Who's looking after the doctor's health?

Stress and burnout in doctors

Dr Blánaid Hayes,
Consultant Occupational Physician (Beaumont Hospital),
Dean of Faculty of Occupational Medicine,
Royal College of Physicians of Ireland.

ıior doctor who took own life
orked immoral hours, mum tells
ınquest

PUBLISHED
19/11/2013 | 02:00

THE IRISH TIMES FORUM BY AND FOR IRISH CITIZENS ABROAD

Loss of our young people, medical brain drain and more

Round up of articles relating to emigration from The Irish Times this week

Hospitals facing 'staffing meltdown' due to doctor shortage

Delays in treating patients in emergency depts predicted

THE IRISH TIMES

Woman 'denied a termination' dies in hospital

Gover
submi
plan t

THE IRISH TIMES

Sun, Apr 1

NEWS | SPORT | BUSINESS | OPINION | LIFE & STYLE | CULTUR

Health | Ireland | World | Politics | Crime & Law | Social Affairs | Education | Bre

Medical Council sees complaints against doctors rise 20%

Complaints from patients about poor communication up significantly, annual report shows

Thu, Aug 25, 2016, 13:27 | Updated: Thu, Aug 25, 2016, 17:28

Elaine Edwards, Martin Wall

ORIGINAL RESEARCH

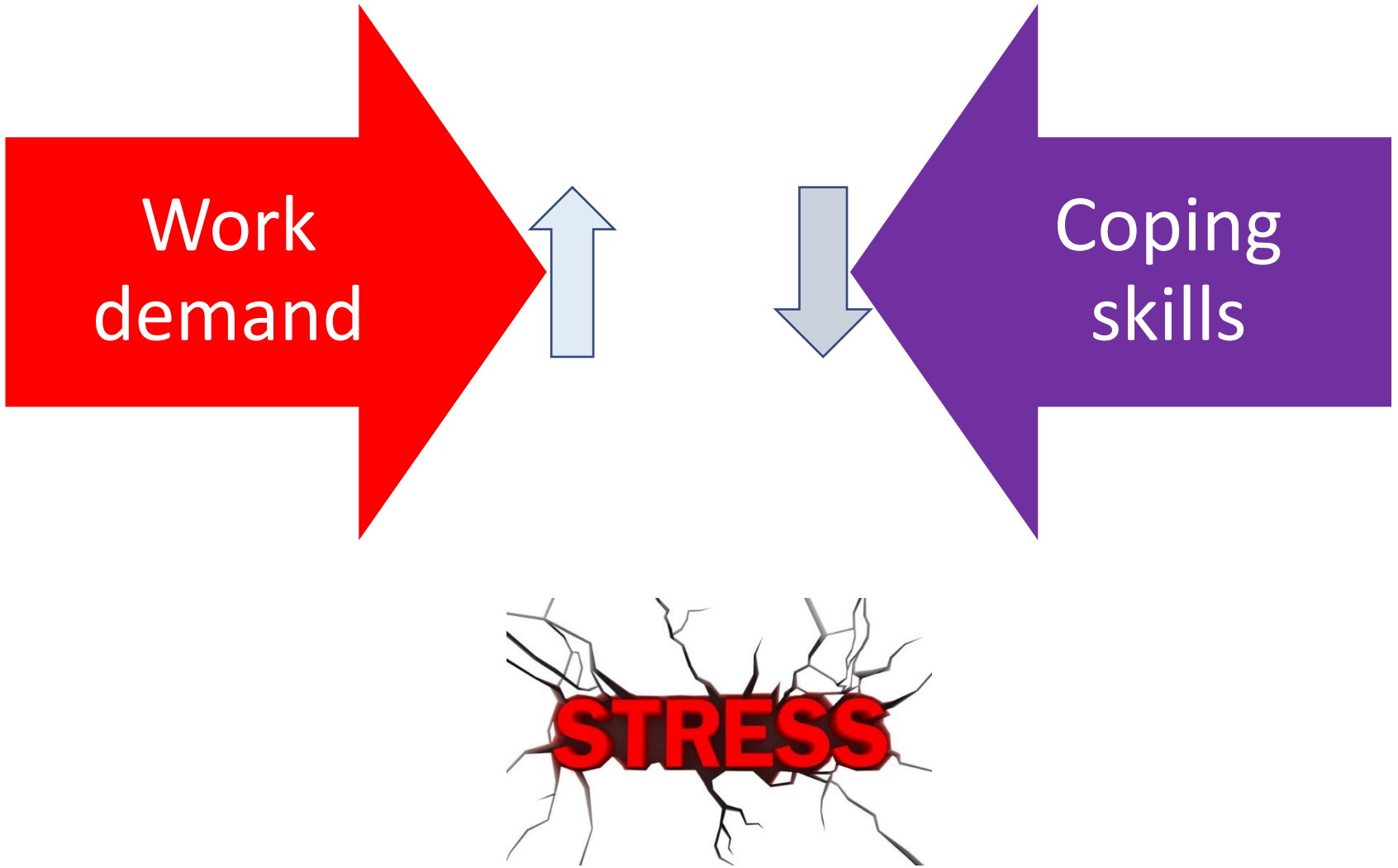
OPEN ACCESS

The Irish National Adverse Events Study (INAES): the frequency and nature of adverse events in Irish hospitals—a retrospective record review study

Natasha Rafter,[1] Anne Hickey,[2] Ronan M Conroy,[3] Sarah Condell,[4] Paul O'Connor,[5] David Vaughan,[6] Gillian Walsh,[7] David J Williams[1]

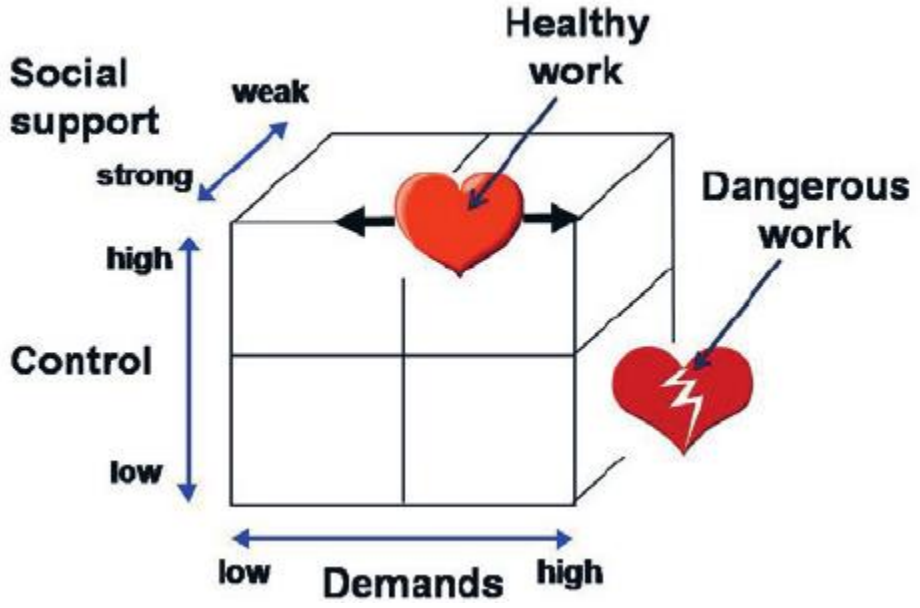
Overview

- Burnout measures
- Burnout prevalence and stress
- Impact of burnout
- Interventions
- The future


Work demand
Coping skills
STRESS

Stress and burnout in doctors

- Links between work and health are well documented
- Work with excessive demand coupled with low support and control has a negative impact
- A negative psychosocial environment in work is associated with depression and other common mental disorders



The King's Fund Ideas that change health care

- *'What we know is that stress kills people. It causes heart disease, it causes relationships to break up, it causes poor immune functioning - it is a really clear killer in society.'*
- *'The paradox at the heart of the health service is that we are damaging and killing the very people who are committing their working lives to caring for the health and wellbeing of other people. We are actually creating more customers for our system. It's a deeply disturbing paradox.'*

Michael West, Head of Thought Leadership at the King's Fund, January 14th 2016
http://careers.bmj.com/careers/advice/Stress_of_working_for_NHS_is_killing_staff,_King%E2%80%99s_Fund_says

- Work stressors
  - Emotionally demanding work
  - Trying to do more with less
  - Systems of governance leading to loss of autonomy and erosion of professional values
  - Rigid organisational structures and inflexible hours
  - Highly bureaucratic professional regulatory systems (e.g. appraisals, revalidation, quality inspections).

- Professional facilitators
  - Knowledge of and access to drugs
  - Potential to self-medicate / prescribe
  - Tendency to avoid seeking help and support when unwell or under pressure
  - Perceived stigma among doctors around mental illness

What is burnout?

- First reported in 1970's, increasingly reported as a phenomenon of the modern world of work
- Caused by chronic occupational stress
- 3 criteria
  - Emotional exhaustion (physical and emotional tiredness)
  - Depersonalisation (a break down in the ability to care, emerging cynicism, disengagement from the human service component of work)
  - Reduced personal accomplishment (reduced output across all areas of life)
- These occur in a previously highly functioning person for whom they are uncharacteristic
- People around the individual also suffer

Caveats

- MBI is gold standard but not designed as a diagnostic tool
- Its cut-off points don't conform to any scientifically validated standard
- Psychological and psychobiological mechanisms underlying it are largely unexplained.
- Unlikely to represent a separate pathological entity

- How is it reported?
  - As a continuous or dichotomous variable
  - By its individual elements or various combinations
    - Usually EE
    - May be EE +/- DP
    - EE + (DP or PA) = EE + 1
    - Or just 2 statements

Risk factors for burnout in doctors

- Female gender
- Younger age
- Longer working hours
- Low job satisfaction

Amoafo E, Hanbali N, Patel A, Singh P. What are the significant factors associated with burnout in doctors? Occupational Medicine (Lond). 2015;65(2):117-21

National Survey (data collected 2014)

Captures and explores:

- Demographic Details
- Career Satisfaction
- Lifestyle
- Wellbeing
- Workplace Wellbeing
- Coping

burnout & stress

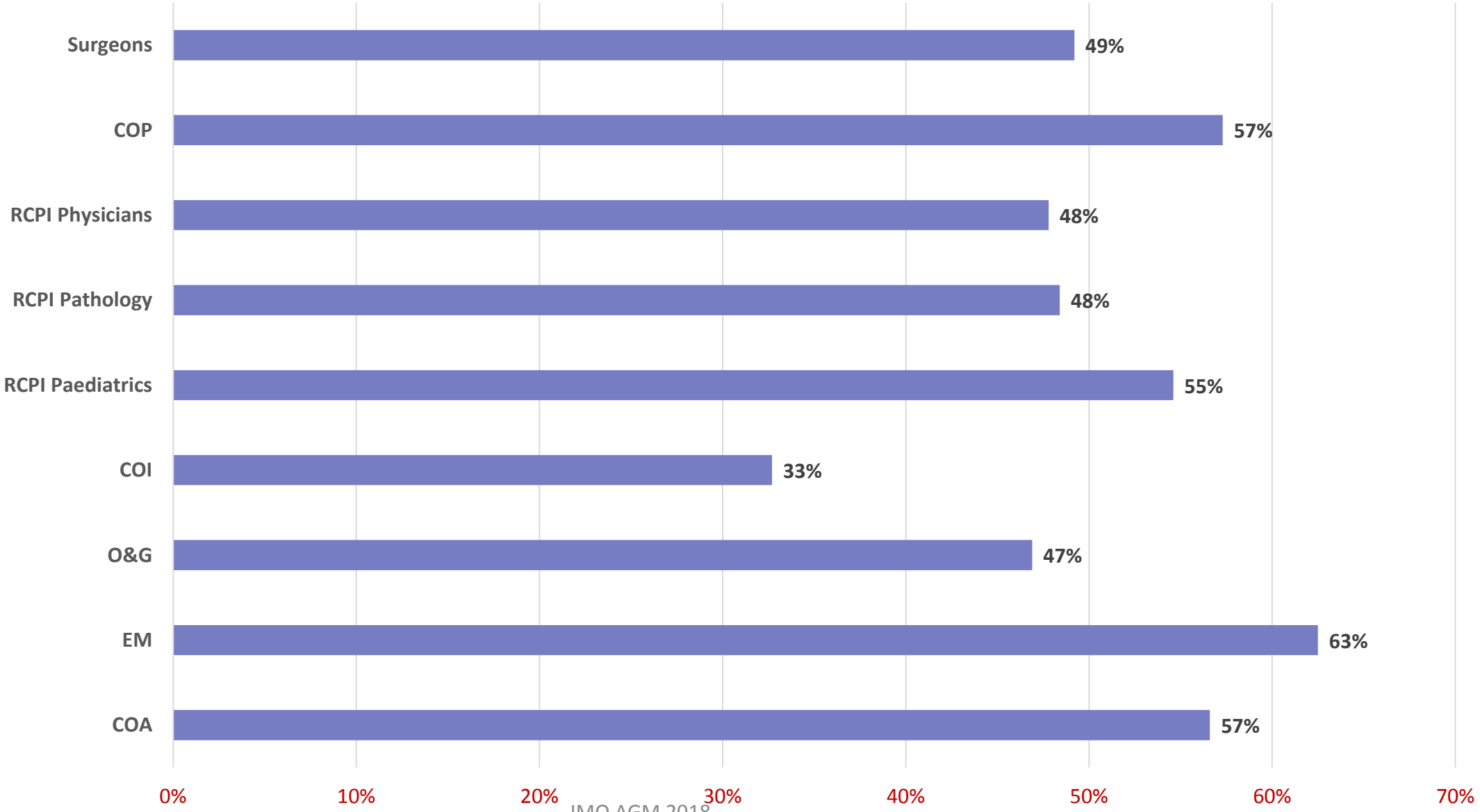
Sample

- Randomised sample
- 1863 completed
- 1749 met inclusion criteria
- Response rate 55%
  - Consultants 60%
  - Trainees 51%

Analysis

- M= 50.5% F= 49.5%
- Consultants ~ trainees
- 85% Irish nationality

Response rates by specialty



Mean hours worked per specialty

BMJ Open

What's up doc? A national cross-sectional study of psychological wellbeing of hospital doctors in Ireland

Blánaid Hayes,[1,2] Lucia Prihodova,[2] Gillian Walsh,[2] Frank Doyle,[3] Sally Doherty[3]

To cite: Hayes B, Prihodova L, Walsh G, *et al*. What's up doc? A national cross-sectional study of psychological wellbeing of hospital doctors in Ireland. *BMJ Open* 2017;**7**:e018023. doi:10.1136/bmjopen-2017-018023

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2017-018023).

Received 7 June 2017
Revised 10 August 2017
Accepted 29 August 2017

ABSTRACT

Objectives To measure levels of psychological distress, psychological wellbeing and self-stigma in hospital doctors in Ireland.

Design National cross-sectional study of randomised sample of hospital doctors. Participants provided sociodemographic data (age, sex, marital status), work grade (consultant, higher/basic specialist trainee), specialty and work hours and completed well-being questionnaires (the Depression Anxiety Stress Scale, WHO Well-being Index, General Health Questionnaire) and single-item scales on self-rated health and self-stigma.

Setting Irish publicly funded hospitals and residential institutions.

Participants 1749 doctors (response rate of 55%). All hospital specialties were represented except radiology.

Results Half of participants were men (50.5%). Mean hours worked per week were 57 hours. Over half (52%) rated their health as very good/excellent, while 50.5% reported positive subjective well-being (WHO-5). Over a third (35%) experienced psychological distress (General Health Questionnaire 12). Severe/extremely severe symptoms of depression, anxiety and stress were evident in 7.2%, 6.1% and 9.5% of participants (Depression, Anxiety, Stress Scale 21). Symptoms of distress, depression, anxiety and stress were significantly higher and levels of well-being were significantly lower in trainees compared with consultants, and this was not accounted for by differences in sociodemographic variables. Self-stigma was present in 68.4%.

Conclusions The work hours of doctors working in Irish hospitals were in excess of European Working Time Directive's requirements. Just over half of hospital doctors in Ireland had positive well-being. Compared with international evidence, they had higher levels of psychological distress but slightly lower symptoms of depression and anxiety. Two-thirds of respondents reported self-stigma, which is likely to be a barrier to

Strengths and limitations of this study

- This study provides new information on levels of well-being in a national cohort of hospital doctors in Ireland in the aftermath of the country's economic crises, which resulted in substantial cut backs in health expenditure and workforce depletion.
- The utilisation of widely used standard instruments allows for comparison with previous studies of the profession and the national population.
- The good response rate and the range of specialties represented validates the results as being representative.
- The population surveyed did not include doctors who may well be experiencing even greater distress including the most junior grade (interns) and those occupying service posts who are not registered with a postgraduate training body.
- The study is limited by the fact that it is cross-sectional in design and one cannot determine whether the associations observed are causally related or the potential direction of any effects.

developments contribute to ever spiralling costs, which governments seek to control while striving to improve the quality of patient care. Indeed, the utilisation of huge resources does not always translate into the delivery of high-quality care,[3] which is a growing challenge for doctors to provide in an environment where one's autonomy is eroded by cost containment and increasing targets.[4] While many of these changes are global phenomena, the situation in Ireland has been compounded by recent drastic cuts

[1]Occupational Health

http://bmjopen.bmj.com/content/bmjopen/7/10/e018023.full.pdf


2/3
Two thirds reported that if they were experiencing mental health problems they wouldn't want others to know (self-stigma)

Work stress (ERI)

		Consultants		HSTs		BSTs		Total	
		mean	SD	mean	SD	mean	SD	mean	SD
Effort Reward Imbalance (ERI)	Effort reward ratio	1.4	0.5	1.5	0.6	1.4	0.5	1.4	0.6
	Effort*	3.4	0.7	3.3	0.6	3.1	0.6	3.2	0.7
	Reward*	2.6	0.5	2.3	0.6	2.4	0.5	2.4	0.6
	Over-commitment*	2.6	0.6	2.7	0.6	2.6	0.6	2.6	0.6

*Range from 1 to 4, where higher number indicates higher level of effort/reward/over-commitment

Burnout symptoms in doctors

Maslach Burnout Inventory (MBI)	Consultant %	HST %	BST %	Total	Interns* (2012/13)	GPs** (2012/13)
MBI emotional exhaustion (EE)						
High	45.7	59.1	61	52.3	55.4%	52.7%
MBI depersonalisation (DP)						
High	18.3	38.3	43.3	28.6	51.5%	31.6%
MBI personal accomplishment (PA)						
Low	40.4	28.6	24.7	34.0	41.6%	16.3%

ANOVA confirmed significant differences between trainee and consultant grades with significantly higher levels of EE and DP in BSTs and HSTs (p <.001) while more consultants expressed low levels of personal accomplishment (p<.001)

*Hannan E et al (2017). Burnout and stress amongst interns in Irish hospitals: contributing factors and potential solutions. *IJMS* doi: 10.1007/s11845-017-1688-7

**O'Dea, B. et al (2016). Prevalence of burnout among Irish general practitioners: a cross-sectional study. *IJMS* DOI 10.1007/s11845-016-1407-9

Significance of findings

- Prevalence of high EE greatly exceeds levels reported in all reviewed studies (31.6 – 37.9%)
- Prevalence of high DP also higher than most studies reviewed but fell short of Australian study of doctors 2013 (21.2 - 34.6%)

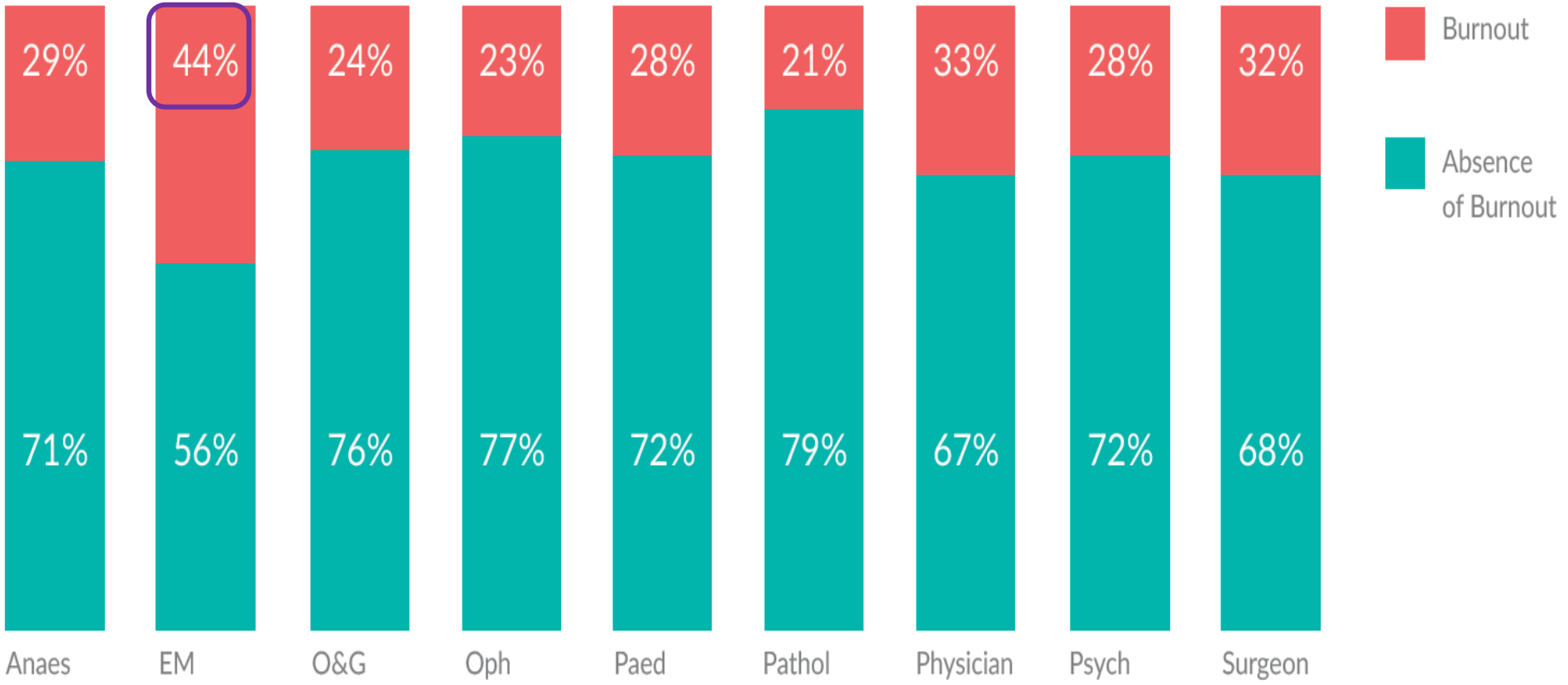
Burnout (MBI)

	Consultants	HSTs	BSTs	Total
Burnout	24.4%	38%	38.4%	30.7%
Absence of burnout	75.6%	62%	61.6%	69.3%

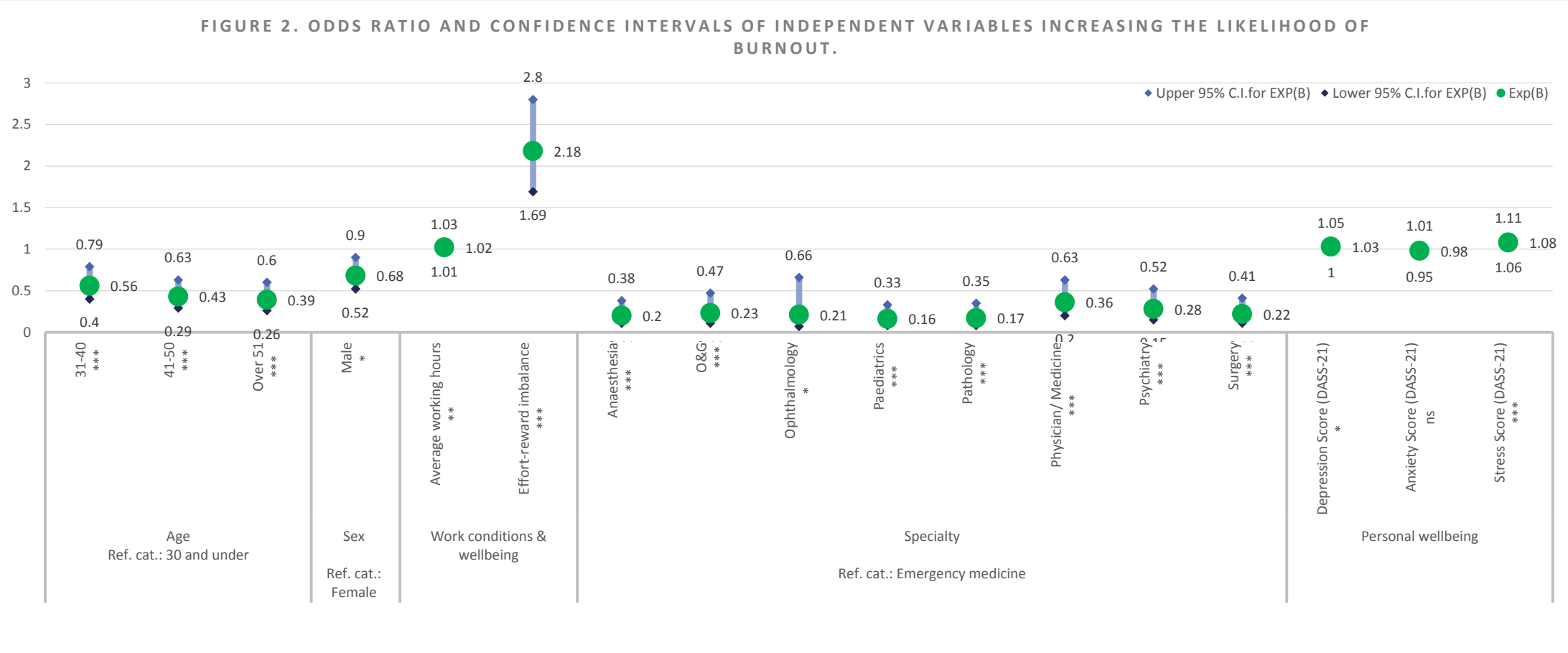
Burnout elsewhere

Year	Country	Cohort	%
2014	ROI	Hosp docs	30.7
2007	Netherlands	Residents (docs)	21.0

Burnout across hospital specialties



Independent variables associated with burnout



National Survey of Wellbeing: burnout

- 31% of all doctors suffered burnout, with the highest rates in emergency medicine doctors and lowest in pathologists

- **Burnout was significantly more prevalent in doctors practising in emergency medicine than in any other hospital specialty** (OR 0.16-0.36 for other specialties)

- Further analysis:
  - Younger age
  - Female sex (OR 0.68 [CI = 0.52-0.9])
  - Longer working hours (OR 1.02 [CI = 1.01 -1.03])
  - Greater work stress (OR 2.18 [CI = 1.69 -2.8])
  - Higher presence of symptoms of depression (OR 1.03 (1 – 1.05])
  - …and stress (OR 1.08 [CI = 1.06-1.11])

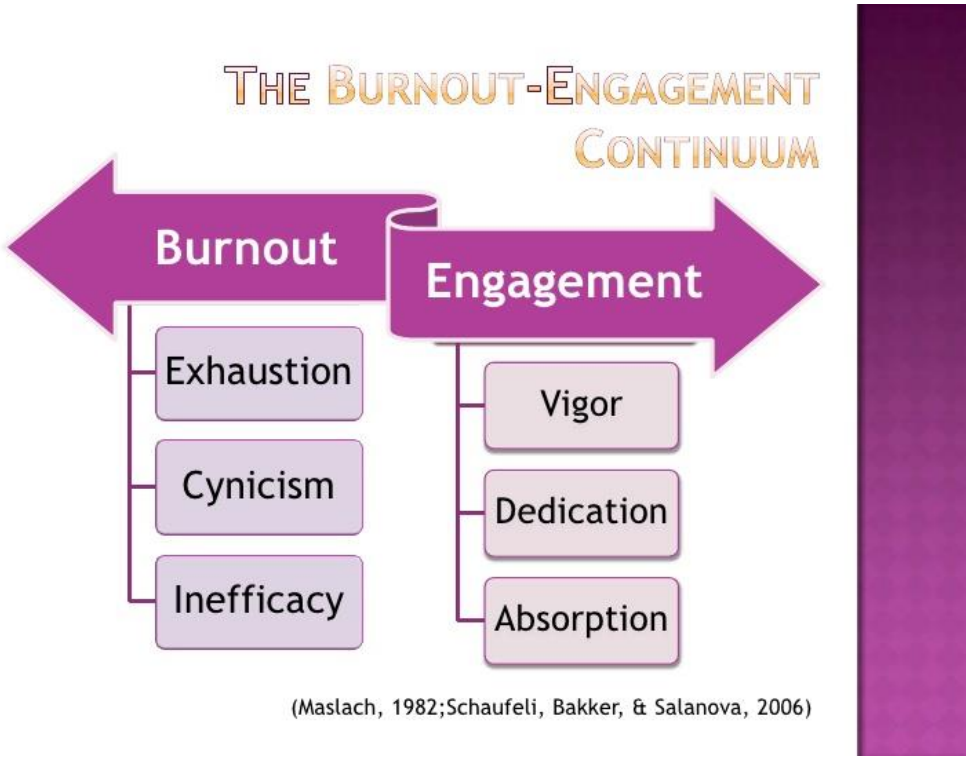
  were significantly associated with burnout (but anxiety was not).

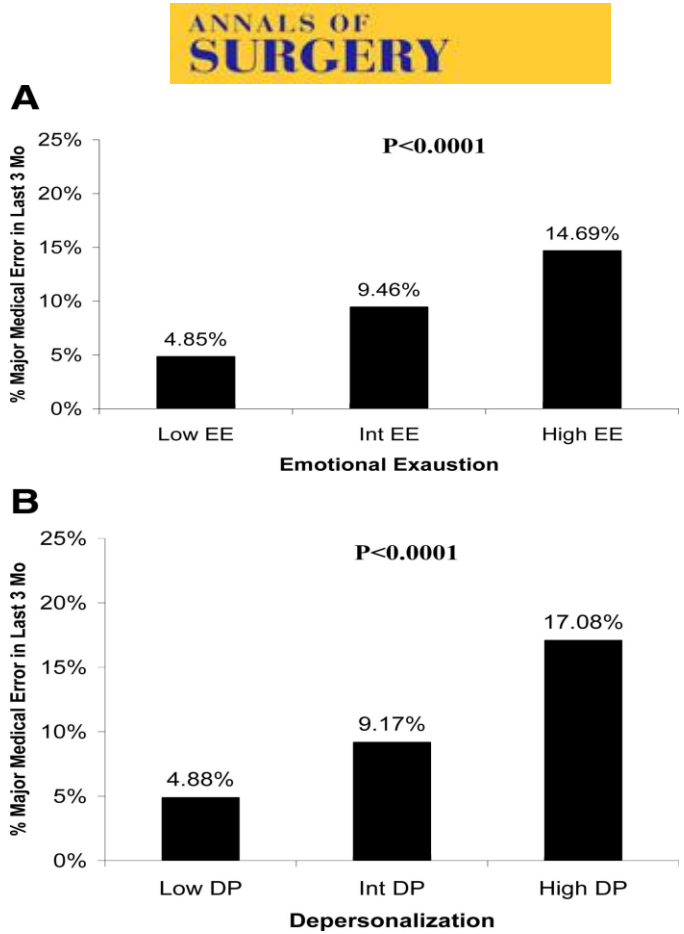
Does professional and personal distress impact on behaviour and on patient care?

- More dissatisfied doctors tend to have riskier prescribing profiles, less adherent patients & less satisfied patients all of which might affect the quality of patient care [1]
- Medical students with burnout[2] admitted to cheating in tests and feeling less altruistic. Depression was less associated with unprofessional behaviours.

1: Health Care Manage Rev 2003;28:119-40. 2: JAMA 2010;304:1173-80.

Burnout and medical error among American surgeons





Annals of Surgery 2010; 251: 995-1000

Review of CMDs and error / incidents (15 studies)

- **Strong evidence for a significant association between burnout / medical incidents** (2 longitudinal and 7 cross-sectional studies with a positive association [odds ratio (OR) 1.07–5.5])
- **Significant positive association between depression /medical incidents** (4 longitudinal studies and 3 cross-sectional studies (strong evidence; OR 2.21–3.29)
- **Significant positive association between fatigue / medical incidents** [1 longitudinal study and 1 cross-sectional study, but 1 cross-sectional study showed a non-significant association (strong evidence; OR 1.37)]
- **Significant positive association between sleepiness /medical incidents** [1 longitudinal study and 2 cross-sectional studies (strong evidence; OR 1.10–1.37)
- **No significant association was found between burnout and unprofessional behaviour** (inconsistent evidence)
- No evidence found for the association between unprofessional behaviour and **depression, fatigue or sleepiness**

M. A. de Jong, K. Nieuwenhuijsen, J. K. Sluiter; Common mental disorders related to incidents and behaviour in physicians, *Occupational Medicine*, Volume 66, Issue 7, 1 October 2016, Pages 506–513

Where do we go now?

- Do we build resilience in our doctors?
- Do we try to address the issues in the workplace?
- What role have the training bodies?

Articles

Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis

Colin P West, Liselotte N Dyrbye, Patricia J Erwin, Tait D Shanafelt

Summary

Background Physician burnout has reached epidemic levels, as documented in national studies of both physician training and practising physicians. The consequences are negative effects on patient care, professionalism, physic own care and safety, and the viability of health-care systems. A more complete understanding than at present o quality and outcomes of the literature on approaches to prevent and reduce burnout is necessary.

Methods In this systematic review and meta-analysis, we searched MEDLINE, Embase, PsycINFO, Scopus, We Science, and the Education Resources Information Center from inception to Jan 15, 2016, for studies of intervent to prevent and reduce physician burnout, including single-arm pre-post comparison studies. We required studi provide physician-specific burnout data using burnout measures with validity support from commonly acce sources of evidence. We excluded studies of medical students and non-physician health-care providers. We consid potential eligibility of the abstracts and extracted data from eligible studies using a standardised form. Outco were changes in overall burnout, emotional exhaustion score (and high emotional exhaustion), and depersonalisa score (and high depersonalisation). We used random-effects models to calculate pooled mean difference estimate changes in each outcome.

Findings We identified 2617 articles, of which 15 randomised trials including 716 physicians and 37 cohort stu including 2914 physicians met inclusion criteria. Overall burnout decreased from 54% to 44% (difference [95% CI 5–14]; p<0·0001; I^2=15%; 14 studies), emotional exhaustion score decreased from 23·82 points to 21·17 p reased from 9·05 to ed from 38% to 24% (34% (4% [0–8]; p=0

Lancet 2016; 388: 2272–81
Published Online September 28, 2016 http://dx.doi.org/10.1016/S0140-6736(16)31279-X
See Comment page 2216

Division of General Internal Medicine and Division of Biomedical Statistics and Informatics (Prof C P West MD), **Division of Primary Care Internal Medicine** (Prof L N Dyrbye MD), **Medical Library** (P J Erwin MLS), **and Division of Hematology** (Prof T D Shanafelt MD), **Mayo Clinic, Rochester, MN, US**

Correspondence to: Prof Colin P West, Division of General Internal Medicine and Division of Biomedical Statistics and Informatics, Rochester, MN
west.colin(

thebmj

BMJ 2017;358:j3360 doi: 10.1136/bmj.j3360 (Published 2017 July 14) Page 1 of 2

EDITORIALS

Burnout among doctors

A system level problem requiring a system level response

Jane B Lemaire *clinical professor*[1], Jean E Wallace *professor*[2]

[1]Cumming School of Medicine, University of Calgary, Alberta, Canada; [2]Department of Sociology, Faculty of Arts, University of Calgary

Although doctors have a professional responsibility to be at their best,[1] the wider profession and healthcare organisations urgently need to assume a greater responsibility for burnout. Burnout is a work related hazard that is prevalent among those working in people oriented professions such as healthcare.[2 3] Care providers commonly develop intense interpersonal relationships with those they care for, often prioritising others' needs over their own. While helping and caring for others can be extremely fulfilling, it can also drain your emotional reserves. Over time, this may result in burnout, which is indicated by feelings of overwhelming exhaustion, depersonalisation or cynicism towards people and work, and a sense of professional inefficacy.[2 3]

Burnout is generally high among doctors globally, although the exact rates vary by country, medical specialty, practice setting, gender, and career stage.[3-7] Estimates also vary depending on disorganised rotations and inadequate supervision are also associated with learner burnout.[11]

Chaotic clinic settings with bottlenecks to patient flow and lost charts are associated with doctor burnout as well as medical errors.[15] Doctors on hospital wards are seen struggling to maintain performance standards in a chaotic and unpredictable work environment by using adaptability, flexibility, interpersonal skills, and humour to diffuse stress.[16]

It is increasingly clear that effective interventions must be directed at the profession and healthcare organisations as well as at individuals. A recent meta-analysis showed that, although individual targeted interventions such as mindfulness, stress reduction techniques, and education around communication skills, exercise, and self confidence resulted in small reductions in burnout, they worked better in combination with organisational interventions such as rescheduling shifts, reducing

Research

JAMA Internal Medicine | Original Investigation | PHYSICIAN WORK ENVIRONMENT AND WELL-BEING

Controlled Interventions to Reduce Burnout in Physicians
A Systematic Review and Meta-analysis

Maria Panagioti, PhD; Efharis Panagopoulou, PhD; Peter Bower, PhD; George Lewith, MD; Evangelos Kontopantelis, PhD; Carolyn Chew-Graham, MD; Shoba Dawson, PhD; Harm van Marwijk, MD; Keith Geraghty, PhD; Aneez Esmail, MD

IMPORTANCE Burnout is prevalent in physicians and can have a negative influence on performance, career continuation, and patient care. Existing evidence does not allow clear recommendations for the management of burnout in physicians.

OBJECTIVE To evaluate the effectiveness of interventions to reduce burnout in physicians and whether different types of interventions (physician-directed or organization-directed interventions), physician characteristics (length of experience), and health care setting characteristics (primary or secondary care) were associated with improved effects.

DATA SOURCES MEDLINE, Embase, PsycINFO, CINAHL, and Cochrane Register of Controlled Trials were searched from inception to May 31, 2016. The reference lists of eligible studies and other relevant systematic reviews were hand searched.

STUDY SELECTION Randomized clinical trials and controlled before-after studies of interventions targeting burnout in physicians.

DATA EXTRACTION AND SYNTHESIS Two independent reviewers extracted data and assessed the risk of bias. The main meta-analysis was followed by a number of prespecified subgroup and sensitivity analyses. All analyses were performed using random-effects models and heterogeneity was quantified.

MAIN OUTCOMES AND MEASURES The core outcome was burnout scores focused on emotional exhaustion, reported as standardized intervals.

RESULTS Twenty independent comparisons fro (n = 1550 physicians; mean [SD] age, 40.3 [9.5] associated with small significant reductions in bu [SMD] = −0.29; 95% CI, −0.42 to −0.16; equal to domain of the Maslach Burnout Inventory above suggested significantly improved effects for org (SMD = −0.45; 95% CI, −0.62 to −0.28) compar (SMD = −0.18; 95% CI, −0.32 to −0.03). Interve and in primary care were associated with highe delivered in inexperienced physicians and in se significant. The results were not influenced by t

Editorial page 164
Supplemental content
CME Quiz at jamanetworkcme.com

Comment

Doing something about physician burnout

physicians
is a crisis of
s and work
pathy and
leged class.
negatively
ilability to
ns, health-
bly worried
of health-

In *The Lancet*, Colin West and colleagues[8] report a comprehensive meta-analysis that raises fundamental questions about what clinicians and health-care organisations should be doing about burnout now. They reviewed 2617 articles, of which 15 randomised trials and 37 cohort studies were of sufficient quality; all but three were done in high-income countries. Interventions reduced overall burnout from 54% to 44%, high emotional exhaustion from 38% to 24%, and high depersonalisation from 38% to 34% among participating physicians. West and colleagues[8] note that individual (eg

Annals of Internal Medicine

IDEAS AND OPINIONS

Development of a Research Agenda to Identify Evidence-Based Strategies to Improve Physician Wellness and Reduce Burnout

Liselotte N. Dyrbye, MD, MHPE; Mickey Trockel, MD, PhD; Erica Frank, MD, MPH; Kristine Olson, MD; Mark Linzer, MD; Jane Lemaire, MD; Stephen Swensen, MD, MMM; Tait Shanafelt, MD; and Christine A. Sinsky, MD

Physician burnout, a syndrome characterized by emotional exhaustion, depersonalization, and decreased professional effectiveness, seems to be increasing (1, 2). A 2011 study involving more than 7000 physicians found that 41% had burnout and that burnout was more prevalent among physicians than the general U.S. working population (3). A 2014 follow-up study found that burnout rates had increased in physicians from all specialties, without similar changes in U.S. workers overall, suggesting that the increase has not paralleled general societal changes (1). Evidence-based strategies are needed to address this challenge. Few trials have evaluated interventions to reduce physician burnout (2), many questions remain, and additional interventions are needed to alleviate this problem.

In 2016, 32 experts in the study of burnout in health professionals gathered for the Joy in Medicine Research Summit, sponsored by the American Medical Association, to develop a national agenda for research in this field. (For a list of participants see the **Appendix**, available at Annals.org.) During the meeting, each participant was given a card on which to write his or her top suggestion for accelerating the discovery and dissemination of effective strategies to promote physician well-being. The group members then randomly exchanged the cards with one another 5 times, and each member scored each suggestion on a scale of 1 to 5 during each exchange. The group discussed the 6 highest-scoring ideas, which led to the recommendations outlined here.

Recommendation 1: Further Establish the Links Among Physician Burnout, Well-Being, and Health Care Outcomes

Several studies reported associations among physician burnout, quality of care, and patient outcomes, resulting in physician wellness being labeled the "missing quality indicator" (4) and calls for the Triple Aim to be expanded to the Quadruple Aim (5).

Recommendation 2: Estimate the Economic Cost of Physician Burnout

Medical error, malpractice suits, physician turnover, reductions in clinical work hours, and lower patient satisfaction are among the consequences of burnout that have tangible organizational costs (4, 6). In a prospective study of 2660 physicians, burnout scores at baseline predicted actual reduction in time at work during the following 24 months, according to payroll records (6). Work inefficiencies that contribute to burnout, particularly those related to the electronic health record and computer order entries by physicians, also have financial implications (7). Research is needed to explore the relationship between physician burnout and behaviors that influence health care costs, such as referral patterns, test ordering, and prescribing practices. Economic models estimating the costs of burnout may lead to greater financial support for intervention research.

Recommendation 3: Build Alliances to Address Physician Burnout

New alliances among researchers and health care delivery systems, foundations, and funding agencies are needed to develop and test interventions. Collaborations with funding agencies should be pursued to design projects that have realistic budgets and timelines and align outcomes studied with funders' interests. Partnering with other stakeholders may help in disseminating successful strategies. Involving the larger community, including employers, groups interested in improving quality and safety, health insurers, and patients, also may create leverage. Development of well-funded and structured consortiums might accelerate research and translation of findings. Although improvement strategies may be most effective if developed or tailored specifically for each setting, multi-institutional alliances may facilitate benchmarking and natural experimentation by comparing results locally with trends elsewhere.

Research

Launch of department

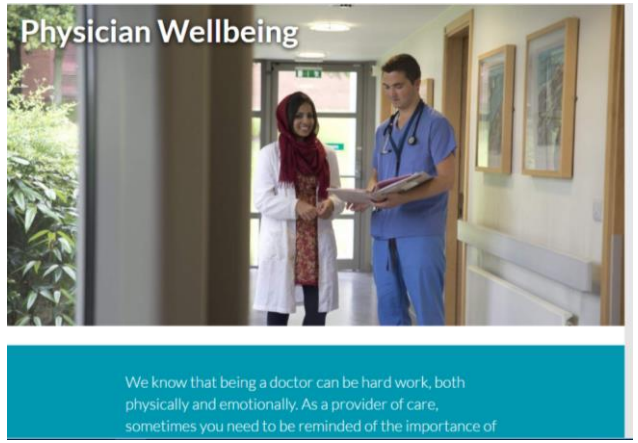
Education

Position paper

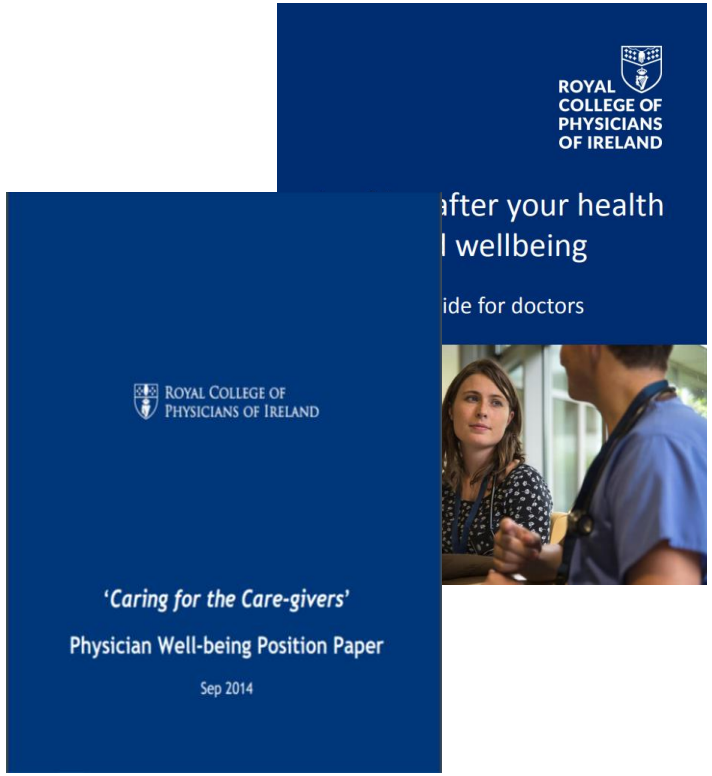
Training

Guidance for doctors

ROYAL COLLEGE OF PHYSICIANS OF IRELAND



We know that doctors who enjoy good mental health and are 'engaged' achieve better patient outcomes



7/10

Seven out of ten doctors love what they do and have a strong desire to practise medicine.

The future……

- HSE's Workplace Health and Wellbeing Unit
  - Strategy for Doctors Health and Wellbeing 2018-2021.
- To be launched April 2018

References

1. Weinstein MJ. Out of the Straitjacket. N Engl J Med 2018; 378:793-795
2. Rimmer A. Stress of working for the NHS is killing staff, King's Fund says. 15/1/2016
3. Amoafo E, Hanbali N, Patel A, Singh P. What are the significant factors associated with burnout in doctors? Occupational Medicine (Lond). 2015;65(2):117-21
4. Hayes B, Prihodova L, Walsh G*, et al* . What's up doc? A national cross-sectional study of psychological wellbeing of hospital doctors in Ireland. *BMJ Open* 2017;**7:**e018023. doi: 10.1136/bmjopen-2017-018023
5. Hannan E et al (2017). Burnout and stress amongst interns in Irish hospitals: contributing factors and potential solutions. *IJMS* doi: 10.1007/s11845-017-1688-7
6. O'Dea B et al (2016). Prevalence of burnout among Irish general practitioners: a cross-sectional study. *IJMS* DOI 10.1007/s11845-016-1407-9
7. Health Care Manage Rev 2003;28:119-4 Williams ES, Skinner AC. Outcomes of physician job satisfaction: a narrative review, implications and directions for future research. *Health Care Manage Rev* 2003; 28**:** 119–40.
8. Dyrbye LN et al. Relationship between burnout and professional conduct and attitudes among US medical students. JAMA 2010;304:1173-80
9. Shanafelt TD et al. Burnout and medical error among American surgeons. Annals of Surgery 2010; 251: 995-1000 et
10. MA de Jong et al. Common mental disorders related to incidents and behaviour in physicians, *Occupational Medicine*, Volume 66, Issue 7, 1 October 2016, Pages 506–513


Thank you