pneumoconiosis	77	187	*14*	2	2	*1*	0	0
	Other	43	109	*8*	4	48	*35*	3	60
	Total diagnoses	**430**	**1365**		**17**	**138**		**5**	
	Total cases	**408**	**1310**	***100***	**17**	**138**	***100***	**5**	**100**

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	%
SKIN	Contact dermatitis	329	956	*70*	25	179	*82*	7	*88*
	Allergic	*130*	*317*	-	-	-	-	-	-
	Irritant	*132*	*407*	-	-	-	-	-	-
	Allergic and irritant	*63*	*206*	-	-	-	-	-	-
	Unspecified	*7*	51	-	-	-	-	-	-
	Contact urticaria	14	58	*4*	0	0	*0*	0	*0*
	Folliculitis/acne	0	0	*0*	0	0	*0*	0	*0*
	Infective	1	1	*<1*	0	0	*0*	0	*0*
	Mechanical	2	2	*<1*	1	12	*6*	0	*0*
	Nail	1	12	*1*	0	0	*0*	1	*12*
	Neoplasia	52	327	*24*	0	0	*0*	0	*0*
	Other	7	73	*5*	5	27	*12*	0	*0*
	Total diagnoses	**406**	**1429**		**31**	**218**		**8**	
	Total cases	**396**	**1375**	***100***	**31**	**218**	***100***	**8**	***100***
MUSCULOSKELETAL	Hand/wrist/arm	**No case reports from clinical specialists**			73	425	*45*	8	*17*
	Elbow				12	56	*6*	10	*22*
	Shoulder				17	94	*10*	6	*13*
	Neck/thoracic spine				10	109	*11*	1	*2*
	Lumbar spine/trunk				33	253	*27*	15	*33*
	Hip/knee				5	49	*5*	4	*9*
	Ankle/foot				2	2	*<1*	5	*11*
	Other				2	13	*1*	1	*2*
	Total diagnoses				**154**	**1001**		**50**	
	Total cases				**149**	**952**	***100***	**46**	***100***

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	**Estimated diagnoses**	***%***	**Actual diagnoses**	**Estimated diagnoses**	***%***	**Actual diagnoses**	***%***
MENTAL ILL-HEALTH	Anxiety/depression	**No case reports from clinical specialists**			137	1028	*60*	18	*50*
	Post-traumatic stress disorder				9	86	*5*	0	*0*
	Other work-related stress				144	881	*51*	24	*67*
	Alcohol or drug abuse				2	13	*1*	0	*0*
	Psychotic episode				0	0	*0*	0	*0*
	Other				11	33	*2*	7	*19*
	Total diagnoses				**303**	**2041**		**49**	
	Total cases				**262**	**1714**	***100***	**36**	***100***

As more than one diagnosis may be reported the sum of percentages and total cases in each diagnostic category may be greater than 100%

OTHER CASES REPORTED

In addition to the categories described in Table 1, OPs and GPs report other diagnoses of work-related ill-health (WRIH) not classified within these major diagnostic groups.

In 2016, OPs reported 27 actual (236 estimated) cases of 'other' cases of WRIH; 12 reported as audiological disorders including 11 cases of noise induced hearing loss (production operative (4) soldier (3) welder (3) offshore driller (1)) and 1 case reported as perforated ear drum (groundsman). 3 cases reported as stroke / heart attack / palpitations each with a co-diagnosis of anxiety and 1 case reported as stress; 3 cases of lead poisoning (lead workers), 3 cases of infectious disease (tuberculosis, nurse; staphylococcal infection, midwife; hepatitis C, nurse) and 1 case each of the following – heat illness (coke over worker); allergic sensitisation (animal care technician); irritable bowel syndrome (police officer); eye injury (tennis coach); chronic regional pain syndrome (custody officer).

GPs reported 15 cases of 'other' WRIH in 2016; 5 were reported as audiological disorders and were diagnosed as follows: otitis externa (swimming instructor; water), pain in ear (call centre worker; use of ear piece), noise induced hearing loss (minister of religion), tinnitus (bus driver; noise) and aural barotrauma (diver; compressed air). Other cases included: legionnaires pneumonia (vehicle technician); foreign body in finger (builder; glass installation); headaches (PhD student; computer work) and erythema migrans / lyme disease (gardener; tick bite).

INDUSTRY AND OCCUPATION

For cases of occupational lung disease reported to SWORD, the construction industry sector (41%) and the manufacturing sector (29%) were most frequently reported in 2016; the occupations most frequently reported were also allied to the construction industry with carpenters and joiners (9%) and labourers in building and woodworking trades (5%) reported most frequently.

For cases of work-related skin disease reported to EPIDERM, health and social care (22%), other service activities (13%), hotels and accommodation (11%), and agriculture, fishing and forestry (11%) were the most frequently reported industry sectors based on 2016 cases. Nurses (10%), hairdressers and barbers (7%) and cleaners, domestics (7%) were the most frequently reported occupations.

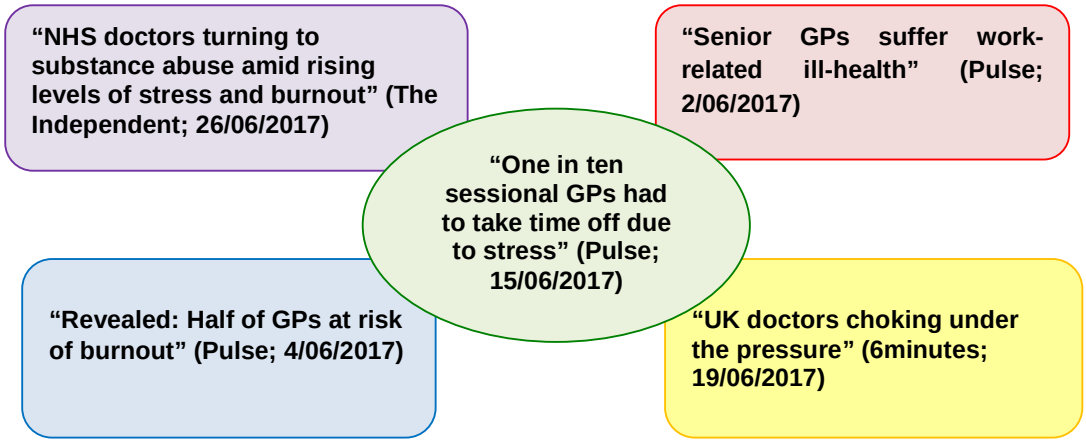
OPRA cases were reported most frequently in those industry sectors that are well covered by occupational health service; health and social care (33%) and manufacturing (19%). Mental ill-health cases in 2016 were reported most frequently in health and social care (44%), public administration and defence (15%) and education (13%), and the occupations frequently reported included nurses (10%) and doctors (8%). For musculoskeletal cases, health and social care (19%) and construction (9%) were the most frequently reported industry sectors, and of the occupations, metal working production and maintenance fitters (9%) and nursing auxiliaries and assistants (5%) were frequently reported. Skin cases were reported most frequently in health and social care (30%), and manufacturing (19%). Given the large proportion of cases reported in the health and social care sector, doctors (17%) and nurses (12%) were the occupations most frequently reported for skin disease to OPRA. Cases from the manufacturing sector made up the largest proportion (38%) of OP

respiratory cases, with the manufacture of food and beverages most frequently reported in this sector (9%), followed by the health and social care sector (19%). Process operatives were the occupational groups most frequently reported (18%).

For reports of all WRIH made to THOR-GP in 2016, health and social care (16%) and construction (10%) were the most frequently reported industry sectors. For mental ill-health cases, 25% were reported in health and social care and 11% in education whereas for musculoskeletal reports, cases were reported most frequently in construction (13%) and health and social care (11%). The most frequently reported occupations for cases of WRIH reported by GPs in 2016 were nurses (5%) and other goods handling and storage workers (5%).

FEATURE – WORK-RELATED ILL-HEALTH IN DOCTORS

A quick internet search for news topics on work-related ill-health soon provides headline after headline focusing on GPs and stress: these headlines are from this month alone –



Looking at the data reported for 2016, 40 actual (238 estimated) case reports of WRIH in doctors have been submitted to the THOR schemes: OPRA (27 actual, 203 estimated), EPIDERM (12 actual, 34 estimated), THOR-GP (1 actual). The diagnostic categories for the estimated cases reported are detailed in Table 2.

Table 2 Estimated cases by major diagnostic categories of work-related ill-health reported in doctors to THOR (2016)

	EPIDERM	SWORD	THOR-GP	OPRA
Mental ill-health	-	-	-	165 (81%)
Skin	34 (100%)	-	-	37 (18)
Respiratory	-	0	1 (100%)	-
Musculoskeletal	-	-	-	1 (<1%)
Total	**34**	**0**	**1**	**203**

Of the mental ill-health cases in doctors reported to OPRA in 2016, 86/165 (52%) were reported as anxiety and depression, 78/165 (47%) as other work-related stress, and 1 under 'other psychiatric problem' and diagnosed as 'burnout'. All of the skin cases in doctors reported to both OPRA and the specialist dermatologist reporting scheme EPIDERM, were diagnosed as contact dermatitis. The 1 musculoskeletal case reported to OPRA was recorded as a rotator cuff injury caused by manual handling; and the 1 respiratory case reported by a general practitioner to THOR-GP was recorded as wheeze and cough attributed to glass reinforced plastic.

The above provides a descriptive snapshot of the cases reported in doctors to the THOR schemes in the last full calendar year. Dr Anli Zhou, Academic Clinical Fellow in COEH, has recently undertaken an analysis of the THOR data in order to determine incidence and trends of WRIH and work-related mental ill-health (WRMIH) in doctors compared to other professions in Great Britain. Incidence rates for a number of occupations (doctors, nurses, teachers, social workers and ambulance staff) were calculated and multilevel regression analysis undertaken to determine trends in incidence from 2001-2014. In brief, the results of this analysis showed annual average incidence rates of 515 for WRIH and 431 WRMIH per 100,000 persons employed in doctors. Higher incidence rates for WRIH and WRMIH were observed for ambulance staff and nurses respectively. However, doctors demonstrated an annual average incidence rate increase for WRIH and WRMIH, especially in females, whereas other occupations demonstrated a decreasing or static trend. The difference in trends between the occupations was statistically significant. The paper is currently under review for publication in a well-known journal.

BECK REPORT

We are most grateful to Dr Mark Wilkinson for providing the Beck Report, which provides a commentary for cases of work-related skin disease reported to THOR and THOR-GP throughout January to March 2017. Please note that the information used by Dr Wilkinson incorporates case reporting to EPIDERM, OPRA and THOR-GP, so the "numbers" cited here may differ to those within the table in Appendix 1.

BECK REPORT

Healthcare featured prominently in the cases reported by occupational physicians this month with 9 of 11 reports being women employed as nurses or therapists. All had irritant dermatitis variably attributed to wet work and hand hygiene measures (hand wash and alcohol gel). It continues to surprise me that more preventative measures aren't taken to try to reduce the

incidence of irritant hand dermatitis[1]. In the environment in which I work, emollient is conspicuous by its absence, I assume a consequence of the potential cost of making it available. Hopefully, the results of the SCIN trial[2] will soon be available and give economic data to underpin what we trust will be a favourable outcome of the intervention.

Amongst the cases of irritant dermatitis seen in healthcare reported by dermatologists, there are cases of contact allergy to methylisothiazolinone and fragrance present in hand washes etc. Choice of products for healthcare use doesn't always seem to be given the importance it deserves. When fragrance, for instance, isn't needed for function it is perverse that we still purchase fragranced products knowing that 2% of the general population has a fragrance allergy[3]. I was surprised to find that in my workplace, all 3 brands of skin cleansing foam used by the organisation were perfumed – not surprising to find that the nurse referred by occupational health was allergic to fragrance in the product and that there were anecdotal reports of patients reacting to it!

Allergic cheilitis as a consequence of occupational exposure and sensitisation to essential oils was an unusual presentation this quarter. An aromatherapist had become sensitised to fennel, absinthe, star anise and hyacinth essential oils. She then used a toothpaste containing anethole the main allergenic constituent of these oils!

Dr Mark Wilkinson, Leeds General Infirmary

NEWS AND EVENTS

Staff from COEH will be presenting (or have already presented) THOR data at a number of conferences in 2017, including:

The European Agency for Safety and Health at Work (EU-OSHA), Brussels 18th May: Raymond Agius was invited to speak on the topic of: Methodologies to identify work-related diseases – review on sentinel and alert approaches: THOR.

***Society Occupational Medicine / Faculty of Occupational Medicine Annual Scientific Meeting* (Occupational Health 2017),** 26th-28th June, Leeds: Raymond Agius was invited to deliver an eponymous keynote lecture on the topic of: Anticipating new risks to health from work.

[1] The three moments of skin cream application: an evidence-based proposal for use of skin creams in the prevention of irritant contact dermatitis in the workplace. Hines J, et al. J Eur Acad Derm Venereol 2017; 31: 53-64

[2] A behavioural change package to prevent hand dermatitis in nurses working in the national health service (the SCIN trial): Study protocol for a cluster randomised controlled trial. Madan, I et al. Trials 2016; 17:145

[3] Prevalence of fragrance contact allergy in the general population of five European countries: a cross-sectional study. Diepgen TL et al. Br J Dermatol. 2015;173:1411-9.

26th International Epidemiology in Occupational Health (EPICOH), 28th–31st August, Edinburgh (including 3rd post COST Modernet meeting):

Melanie Carder - Incidence of work-related respiratory ill-health attributed to cleaning agents: occupational and chemical determinants.
Louise Hussey - Improving incidence rates of work-related ill-health calculated from general practice.
Matthew Gittins - Accounting for reporter fatigue and excess zeros when estimating the true rate of Work-Related Ill-Health in a voluntary reporting surveillance scheme.
Anli Zhou - Work-related ill-health in doctors working in Great Britain: Incidence rates and trends.

Society for Social Medicine Annual Scientific Meeting**,** 6th–8th September, Manchester:
Louise Hussey - The relationship between socio-economic class and work-related mental ill-health.

Jean Monnet Centre of Excellence, Manchester 1st November 2017
Raymond Agius invited to speak on the topic: Health at Work in the shadow of Brexit.

REMINDER OF HOW WE CAN HELP YOU

We would again like to take this opportunity to encourage THOR reporters to contact us if they would like to present THOR-UK data at future meetings; simply email Annemarie.money@manchester.ac.uk

THOR CONTACTS

Many thanks for your continued support to THOR. Please feel free to contact us (Table 3) if you have any queries or require duplicate reporting cards / details about electronic reporting.

Table 3 THOR Contact details

SCHEME	email	phone
EPIDERM / SWORD	Christina.O'Connor@manchester.ac.uk	0161 275 7103
OPRA / THOR-GP	Susan.taylor@manchester.ac.uk	0161 275 5531
DATA REQUESTS	Melanie.carder@manchester.ac.uk	0161 275 5636
GENERAL ENQUIRIES	Melanie.carder@manchester.ac.uk Annemarie.money@manchester.ac.uk	0161 275 5636 0161 275 8491

Appendix 1 Quarterly report – January-March 2017

Table A1. Estimated diagnoses* by major category and group – January to March 2017

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	%
RESPIRATORY DISEASE	Asthma	25	58	*16*	1	12	*50*	0	0
	ascribed to sensitisation	*18*	*40*	-	-	-	-	-	-
	ascribed to irritation/RADS	*7*	*18*	-	-	-	-	-	-
	Unspecified	-	-	-	-	-	-	-	-
	Inhalation accidents	1	1	*<1*	0	0	*0*	0	0
	Allergic alveolitis	4	26	*7*	0	0	*0*	0	0
	Bronchitis/emphysema	4	4	*1*	0	0	*0*	0	0
	Infectious disease	0	0	*0*	0	0	*0*	0	0
	Non-malignant pleural disease	49	126	*35*	0	0	*0*	0	0
	predominantly plaques	*39*	*105*	-	-	-	-	-	-
	predominantly diffuse	*10*	*21*	-	-	-	-	-	-
	Unspecified/other	*5*	*5*	-	-	-	-	-	-
	Mesothelioma	12	56	*16*	0	0	*0*	0	0
	Lung cancer	3	3	*1*	0	0	*0*	0	0
	Pneumoconiosis	28	72	*20*	0	0	*0*	0	0
	Other	8	19	*5*	1	12	*50*	0	0
	Total diagnoses	**134**	**365**		**2**	**24**		**0**	
	Total cases	**127**	**358**	***100***	**2**	**24**	***100***	**0**	**0**

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	%
SKIN	Contact dermatitis	70	169	*75*	5	38	*100*	4	*100*
	Allergic	*24*	*57*	-	-	-	-	-	-
	Irritant	*33*	*66*	-	-	-	-	-	-
	Allergic and irritant	*13*	46	-	-	-	-	-	-
	Unspecified	1	1	-	-	-	-	-	-
	Contact urticaria	0	0	*0*	0	0	*0*	0	*0*
	Folliculitis/acne	0	0	*0*	0	0	*0*	0	*0*
	Infective	0	0	*0*	0	0	*0*	0	*0*
	Mechanical	2	24	*11*	0	0	*0*	0	*0*
	Nail	0	0	*0*	0	0	*0*	0	*0*
	Neoplasia	11	33	*15*	0	0	*0*	0	*0*
	Other	1	1	*<1*	1	1	*3*	0	*0*
	Total diagnoses	**84**	**227**		**6**	**39**		**4**	
	Total cases	**83**	**226**	***100***	**5**	**38**	***100***	**4**	***100***
MUSCULOSKELETAL	Hand/wrist/arm	**No case reports from clinical specialists**			26	147	*47*	4	*25*
	Elbow				1	1	*<1*	2	*13*
	Shoulder				5	16	*5*	2	*13*
	Neck/thoracic spine				3	14	*4*	0	*0*
	Lumbar spine/trunk				13	101	*32*	4	*25*
	Hip/knee				4	37	*12*	2	*13*
	Ankle/foot				0	0	*0*	1	*6*
	Other				0	0	*0*	2	*13*
	Total diagnoses				**52**	**316**		**17**	
	Total cases				**51**	**315**	***100***	**16**	***100***

CATEGORY	DIAGNOSTIC GROUP	CLINICAL SPECIALISTS			OCCUPATIONAL PHYSICIANS			GENERAL PRACTITIONERS	
		Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	Estimated diagnoses	%	Actual diagnoses	%
MENTAL ILL-HEALTH	Anxiety/depression	**No case reports from clinical specialists**			31	251	*52*	7	*50*
	Post-traumatic stress disorder				4	37	*8*	0	*0*
	Other work-related stress				38	313	*65*	10	*71*
	Alcohol or drug abuse				0	0	*0*	0	*0*
	Psychotic episode				0	0	*0*	0	*0*
	Other				3	14	*3*	3	*21*
	Total diagnoses				**76**	**615**		**20**	
	Total cases				**62**	**480**	***100***	**14**	***100***

As more than one diagnosis may be reported the sum of percentages and total cases in each diagnostic category may be greater than 100%

Other cases reported included:

Occupational physicians – OPs reported 5 cases of other WRIH this quarter - 4 cases of noise induced hearing loss (1 with a co-diagnosis of carpal tunnel syndrome) in a workshop technician, soldier, tool pusher and production worker; 1 case of sleep loss, tiredness and agitation reported in a technician attributed to shift work.

General practitioners – GPs reported 3 cases of other WRIH this quarter notably including 2 cases with a co-diagnosis of work-related stress and reported as palpitations and ectopic beats exacerbated by stress (health care worker) and insomnia, palpitations and agitation (police officer).

APPENDIX 2 RECENT THOR PUBLICATIONS

The following are recently published, or forthcoming, papers based on THOR work:

Under review / in press:

Carder M, Darnton A, Gittins M, Stocks SJ, Ross D, Barber CM, Agius RM. Work-related long-latency respiratory disease in Great Britain: 1996 to 2014. European Respiratory Journal

Zhou Y, Carder M, Hussey L, Gittins M, Agius RM. Differential reporting of work-related mental ill-health in the medical profession. Occupational Medicine

Montgomery R, Agius R, Wilkinson SM, Carder M. UK trends of occupational skin disease attributed to fragrance 1996–2015. Contact Dermatitis

Zhou Y, Carder M, Gittins M, Agius R. Work-related ill-health in doctors working in Great Britain: Incidence rates and trends. British Journal of Psychiatry

Published:

Zhou Y, Dodman J, Hussey L, Sen D, Rayner C, Zarin N, Agius R. Electronic, Experiential, Learning, Audit and Benchmarking (EELAB): An innovative educational resource in occupational medicine. Occupational Medicine. doi: 10.1093/occmed/kqx057. [Epub ahead of print]

Carder M, Hussey L, Money A, Gittins M, McNamee R, Stock SJ, Sen D, Agius RM. (2017) The Health and Occupation Research network (THOR) - an evolving surveillance system. *SHAW* (12) 003

Gittins M, McNamee R, Holland F, Carter LA. (2016) Accounting for reporting fatigue is required to accurately estimate incidence in voluntary reporting health schemes. *Journal of Clinical Epidemiology* (9) 006