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Vol 7 Issue 3 Aug 2021

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- Revenue is raised from, among other sources, the sale of advertising in the APPSA Journal

- Publishing dates for 2021: February, May, August and November.

- All editorial material for the APPSA Journal must reach The Editor at least six weeks prior to the month of publication. Send material to:
  Email: carma@gonet.co.za
  The Editor - APPSA Journal
  Tel: 072 825 3124

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PUBLISHED BY:
APPSA

Contents

5 **PSYCHOSOCIAL IMPACT OF THE COVID-19 PANDEMIC**
Initial Baseline Data Frame

21 **FINDING OUR RESILIENCE**
By Sheila L Allen, BSN, RN, CNOR, CRNFA(E)

27 **PERI-OPERATIVE FLUID MANAGEMENT**
Concensus Statement From The Enhanced Recovery Partnership
By Monty G Mythen, Michael Swart, Nigel Acheson, Robin Crawford, Kerri Jones, Martin Kuper, John S McGrath and Alan Horgan

35 **REVISITING ENHANCED RECOVERY**
Surgical Pathways
By Kate Woodhead, RGN, DMS

REGULAR FEATURES

3 From The President's Desk

4 From The Editor's Desk

From The PRESIDENT

Fellow peri-operative practitioners, we are now 17 months into this pandemic. I would like to thank every one of you for your commitment and dedication during these trying months. You have been an integral part of our workforce, fighting daily, never stopping, never giving up. My sincere condolences to all who have lost loved ones: husbands, wives, children, friends and colleagues. This Third Wave turned many of us into statistics. Gauteng was extremely hard hit. We worked harder than we have ever done before, but the flood of COVID-19 cases just never stopped. Many of us were nursing patient in cars outside the Emergency Units; minutes turned to hours as we waited for beds. Pressure mounted and patient numbers increased. June and July were nightmare months that blended into one another as the numbers climbed past the 100 000 mark. Thankfully, it seems that we have reached the peak and the numbers are dropping off in Gauteng - only to start rising sharply in the Western Cape. Hopefully it will not reach the peak in the Western Cape that we faced in Gauteng.

The problem is that we have no idea how long this pandemic will last. Will this be 'the new normal' of nursing care? Will isolation nursing, running around looking for oxygen, opening COVID-19 operating room suites and cutting down on theatre cases be the order of the day? We have seen the re-deployment of theatre staff to other units in need of specialised nursing care. Theatre staff are adding 'specialties' to their CVs because they can now care for every eventuality: patients on ventilators; high flow; NIV; isolation nursing; neonatal ICU ... the list is endless.

The greatest stumbling block we had seems to be getting into a rhythm: the vaccination rollout plan is moving in the right direction. Vaccination centres are springing up, and many 35-year-olds are now being vaccinated. Sadly there are many who still do not believe in vaccinations, but it is really the only answer to addressing this pandemic successfully. Years ago, when we were young mothers, we took our new-born babies to clinics for vaccinations, keeping their cards up-to-date to prove they were vaccinated - and safe from terrible diseases. Today it is no different. Please, I urge every South African to look into getting themselves and their offspring vaccinated. We are only going to beat this pandemic if we are all vaccinated and have a degree of protection against COVID-19.

APPSA members, we promised you we would resume our Study Day Programme as soon as possible. This is still our intention, but we have to be guided by science. At the moment it is still not safe to gather in any meaningful numbers. Until then, we need to keep in touch with each other by any means possible. Thank you, Madeleine Hicklin and Carma Design, for continuing to ensure that our members get a journal and for keeping us in touch with each other and in touch with medically relevant news. As soon possible, we will revert to our printed journal. The Presidents of all the Chapters are ready to start with physical meetings again, but we need our members to pay their membership fees and recruit other members so we can emerge stronger than ever before. We have many stories to share, and many battle scars to brag about. Until we can meet again in person, stay kind and considerate, compassionate and caring - and look after yourself and your families.

I believe we will get through the pandemic, we must just have faith.
Marilyn de Meyer

From The EDITOR'S DESK

Today - what stressful times we live in. Yesterday is a memory; tomorrow is not promised; today is a gift - that's why it's called the PRESENT.

These two sentences describe the same thing: today, the times we live in. The difference is our attitude to the statement, and the adjectives we use to describe it. This is what I want to discuss in this *Editor's Letter.* Our attitude to life determines how we survive, or sink, under the pressure of the stresses we are facing in life dominated by COVID-19.

There is no doubt in my mind that every single one of us is going through the most unusual, difficult and stressed time of our collective lives. 2019 was a hard year for many people, from a financial point of view. A lot of businesses were under pressure and I remember the joy I, and many others, felt as the countdown to 2020 began on 31 December. We all had such high hopes that the start of a new year would bring much joy and tremendous relief from the hardships of 2019. Boy, were we in for a surprise! 2020 was the hardest year yet. For everyone ... or so we thought.

I don't know many people who really celebrated the end of 2020 with the hope that 2021 would be a 'return to life as we knew it'. I know many hoped that 2021 would be an easier year than 2020 was, but it has proven not to be so. In many ways, it has been harder. The Third Wave has been punishing. The numbers of people infected and affected by COVID-19 have become names of people we know, and are now family members we have lost. Nothing could have been worse than that. But, as Pooh Bear always says: Anyone can show up when you're happy. But the ones who stay by your side when your heart falls apart, they are your true friends.

What COVID-19 has really taught me is who my real, true friends are. Who my support system really and truly is. It's those people we can lean on when the going really gets tough. But it has also taught me that I have been incredibly lucky to have loved some people so much, and so hard that it aches to have to say goodbye. It has taught me to use my voice, to be brave enough to listen to my heart and to live life TODAY ... because today is a present that is not given to everyone.

I have always said that if I could choose to be anything, I would choose to be kind - mainly because I have no idea what battles people are fighting. I was also taught by my parents to say 'please' and 'thank you' - because good manners count. In every situation.

So, on behalf of all of South Africa, allow me to say 'Thank You' to all of you who put your own life on the line by showing up for work every day to treat the ill, the wounded and the injured.

Thank you for choosing to be kind.
Thank you for choosing to be brave.
Thank you for listening to your heart.
Thank you for caring about others.

Madeleine Hicklin

PSYCHOSOCIAL IMPACT OF THE COVID-19 PANDEMIC ON 4 378 UK HEALTHCARE WORKERS AND ANCILLARY STAFF:

Initial Baseline Data Frome A Cohort Study Collected During The First Wave Of The Pandemic

By Danielle Lamb, Sam Gnanapragasam, Neil Greenberg, Rupa Bhundia, Ewan Carr, Matthew Hotopf, Reza Razavi,Rosalind Raine, Sean Cross, Amy Dewar, Mary Docherty, Sarah Dorrington, Stephani Hatch, Charlotte Wilson-Jones, Daniel Leightley, Ira Madan, Sally Marlow, Isabel McMullen, Anne-Marie Rafferty, Martin Parsons, Catherine Polling, Danai Serfioti, Helen Gaunt, Peter Aitken, Joanna Morris-Bone, Chloe Simela, Veronica French, Rachel Harris, Sharon A M Stevelink, Simon Wessely

INTRODUCTION

In the UK, universal health coverage is provided through the National Health Service (NHS). The NHS is largely free at the point of use, funded primarily through general taxation. All residents are automatically entitled to free public healthcare, including hospital, physician and mental healthcare. The NHS has faced extraordinary pressures during the COVID-19 pandemic. NHS clinical and non-clinical healthcare workers (HCWs) have had to contend with a range of significant stressors including the risk of infection, workload changes, sleep deprivation, loss of colleagues and sometimes providing care in less than adequate settings while reporting insufficient access to personal protective equipment (PPE). All of these stressors may contribute to an increase in the prevalence of common mental disorders (CMDs), as well as exposing HCWs to so called 'moral injury', the distress resulting from violation of one's moral code. For example, HCWs may feel betrayed by their employers or others outside the healthcare service who they once trusted, provided patient care in such a way that it violated their own moral codes or values or saw things in the healthcare service that they felt were morally wrong.[1]

In addition to workplace-based stressors, HCWs are also vulnerable to wider socio-economic stressors such as loss of social support, financial difficulties and infection/death of loved ones. Concerns have been raised about the potential psychosocial toll on this population during COVID-19, based on evidence from previous epidemics, mainly severe acute respiratory syndrome, Middle East respiratory syndrome and Ebola. Symptoms of anxiety, depression and post-traumatic stress disorder (PTSD) have been reported as adverse outcomes for HCWs during, and in the years following, those epidemics.[2, 3, 4]

Self-reported mental health has been deteriorating across the UK during the pandemic, with large-scale population studies reporting increased prevalence of depression and anxiety.[5, 6, 7] However, there is conflicting evidence about whether the psychosocial impact of the COVID-19 pandemic has been more detrimental for HCWs than for the general population. A significant limitation of existing research related to the mental health of HCWs during COVID-19 is the use of cross-sectional study designs and convenience samples recruited via social media, with no clear sampling frame or ability to calculate a response rate and assess bias.[8] Our study (NHS CHECK) aims to remedy these limitations using a cohort design with a defined source population

including all NHS staff (not just clinical staff). The detailed information we hold about our population is important in allowing us to assess the representativeness of our sample and understand and mitigate the impact of non-response bias. NHS CHECK is investigating CMDs and moral injury, as well as commonly reported adverse mental health outcomes such as, for example, anxiety, depression, PTSD, suicidal ideation and alcohol misuse. We report on preliminary baseline data collected during the initial lockdown period in the UK (April to June 2020), describing a cohort of HCWs from a known population of all staff in the first three of the participating Trusts. Here we report associations between socio-demographic and occupational factors with adverse mental health outcomes in HCWs.

Our research questions were:

1. What is the socio-demographic, occupational and mental health profile of our sample of HCWs?
2. What factors are associated with probable CMDs as measured by the General Health Questionnaire (GHQ-12)?
3. What factors are associated with other adverse mental health outcomes as measured by the seven-item Generalised Anxiety Disorder (GAD-7), nine-item Patient Health Questionnaire (PHQ-9), Alcohol Use Disorder Identification Test (AUDIT), six-item Post-Traumatic Stress Disorder checklist (PCL-6) and Clinical Interview Schedule (CIS-R)?

METHOD

Study design and participants

The sample for NHS CHECK includes all staff working in participating NHS Trusts, including medical, nursing, midwifery, allied health professionals, support, administrative, management and students who volunteered or were fast-tracked into clinical roles during the COVID-19 pandemic. In this paper, we report the results from the initial lockdown period of the pandemic (April to June 2020) during which there were on-going high levels of COVID-19 hospital admissions and mortality. At that time, the study had been launched across three NHS Hospital trusts in South East London serving two of the Greater London boroughs that were in the top 10 for highest rates of COVID-19 related deaths during this period.[9]

Procedures

We identified eligible participants via the Trusts' human resources (HR) systems. We used the Trusts' existing group emails to distribute communications to NHS staff explaining and promoting the study. A dedicated NHS CHECK recruitment email was sent by senior management explaining the study, with a link to the study website. A variation of this email was sent repeatedly during baseline recruitment. We also used existing team-based local contacts established through in-reach staff support, for example, staff support teams/leads, chief nursing officers, medical directors, occupational health departments, trade union representatives and well-being hub users. NHS CHECK was promoted during team briefings, included in Trust newsletters, news items on Trust intranet websites, closed social media groups and screen savers on Trust computers, etc.

Data collection and materials

A survey was developed with input from the NHS CHECK Patient and Public Involvement (PPI) advisory group, and we tested the acceptability of the questions, materials and data collection

procedures with this small informal reference group of frontline staff (psychologists, managers, administrators, security staff, intensivists and trainees) and refined it accordingly. Participation in the baseline survey of NHS CHECK involved completing a short (5 minute to 10 minute) on-line questionnaire that was hosted using Qualtrics questionnaire software, with the option to complete an additional, longer (10 minute to 15 minute) questionnaire if they wished. Participant information provided on the study website reinforced that participation was voluntary and confidential. Participants provided on-line informed consent before starting the on-line survey. NHS CHECK was launched on 24 April 2020, five weeks after the initial lockdown in the UK began (23 March 2020).

Short baseline questionnaire

The short baseline questionnaire collected a variety of information, including: (1) contact details, (2) occupational information (for example, occupational group and length of professional registration) and (3) socio-demographic characteristics (including age, sex, ethnicity and marital status). The primary outcome was prevalence of probable CMDs, which were assessed using the GHQ-12, using GHQ scoring method, with a cut-off score of 4 or more indicating 'caseness' (indicating increased probability of experiencing a recognised mental disorder) of a CMD.[10]

Longer baseline questionnaire

If participants opted to fill in the longer baseline survey, the following validated measures on mental health were used as secondary outcomes, with binary outcomes variables defined using the following cut-off scores for caseness: the GAD-7 scale to measure probable moderate anxiety disorder with a cut-off score of 10 or more[11]; the PHQ-9 to measure probable moderate depression with a cut-off score of 10 or more[12]; the 10-item AUDIT to measure alcohol consumption with a cut-off score of 8 or more indicative of hazardous drinking[13]; and the PCL-6 civilian version to measure PTSD[14] with a score of 14 or more indicating the presence of probable PTSD.

In addition, the nine-item Moral Injury Event Scale (MIES) to measure moral injury,[15] with a higher score indicating more exposure to morally injurious events (possible score range 9 to 54). For the purpose of analysis, the MIES was split into tertiles (lower: 9; middle: 10 to 16; upper: 17 to 54). We also assessed suicidal ideation, using items related to suicidal thoughts, suicide attempts and self-harm derived from the Clinical Interview Schedule (CIS-R).[16] The following items were asked: 'Have you ever thought of taking your life, even though you would not actually do it?'; 'Have you ever made an attempt to take your life, by taking an overdose of tablets or in some other way?'; and 'Have you ever deliberately harmed yourself in any way but not with the intention of killing yourself?'. Response options were, 'Yes, in the past 2 months', 'Yes, but not in the past two months' or 'No'.

The measures included aimed to capture commonly reported adverse mental health outcomes and enable comparison with previous and ongoing research. For all validated measures used, recommended scoring methods and cut-off scores have been applied.

Statistical analysis

Aggregate-level population data were provided by participating Trust HR departments including information on the number of employees and the age, sex and ethnicity composition of the workforce. From this, we calculated a response rate for each Trust. Response weights were generated using a raking algorithm based on age, sex and ethnicity.[17] For weighting purposes

only, missing demographic data were imputed using multiple imputation. Missingness [in statistics this refers to missing information or data- *Editor's Note*] was no more than 6%, 2% and 2% for age, sex and ethnicity, respectively, before imputation. Duplicate entries were removed. The analysis then proceeded in five stages.

First, we described the representativeness of the sample by comparing composition in terms of age, sex and ethnicity with the HR population data using frequencies and percentages. Second, we summarised survey participants with appropriate descriptive statistics for each variable (frequencies and weighted percentages for categorical variables, mean and SD for continuous variables). Third, we described differences between individuals who completed both the 'short' and 'long' baseline surveys versus those completing only the 'short' survey. Fourth, we summarised the weighted prevalence of the primary (GHQ) and secondary outcomes (GAD-7, PHQ-9, AUDIT, PCL-6, MIES and CIS-R) for all participants and stratified by socio-demographic and occupational factors. Finally, we used multi-variable binary logistic regression models to explore relationships of socio-demographic and occupational factors (age, sex, ethnicity and role), as well as moral injury with the primary and secondary outcomes, adjusting for all covariates in the models. All analyses were conducted using Stata V.16.

RESULTS

The total sample size was 4 378 (n = 37 870), representing a response rate of 12%.

Table 1 Demographic characteristics of the sample (n=4378)*

Characteristic	N (weighted %)
Age (years)	Mean age: 41 (SD 12)
≤30	985 (24.2)
31–40	1138 (30.7)
41–50	979 (23.5)
51–60	861 (20.8)
≥61	171 (4.1)
Sex	
Female	3482 (74.8)
Male	833 (24.6)
Other	6 (0.2)
Prefer not to say	18 (0.5)
Relationship status	
Married/civil partnership	1827 (42.2)
Cohabiting/in a relationship	1129 (23.2)
Divorced/separated/widowed	251 (6.3)
Single	1114 (28.3)
Ethnicity	
White	3215 (53.2)
Black/African/Caribbean/black British	373 (20.0)
Asian/Asian British	477 (17.4)
Mixed/multiple racial and ethnic groups	173 (3.9)
Other racial and ethnic minority groups†	90 (4.5)
Country of birth	
UK	2974 (61.1)
EU (not UK)	525 (9.8)
Other	812 (29.2)
Length of time living in the UK (for those born outside the UK) (years)	
<1–2	106 (7.8)
3–5	163 (10.9)
6–10	210 (14.5)
11–20	404 (32.5)
21–29	223 (17.1)
≥30	220 (16.5)
Prefer not to say	7 (0.7)
Main role‡	
Doctor	557 (12.8)
Nurse	1107 (26.7)
Other clinical	1306 (28.3)
Non-clinical	1356 (32.3)

* Frequencies are unweighted, and proportions are weighted. Numbers may not add up due to missing data

† 'Other racial and ethnic minority groups' includes the options 'Arab' and 'Any other ethnic background'

‡ In the 'main role' variable, 'other clinical' includes all other clinical roles, for example, physiotherapist, psychologist, dietician, radiographer, to name a few. 'Non-clinical' includes all other roles, for example, administrative, domestic services, IT support, and finance

Demographic composition of the sample in comparison with population

The demographic characteristics of the sample are described in Table 1. In all data presented here, frequencies are unweighted, and proportions are weighted to adjust for Trust size and non-response (Trust-level data provided by Trust HR: see on-line supplemental Table 1 for full weighted and unweighted proportions). There were some statistically significant differences between those who completed only the short survey (n = 2 212) and those who completed both the long and short survey (n = 2 166), with men, those identifying as being from racial and ethnic minority groups, those born outside the EU (including UK), and doctors, other clinical staff and non-clinical staff being less likely than nurses to complete both surveys (see on-line supplemental Table 2 for full details).

Table 2 Prevalence of adverse mental health outcomes*

Characteristic	N	N (% meeting cut-off score) (95% CI)	Mean (95% CI)
Probable common mental disorders (CMDs) (*GHQ: cut-off ≥4, scale range: 0–12*)	3967	2338 (58.9) (58.1 to 60.8)	4.9 (4.7 to 5.0)
Probable anxiety (*GAD-7: cut-off ≥10, scale range: 0–28*)	2471	558 (23.2) (21.3 to 25.3)	6.5 (6.3 to 6.8)
Probable depression (*PHQ-9: cut-off ≥10, scale range 0–36*)	2466	665 (27.3) (25.3 to 29.4)	7.1 (6.8 to 7.3)
Alcohol misuse (*AUDIT: cut-off ≥8, scale range 0–45*)	2308	278 (10.5) (9.2 to 11.9)	3.5 (3.3 to 3.7)
Probable PTSD (*PCL-6: cut-off ≥14, scale range 6–30*)	2447	715 (30.2) (28.1 to 32.5)	11.9 (11.7 to 12.2)
Moral injury (*MIES: no cut-off, scale range 9–54*)	2399	(no cut-off)	15.5 (15.1 to 16.0)

GHQ was measured in the short survey, while the other measures were included in the optional longer survey, hence the difference in numbers completing each.

* Frequencies are unweighted, proportions and means are weighted. AUDIT, Alcohol Use Disorder Identification Test; GAD-7, seven-item Generalised Anxiety Disorder; GHQ, General Health Questionnaire; MIES, Moral Injury Event Scale; PCL-6, six-item Post-Traumatic Stress Disorder checklist; PHQ-9, nine-item Patient Health Questionnaire.

Mental health measures

Table 2 shows the prevalence of probable CMDs, measured by the GHQ, with 58.9% (95% CI 58.1 to 60.8) of participants meeting the cut-off score. In terms of secondary outcomes, 23.2% (95% CI 21.3 to 25.8) met the cut-off score for probable anxiety (GAD-7), 27.3% (95% CI 25.3 to 29.4) for probable depression (PHQ-9), 10.5% (95% CI 9.2 to 11.9) for probable alcohol misuse (AUDIT), 30.2% (95% CI 28.1 to 32.5) for probable PTSD (PCL-6) and the sample had a mean score of 15.5 (95% CI 15.1 to 16.0) on the moral injury scale (MIES). A full breakdown of each measure by all demographics is given in on-line supplemental Table 3.

In the past two months, 8.5% (95% CI 7.3 to 9.8) of participants had considered taking their own life, while 2.0% (95% CI 1.4 to 2.7) had attempted suicide, and 3.0% (95% CI 2.3 to 3.9) had harmed themselves (see Table 3 for full details).

Table 3 Prevalence of suicidal thoughts (CIS-R)*

	N	Yes, in the past 2 months, n (%) (95% CI)	Yes, but not in the past 2 months, n (%)(95% CI)	No, n (%)(95% CI)
Have you ever thought of taking your life, even if you would not really do it?	2487	227 (8.5) (7.3 to 9.8)	526 (19.5) (17.8 to 21.3)	1734 (72.0) (70.0 to 74.0)
Have you ever made an attempt to take your life, by taking an overdose of tablets or in some other way?	2487	47 (2.0) (1.4 to 2.7)	136 (5.1) (4.2 to 6.2)	2304 (92.9) (91.7 to 94.0)
Have you ever harmed yourself in any way but not with the intention of killing yourself?	2488	75 (3.0) (2.3 to 3.9)	282 (9.6) (8.4 to 10.9)	2131 (87.4) (85.9 to 88.8)

*Frequencies are unweighted, proportions are weighted.
CIS-R, Clinical Interview Schedule.

Logistic regression models

The multi-variable logistic regression models showed that the likelihood of meeting the GHQ cut-off score, indicating probable CMDs, was 0.98 (95% CI 0.97 to 0.99) times lower for each increased year of age, adjusting for all other covariates. Males were 0.7 (95% CI 0.5 to 0.9) times less likely to have probable CMDs than females. Nurses were 2.2 (95% CI 1.5 to 3.1) more likely to have probable CMDs than doctors, with other clinical and non-clinical staff also more likely to have probable CMDs than doctors. Those reporting high exposure to potentially morally injurious events were 2.6 (95% CI 2.0 to 3.4) times more likely to report symptoms of probable CMDs than those reporting low exposure (Table 4). These patterns were similar when exploring our secondary outcomes of interest, with older participants and men being less likely to have probable anxiety and PTSD than younger participants and women. Black HCWs were less likely to have probable depression compared with their white peers, while black, Asian and other racial and ethnic minority groups were less likely to engage in alcohol misuse than white HCWs. Doctors were less likely to report symptoms of probable anxiety, depression and PTSD compared with all other groups of HCWs. Those with higher exposure to moral injury were more likely to have probable depression, alcohol misuse and PTSD symptoms. Full details are shown in Table 4.

Table 4 Weighted multivariable binary logistic regression models of factors associated with adverse mental health outcomes

	Probable common mental disorders OR (95% CI) n=2245	Probable anxiety OR (95% CI) n=2273	Probable depression OR (95% CI) n=2278	Probable alcohol misuse OR (95% CI) n=2112	Probable PTSD OR (95% CI) n=2285
Age	**0.98 (0.97 to 0.99)*** **	0.97 (0.96 to 0.98)***	**0.97 (0.96 to 0.98)*** **	0.99 (0.98 to 1.00)	**0.98 (0.97 to 0.99)*** **
Sex (reference: female)					
Male	**0.7 (0.5 to 0.9)****	**0.7 (0.5 to 0.9)****	0.8 (0.6 to 1.1)	1.4 (1.0 to 2.0)	**0.6 (0.5 to 0.9)****
Other	0.4 (0.1 to 2.7)	1.2 (0.3 to 6.3)	1.0 (0.2 to 4.9)	–	0.3 (0.0 to 2.5)
Prefer not to say	0.3 (0.0 to 3.7)	–	0.28 (0.03 to 2.62)	–	–
Ethnicity (reference: white)					
Black	1.0 (0.7 to 1.4)	1.0 (0.7 to 1.6)	**0.6 (0.4 to 0.9)***	**0.3 (0.1 to 0.6)****	1.1 (0.7 to 1.6)
Asian	0.8 (0.6 to 1.0)	0.9 (0.6 to 1.3)	0.9 (0.7 to 1.3)	**0.3 (0.1 to 0.6)*** **	0.9 (0.7 to 1.3)
Mixed racial and ethnic minority groups	1.1 (0.7 to 1.8)	1.1 (0.7 to 1.9)	1.1 (0.6 to 1.8)	0.6 (0.3 to 1.2)	1.0 (0.6 to 1.7)
Other racial and ethnic minority groups*	1.3 (0.6 to 3.3)	0.5 (0.2 to 1.4)	1.3 (0.5 to 3.5)	**0.3 (0.1 to 0.6)****	0.7 (0.3 to 2.1)
Role (reference: doctor)					
Nurse	**2.2 (1.5 to 3.1)*** **	**1.9 (1.2 to 3.1)*** **	**2.3 (1.5 to 3.5)*** **	1.0 (0.6 to 1.8)	**1.9 (1.3 to 2.9)*** **
Other clinical	**1.5 (1.1 to 2.2)****	1.2 (0.7 to 1.9)	**1.6 (1.0 to 2.5)***	0.7 (0.4 to 1.3)	1.5 (0.9 to 2.3)
Non-clinical	**1.5 (1.1 to 2.2)****	**1.8 (1.2 to 2.9)****	**2.5 (1.6 to 3.8)*** **	1.4 (0.8 to 2.3)	**1.8 (1.2 to 2.7)****
Moral injury (MIES) score (reference: low)					
Medium	**1.3 (1.0 to 1.7) ***	1.6 (1.1 to 2.1) **	**1.4 (1.0 to 1.8) ***	1.4 (0.9 to 2.0)	**1.8 (1.4 to 2.4) *** **
High	**2.6 (2.0 to 3.4) *** **	3.0 (2.2 to 4.0) ***	**2.9 (2.2 to 3.9) *** **	**1.7 (1.1 to 2.5) ****	**4.2 (3.2 to 5.6) *** **

Differences within categories are statistically significant at: *p<0.05, **p<0.01, ***p<0.001.
ORs shown are adjusted for all other covariates in each model.
*'Other racial and ethnic minority groups' includes the options 'Arab' and 'any other ethnic background'.

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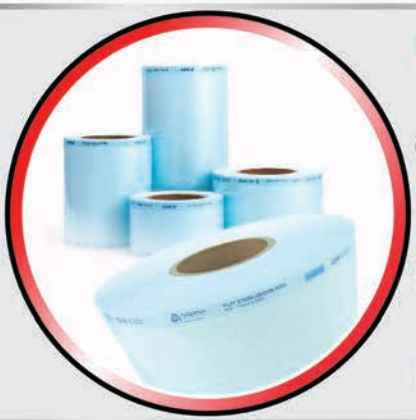
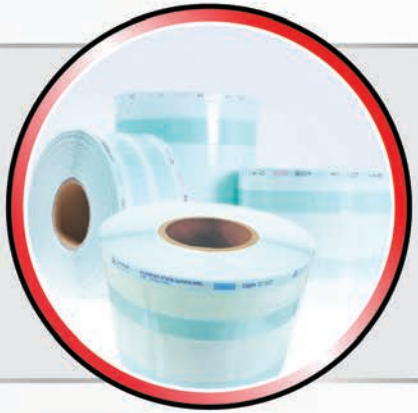
42281913-00976	75mm x 200m
42281913-00977	100mm x 200m
42281913-00978	150mm x 200m
42281913-00979	200mm x 200m
42281913-00980	250mm x 200m
42281913-00981	300mm x 200m





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42281913-00986	150mm x 100m

DISCUSSION

Statement of principal findings

Our study found a high prevalence of adverse mental health outcomes among a sample of London-based HCWs during the first wave of the COVID-19 pandemic. Of particular note, we found concerning numbers of HCWs who reported symptoms of PTSD and that higher exposure to moral injury was associated with worse outcomes. We identified groups at higher risk of experiencing poor mental health included women, younger staff and nurses.

Strengths and limitations

The NHS CHECK multi-site study provides findings from three different NHS Trusts, including acute and mental health services. The sites are located in London, which had a high regional case burden of COVID-19 during the first wave when recruitment commenced. This study represents a large sample size (n = 4 378) relative to existing literature, with similar demographic characteristics to the overall NHS workforce in terms of age and sex,18 while London Trusts typically have a higher proportion of staff from racial and ethnic minority groups than other areas of the country, which is represented in our weighted data. We had detailed population-level HR information and were able to estimate response rates and the extent of non-response bias. These are notable methodological strengths compared with existing literature that have largely not reported response rates or assessed for related bias.[19] This study was uniquely inclusive in having gathered data from all staff employed by the NHS Trusts, including non-clinical, ancillary, lower paid and temporary staff. To our knowledge, this is also the only study that considers moral injury in the context of COVID-19 in HCWs.

However, there are some limitations. First, despite substantial recruitment efforts as outlined above, the response rate was 12%, and therefore, it is inevitable that findings are open to selection bias, with those for whom the survey had greatest salience (in other words, those who were distressed) probably being most likely to participate. We hypothesise that the participation levels may be reflective of HCW burden related to COVID-19, such as work pressures and research/survey fatigue at this time, as well as longer term decline in HCW participation rates in surveys as observed over recent decades.[20] We found evidence that participants from some demographic and occupational groups, notably those from racial and ethnic minority groups and men, were less likely to participate. Although we took steps to weight the data for such non-participation, differential participation may lead to inaccuracies in prevalence estimates and hampers generalisability of the results. These concerns are compounded by differential response between our short and long surveys; however, due to the time limitations on HCWs, it was necessary to provide the option to complete only the short survey.

Second, it has also been shown that occupational specific surveys of any given group give rise to higher prevalence of mental health distress compared with population studies that contain sufficient numbers of the same occupational group for analysis, suggesting a possible contextual or framing effect.[21] Third, given that all three sites were based in London, we have not captured associated national geographical variations. Finally, the data were at this stage cross-sectional, meaning we were unable to look at whether symptoms persist, although as noted above, these are preliminary data, and 15 additional sites and longitudinal data will follow. Unfortunately, as this study began in response to the COVID-19 pandemic, we do not have pre-COVID-19 baseline data with which to compare our results with, which is a significant limitation.

COMPARISON WITH LITERATURE

International HCWs

Direct comparison of our findings with other COVID-19 HCW studies is challenging owing to varied methodological quality and heterogeneity of healthcare systems in different countries, which is reflected in the wide range of results published to date. A systematic review of 54 707 HCWs from 59 HCW specific international studies during COVID-19 found median anxiety levels of 24% (range 9% to 90%), depression levels of 21% (range 5% to 51%) and general psychological distress of 37% (range 7% to 97%), although measures and cut-off scores used in the included studies were heterogenous.[22] Compared with the reported median, our results show higher prevalence of poor psychological health, higher levels of depression and similar levels of anxiety.

UK HCWs

In comparison with other UK-based HCW studies, our results show lower levels of anxiety and depression, though higher levels of PTSD. A cross-sectional study (n = 1 194) using convenience sampling found 47.3% anxiety (using a lower cut-off than us of ≥8 on the GAD-7), 46.9% depression (using the same cut-off as us of ≥10) and 22.5% PTSD (using a different measure: ITQ[23]).[24] A different cross-sectional study (n = 2 773) found levels (using the same cut-off scores of ≥10 for the GAD-7 and PHQ9, though a different PTSD measure; IES-R[25]) of 33.1% for probable anxiety, 28.1% for probable depression and 14.6% for PTSD symptoms.26 Elevated prevalence of anxiety and depression compared with our study may be attributable to differing sample demographic factors, particularly sex, which was over-represented in these studies.

Previous epidemics

With the notable exception of PTSD, our results are comparable with findings from previous epidemics. A rapid systematic review and meta-analysis of the impact of viral epidemic outbreaks on the mental health of HCWs that included 117 international studies found a pooled prevalence of anxiety (30%), depression (24%) and PTSD (13%).[27] The level of probable PTSD in our study (30.2%) was more than double this level; however, Serrano-Ripoll *et al* provide no information about the PTSD measures used in included studies, nor the cut-off scores used, making direct comparisons challenging. We used the recommended cut-off score of ≥14 on the PCL-6.14

General population

Contrasting our results with contemporary non-HCW-specific population-level studies conducted during the COVID-19 pandemic, which use the same measure (GHQ) and cut-off score,[5] we report higher prevalence of poor general psychological health (58.9%) in HCWs. The Understanding Society (n = 17 452)[7] and the UK Household Longitudinal Survey (n = 12 074)[5] found prevalence of poor psychological health to be 27.3% and 37.1%, respectively. Prevalence of anxiety and depression symptoms were similar to the 'COVID-19 Social Study' (n = 53 328)[6] and 'Mental health in the UK and COVID-19' study (n = 3 097),[28] which found 24.4% and 26.0% participants, respectively, met the threshold for anxiety and 31.4% and 31.6%, respectively, for depression (using the same measures and cut-off scores as us).

However, the demographic profile of these samples (where given) were different to ours, for example, with more men (46.4%) and a higher average age (51 years),[6] and more white participants (93.6%[6]; 95%[7]).

Associated factors

Notably, some results from population studies large enough to include subsamples of HCWs did not find that HCWs had significantly different mental health to the general population and/or noted that any differences found might be explained by demographic differences between HCWs and the general population.[7, 29] Others show an increase for key workers (samples which included HCWs) of anxiety[28, 30] and depression.[30] Similarly, systematic reviews and meta-analyses that compared results from HCW and general population studies found varied results, with some suggesting elevated risk among HCWs,[31, 32] while others did not find any statistically significant difference in depression, anxiety, PTSD and psychological distress related to HCW status.[33] As such, while there is good evidence of increased stress, depression and anxiety across the general population and HCWs, robust evidence is still needed to determine whether the risk of mental ill health is comparatively greater in HCWs.

The odds of having CMDs were greater among women, those of a younger age and in specific occupational roles including nurses, other clinical and non-clinical staff (relative to doctors). Younger age was also associated with increased levels of anxiety, depression and PTSD. Female sex was associated with increased anxiety and PTSD. Nurses and non-clinical staff were disproportionately impacted by anxiety, depression and PTSD. These associations are in-keeping with literature from previous epidemics[27] and COVID-19,[22, 34] whereby female sex, younger age and specific occupational roles (for example, nursing) are associated with increased adverse outcomes. Our findings contribute to this strong and evolving weight of evidence.

Self-harm and suicidality

Our study reported 8.5% of participants had considered taking their own life in the two previous months, while 2.0% had attempted suicide and 3.0% had harmed themselves in the same time period. A contemporary general population study in the UK, COVID-19 Social Study (n = 44 775), reported data between March and April 2020 that found 18% experienced thoughts of suicide or self-harm (not directly comparable with our data) and 5% reported self-harm behaviour (higher than our rate).[35] A systematic review and meta-analysis (n = 25 studies) of doctors conducted prior to the pandemic (1970s to 2018) found 17% suicidal ideation and 1% lifetime suicide attempts,[36] which is lower than UK population data, at 20.6% suicidal ideation and 6.7% lifetime suicide attempts.[37] Overall, while any level of suicide ideation is concerning, our results do not provide evidence for elevated suicidal ideation, or acts of self-harm, compared with the general population; however, it is possible that suicide attempts may be elevated. Interpretation of these findings must be cautious due to a lack of robust comparative data and contextualised with current research findings from high-income countries that have found no population-wide rise in suicide rates due to COVID-19 to date.[38]

Moral injury

HCWs with high exposure to moral injury had elevated odds of probable CMDs, depression, alcohol misuse and PTSD. This is consistent with concerns during the pandemic[39] and previous occupational moral injury literature. A systematic review and meta-analysis, unrelated to COVID-19, that included 13 studies representing 6 373 participants found that exposure to potentially morally injurious experiences increased risk of PTSD, depression and suicidality.[1] Although most studies included in the systematic review were from military samples, our study adds to the evidence that there may be an association between exposure to moral injury and mental disorders in HCW populations.

Unanswered questions and future work

The wider NHS CHECK study, from which the data presented here were taken, is collecting data at baseline, with consent from participants to contact them for follow-up data at six-monthly intervals thereafter, dependent on how the pandemic evolves over time. We have expanded our study population to ensure a broader, more representative geographical spread, and our study now includes 18 sites across England and Wales. In particular, the elevated rates of PTSD identified warrant further investigation in the on-going study and larger dataset analysis. As data from more sites become available, we will also explore the impact of organisational and social factors on the experiences of staff and mental health outcomes (including, for example, working practices, perceived support from colleagues and managers, COVID-19 impacts and experiences, and staff support programmes available and used).

Furthermore, although we have used validated mental health questionnaires, questionnaire-based surveys of mental health are case finding, rather than diagnostic tools, which favour sensitivity over specificity. Occupational self-report measures commonly overestimate rates of 'caseness', that is, individuals who are likely to meet true diagnostic criteria and might thus require specific interventions.[21] Collecting information about distress at a time of great stress means that high proportions of participants reporting difficulties might be expected; however, this is not necessarily indicative of being mentally ill. In particular, we need to know whether these symptoms persist and whether they are associated with a reduction in ability to function at work and home, and other meaningful outcomes, for example, help seeking, reduced desire to remain in their post. Hence, we will be extending the study in a two-stage psychiatric epidemiology design,[40] using standard psychiatric diagnostic interviews administered by phone with a sub-sample of participants, in order to distinguish distress from disorder.

We anticipate finishing baseline data collection in December 2020, with follow-up data collection starting at six months post-baseline for each individual participant. We will continue to increase response rates through extra engagement tools, including: new PPI initiatives, further work with trade union representatives, offering incentives to participants and ensuring paper surveys are available in addition to the online version. We will also focus on engaging with racial and ethnic minority groups to address the relatively reduced participation rate and completion of the longer component of the survey by forming partnerships with those experienced in such engagements. Inclusion of an ethnicity-focused module at eight months will help capture inequalities in mental health and occupational outcomes.

Implications

HCWs are experiencing a high burden of adverse mental health outcomes during the COVID-19 pandemic, and some demographic and occupational groups are more vulnerable than others. The mental health offering to HCWs must therefore consider the overlap of these factors. For example, our findings indicate that young female nurses may be more vulnerable to adverse mental health outcomes and therefore may benefit from targeted support. Despite the high levels reported by our study and others, there remains uncertainty about whether HCWs have worse COVID-19 related mental health outcomes compared with the general population. We urge additional research that emphasises quality and methodological rigour, namely with use of standardised diagnostic interviews with a defined sampling frame. In doing so, the mental health offer will be better able to avoid pathologising ordinary distress responses, identify those most at risk and provide necessary support.

CONCLUSION

Our preliminary data indicate that continued monitoring of HCWs is vital in order to identify those groups most at risk of adverse mental health outcomes. Longitudinal data and diagnostic interviews will be needed to pick apart mental disorders from normal distress responses and ensure appropriate support is provided to those most in need. Our findings suggest that it is not only the clinical staff who may need support, but the full range of HCWs contributing to the pandemic effort.

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Acknowledgements: *We are especially grateful to all the participants who took part in the study. We would also like to extend our thanks to Haifa Issa, Dr Howard Burdett, Melanie Chesnokov, the medical students who helped to recruit participants at the research sites and all National Health Service (NHS) staff who promoted NHS CHECK. We would also like to thank the TIDES study team for their support and collaboration. RoR and DLa are supported by the National Institute for Health Research (NIHR) Applied Health Research North Thames (NIHR ARC North Thames).*

Funding: *NHS CHECK has received funding from the following organisations and charities for the period of data collection reported in this manuscript: National Institute for Health Research Maudsley Biomedical Research Centre, King's College London; Rosetrees Trust; and the National Institute for Health Research Health Protection Research Unit in Emergency Preparedness and Response at King's College London. The funders had no role in the design, analysis, interpretation or decision to submit this paper. The joint first authors had full access to the data in the study and had final responsibility, with endorsement from the joint last authors (SW and SAMS), for the decision to submit the paper for publication. The views expressed are the views of the authors and do not necessarily represent the views of their organisations or funding sources.*

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Patient consent for publication: *Not required.*

Provenance and peer review: *Not commissioned; externally peer reviewed.*

Data availability statement: *Data are available on reasonable request. Data may be available on request to the corresponding author.*

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This article first appeared in BMJ Occupation and Environmental Medicine June 2021. BMJ is a global healthcare knowledge provider with a vision for a healthier world. BMJ's mission is to share knowledge and expertise to improve health outcomes. This article is shared in the APPSA Journal through BMJ's Open Access policy. Lamb D, Gnanapragasam S, Greenberg N, et al. Occup Environ Med Epub doi:10.1136/oemed-2020-107276 on 28 June 2021

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REFERENCES:

1 Williamson V, Stevelink SAM, Greenberg N. *Occupational moral injury and mental health: systematic review and meta-analysis.* Br J Psychiatry 2018;212:339–46.
2 Brooks SK, Dunn R, Amlôt R, *et al. A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak.* J Occup Environ Med 2018;60:248–57.
3 Lung F-W, Lu Y-C, Chang Y-Y, *et al. Mental symptoms in different health professionals during the SARS attack: a follow-up study.* Psychiatr Q 2009;80:107–16.
4 Wu P, Fang Y, Guan Z, *et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk.* Can J Psychiatry 2009;54:302–11.
5 Daly M, Sutin A, Robinson E. *Longitudinal changes in mental health and the COVID-19 pandemic: Evidence from the UK Household Longitudinal Study* [Internet]. PsyArXiv 2020.

6 Fancourt D, Steptoe A, Bu F. *Trajectories of depression and anxiety during enforced isolation due to COVID-19: longitudinal analyses of 59,318 adults in the UK with and without diagnosed mental illness.* medRxiv 2020.
7 Pierce M, Hope H, Ford T, *et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population.* Lancet Psychiatry 2020;7:883–92.
8 Pierce M, McManus S, Jessop C, *et al. Says who? the significance of sampling in mental health surveys during COVID-19.* Lancet Psychiatry 2020;7:567–8.
9. Office for National Statistics. *Death registrations and occurrences by local authority and health board.* U Office for National Statistics; 2020. https://www.ons.gov.uk/peoplepopulationand community/healthandsocialcare/causesofdeath/datasets/deathregistrationsandoccurrences bylocalauthorityandhealthboard [Accessed 29/11/20].
10. Goldberg DP, Hillier VF. *A scaled version of the general health questionnaire.* Psychol Med 1979;9:139–45.
11. Spitzer RL, Kroenke K, Williams JBW, *et al. A brief measure for assessing generalized anxiety disorder: the GAD-7.* Arch Intern Med 2006;166:1092–7.
12. Kroenke K, Spitzer RL, Williams JBW. *The PHQ-9.* J Gen Intern Med 2001;16:606–13.
13. Babor TF, Fuente J, Saunders J, *et al. The Alcohol Use Disorders Identification Test [Internet].* World Health Organisation, 2001. Available: http://citeseerx.ist.psu.edu/viewdoc/download? doi=10.1.1.505.4146&rep=rep1&type=pdf
14. Lang AJ, Stein MB. *An abbreviated PTSD checklist for use as a screening instrument in primary care.* Behav Res Ther 2005;43:585–94.
15. Nash WP, Marino Carper TL, Mills MA, *et al. Psychometric evaluation of the moral injury events scale.* Mil Med 2013;178:646–52.
16. Lewis G, Pelosi AJ, Araya R, *et al. Measuring psychiatric disorder in the community: A standardized assessment for use by lay interviewers.* Psychol Med 1992;22:465–86.
17. Pfeffermann D. *The use of sampling weights for survey data analysis.* Stat Methods Med Res 1996;5:239–61.
18. NHS Digital. NHS Workforce Statistics - August 2020 [Internet]. Available: https://digital.nhs.uk/ data-and-information/publications/statistical/nhs-workforce-statistics/ august- 2020 [Accessed 30 Nov 2020].
19. Lamb D, Greenberg N, Stevelink SAM, *et al. Mixed signals about the mental health of the NHS workforce.* Lancet Psychiatry 2020;7:1009–11.
20. Cook JV, Dickinson HO, Eccles MP. *Response rates in postal surveys of healthcare professionals between 1996 and 2005: An observational study.* BMC Health Serv Res 2009;9:160.
21. Goodwin L, Ben-Zion I, Fear NT, *et al. Are reports of psychological stress higher in occupational studies? A systematic review across occupational and population based studies.* PLoS One 2013;8:e78693.
22. Muller AE, Hafstad EV, Himmels JPW, *et al. The mental health impact of the COVID-19 pandemic on healthcare workers, and interventions to help them: a rapid systematic review.* Psychiatry Res 2020;293:113441.
23. Cloitre M, Shevlin M, Brewin CR, *et al. The International trauma questionnaire: development of a self-report measure of ICD-11 PTSD and complex PTSD.* Acta Psychiatr Scand 2018;138:536–46.
24. Greene T, Harju-Seppänen J, Adeniji M. *Predictors and rates of PTSD, depression and anxiety in UK frontline health and social care workers during COVID-19.* medRxiv 2020.
25. Wilson JP, Tang CS. *Cross-cultural assessment of psychological trauma and PTSD* [Internet]. New York, NY: Springer, 2007.
26. Gilleen J, Santaolalla A, Valdearenas L. T*he Impact of the COVID-19 Pandemic on the Mental Health and Wellbeing of UK Healthcare Workers* [Internet]. Rochester, NY: Social Science Research Network, 2020.

27. Serrano-Ripoll MJ, Meneses-Echavez JF, Ricci-Cabello I, *et al. Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis.* J Affect Disord 2020;277:347–57.
28. Jia R, Ayling K, Chalder T, *et al. Mental health in the UK during the COVID-19 pandemic: cross-sectional analyses from a community cohort study.* BMJ Open 2020;10:e040620.
29. Kwong ASF, Pearson RM, Adams MJ. *Mental health during the COVID-19 pandemic in two longitudinal UK population cohorts* [Internet]. Psychiatry and Clinical Psychology 2020.
30. Murphy J, Spikol E, McBride O. *The psychological wellbeing of frontline workers in the United Kingdom during the COVID-19 pandemic: First and second wave findings from the COVID-19 Psychological Research Consortium* (C19PRC) Study [Internet]. PsyArXiv 2020.
31. da Silva FCT, Neto MLR. *Psychiatric symptomatology associated with depression, anxiety, distress, and insomnia in health professionals working in patients affected by COVID-19: A systematic review with meta-analysis.* Prog Neuropsychopharmacol Biol Psychiatry 2021;104:110057.
32. Krishnamoorthy Y, Nagarajan R, Saya GK, *et al. Prevalence of psychological morbidities among general population, healthcare workers and COVID-19 patients amidst the COVID-19 pandemic: a systematic review and meta-analysis.* Psychiatry Res 2020;293:113382.
33. Cénat JM, Blais-Rochette C, Kokou-Kpolou CK, *et al. Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: A systematic review and meta-analysis.* Psychiatry Res 2021;295:113599.
34. Pappa S, Ntella V, Giannakas T, *et al. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis.* Brain Behav Immun 2020;88:901–7.
35. Iob E, Steptoe A, Fancourt D. *Abuse, self-harm and suicidal ideation in the UK during the COVID-19 pandemic.* Br J Psychiatry 2020;217:543–6.
36. Dutheil F, Aubert C, Pereira B, *et al. Suicide among physicians and health-care workers: a systematic review and meta-analysis.* PLoS One 2019;14:e0226361.
37. McManus S, Hassiotis A, Jenkins R. *Suicidal thoughts, suicide attempts, and self-harm.* 2014:29.
38. John A, Pirkis J, Gunnell D, *et al. Trends in suicide during the covid-19 pandemic.* BMJ 2020;371:m4352.
39. Greenberg N, Brooks SK, Wessely S, *et al. How might the NHS protect the mental health of healthcare workers after the COVID-19 crisis?* Lancet Psychiatry 2020;7:733–4.
40. Dunn G, Pickles A, Tansella M, *et al. Two-Phase epidemiological surveys in psychiatric research.* Br J Psychiatry 1999;174:95–100.
41. Office for National Statistics. *Death registrations and occurrences by local authority and health board [Internet].* Office for National Statistics, 2020. Available: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/datasets/deathregistrationsandoccurrencesbylocalauthorityandhealthboard [Accessed 29 Nov 2020].

FINDING OUR RESILIENCE

By Sheila L Allen, BSN, RN, CNOR, CRNFA(E)

INTRODUCTION

Everyone experiences mild fatigue, sometimes. It is simply the way our body tells us we need sleep and rest. When fatigue becomes a persistent feeling of exhaustion or tiredness, however, that is a warning that some other issue may be at play. Caring people can end up feeling as if they have lost part of themselves, and that they simply don't know how to care.

Nurses are known nurturers; compassion and empathy are at the centre of the nursing profession. During the time of this COVID-19 pandemic, all nurses have been doing more with less. A friend related that in the early stages of the virus, her most challenging role was providing support to patients in the intensive care and nursing units who were unable to have family members visit. While the use of technology was helpful, those unable to participate felt abandoned and alone. In her facility, peri-operative nurses were utilised to serve in their capacity as caring liaisons for patients. It was difficult to feel helpless, to feel unable actually making a difference for those patients in a manner that did not entail 'active nursing care'. The cost of caring occurs when our compassion and empathy have been stretched to the maximum. We need to find a resilience to achieve a balance to see us through these troubled times.

THE ABC MODEL OF UNDERSTANDING STRESS

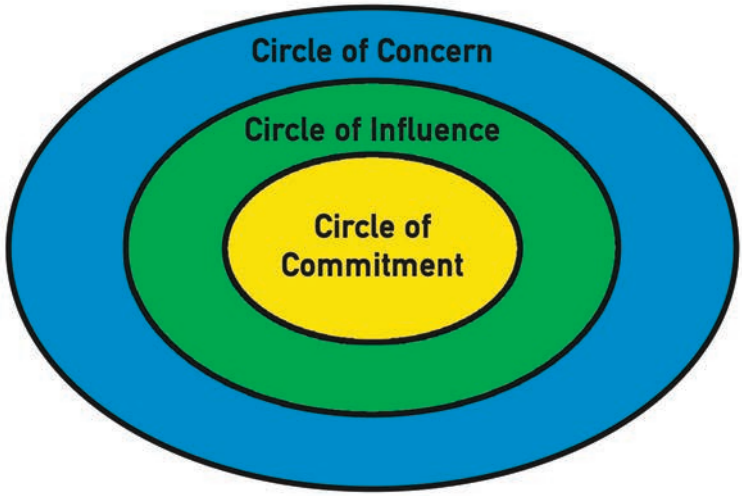
Nurses are accustomed to dealing with stress in all aspects of their working life. We are a service profession that is involved daily with death, birth, extreme despair, suffering, life-threatening trauma, joy and rage. Most individuals experience a limited number of these in their lifetimes. *In The Courage of Compassion* (*Woodhead, APPSA Journal Vol. 7/2*), the common causes of stress were work pressure and schedules, moral distress, pay, education, discrimination, and workplace violence. The COVID-19 pandemic with its many challenges merely added onto the normative stressors creating the perfect storm of compassion fatigue, burnout, and other conditions of concern.

The ABC model provides the tools to help reflect on where you are emotionally in the moment, and how feelings, beliefs, and behaviours impact your well being.

- **A**dversity/event – identify the event that causes the upset such as too many patients, no lunch, family needs me, feeling isolated
- **B**eliefs/thoughts – what is your self-talk related to the event identified such as 'I can't handle the stress, I am ineffective at work, there is no end to this situation'
- **C**onsequences – examine your feelings, what actions will you take, and what will be the impact on others

Once the model has been acknowledged, the individual can begin to reframe the issue to begin to manage the outcomes. Knowing how to manage the ABCs to reframe your response, depends

on handling the 'circles'. It is fairly easy to identify the concern; however, one must know what and how their influence can be incorporated, and the depth to which a commitment can safely be made.



Once the circles have been examined, the steps to reframe the issue can be as follows:

1. Accept the uncontrollable
2. Focus on the controllable
3. Acknowledge your strengths
4. Use the positive - a conscious choice to focus on the good that exists.

FOCUSSING ON THE POSITIVE

During the COVID-19 pandemic, healthcare workers went above and beyond their usual boundaries to make a difference. I hope that, as you read these word and the examples of giving and receiving care, it will lift your spirits as they did mine.

- University health system in Arkansas (US) arranged virtual visits and video calls to chat and engage with seniors in adult living homes to engage in board games, reading books, social activities providing input on the concerns of the residents of the homes. The outcome taught everyone the lesson that the isolation of the elderly puts them at risk for cognitive decline, depression, anxiety, and chronic health issues
- In Kansas, the hospital association developed a website that supports the healthcare workers and patients in communities
- In South Dakota, a paediatrician organised physicians and nurses to support an identified need in the community: diapers/nappies
- In California, hospital workers wear pictures of themselves smiling without all their PPE so that patients can see smiling faces in the hospital. The smiling pictures were a positive gesture that helped patients feel a little more at ease. They also made discharges celebratory and memorable for patients

- In Louisiana, sidewalk notes provided expressions of gratitude and hope expressed in chalk such as: "If you are arriving, thank you for what you are about to do"; "You are extraordinary,"; "If you are leaving after a long shift, thank you. Go home and rest well."

There are many positive examples of ways our colleagues have been recognised and appreciated for their efforts during the COVID-19 pandemic and creative ways we can continue to support, encourage, and acknowledge those who are still on the front-lines and who are working so hard to keep patients and colleagues going.

- In South Africa, two nurses got a company to donate perfumes to a local public sector clinic in appreciation of their efforts in the past 15 months
- One of the 'chicken' chains in the US donated meals to area hospitals. Suggestions for arranging such a gift for nursing shifts:
  - Check to see if there are any rules or restrictions at drop-off site (no homemade items, keeping foods hot or cold)
  - Co-ordinate time of delivery with the facility
  - Portions have to be individually wrapped
  - Provide wrapped disposable plates and cutlery
  - Know the number of staff on unit to which you are donating
  - Can't cover the price of a full meal? Consider coffee or gift cards or pool with others
- Provide staff with list of stores with dedicated shopping hours or those that provide discounts to healthcare workers. Many stores say offer healthcare workers reduced time in queues especially if they are in uniform
- Donate blood, platelets, or plasma
- Feed frontline workers at a hospital with GoFundMe. (See references)
- Help nurses with childcare (an example was of a nursing programme in Wisconsin which was barred from doing clinicals during the pandemic; so students organised childcare for those in need
- Offer to do the grocery shopping for a neighbour who works in the healthcare profession. It takes the strain off their having to go to the shops and that is one less thing for them to worry about.

THE IMPORTANCE OF SELF-CARE

Providing quality patient care while concurrently navigating new ways of working, perhaps intensified by COVID-19 pandemic-related stressors, collides to create an environment where anxiety and uncertainty sets in. Nurses concerns for their own health and that of their families have a balancing act with worries of ethical obligations in the workplace and limited protective equipment. Nevertheless, there is a marked need for a multi-layered approach to supporting self-care, manage stress, and building resilience both individually and in a facility-based manner.

Resilience is explained as the capacity to successfully meet the challenges of life, adapt well during times of stress and adversity, and recover from situations that seem to demand all our focus. In order to meet future challenges, building resilience increases the chances for success. Many of the suggestions for self-care combine mindfulness in all of the activities of the day. This needs to be re-inforced by positive affirmations and an awareness of all the good around you. We all know that we need to take care of our bodies holistically - and that means giving ourselves

proper nutrition, adequate hydration, appropriate exercise, sufficient rest and downtime, and unquestionably, sufficient sleep.

SUGGESTIONS FOR SELF-CARE:

1. Mindful breathing: Take time to take a breathe. Slow, deep calming breaths and connecting to your body helps quiet the mind. It is important to totally disconnect from technology and just take time 'to be in the moment'
2. Physical activity and exercise: It is very important to try and introduce a regular, moderate activity or exercise programme. This helps to improve your circulation, boost your energy, relieve stress, and give you a sense of personal well-being
3. Improve your sleeping habits: Having a decent sleep pattern is very underrated. It is vital, when living with such intense levels of stress, that one takes the time to wind down, read, relax, and devise a consistent sleep schedule
4. Be smart about what you eat: Avoid the high sugar/carbohydrate snacks and substitute these with almonds, dried fruit, or a turkey sandwich. Remember not to skip meals, if humanly possible. This will avoid drops in blood sugar that can encourage depression
5. Ask for help. These times of uncertainty test our patience and grit. There are many avenues available for help. If you don't know any, ask a friend or colleague to advise you. You'll be amazed at how many people are in the same boat as you are
6. Dedicate time to doing something you love: Whatever you enjoy and makes you happy, you have to make time for: go for a hike, take dance lessons, read a book. Do something you enjoy. You need to nurture yourself as well as nurturing your patients
7. Express gratitude: In addition to decreasing your stress levels, expressing gratitude boosts your happiness. Cultivate friendships that uplift your spirits. Conveying thanks also trains the brain to see the positive to help maintain a contented life.

LESSON OF LIFE

I always like to share a story that perhaps summarises the point of the article, speech, or visit. This one is a particular favourite as it serves as a reminder of a little thing that is important:

There was a young woman who had been diagnosed with a terminal illness and who had been given only three months to live. As she was getting her things 'in order', she contacted her Pastor and asked him come to her house to discuss certain aspects of her final wishes. She told him which songs she wanted sung at the service, what scriptures she would like read, and what outfit she wanted to be buried in. Everything was in order and the Pastor was preparing to leave when the young woman suddenly remembered something very important to her.

"There's one more thing," she said excitedly. "What's that?" came the Pastor's reply. "This is very important," the young woman continued. "I want to be buried with a fork in my right hand." The Pastor stood looking at the young woman, not knowing quite what to say.
"That surprises you, doesn't it?" the young woman asked. "Well, to be honest, I'm puzzled by the request," said the Pastor. The young woman explained.

"My grandmother once told me this story, and from that time on I have always tried to pass along its message to those I love and those who are in need of encouragement. In all my years

of attending socials and dinners, I always remember that when the dishes of the main course were being cleared, someone would inevitably lean over and say, 'Keep your fork'. It was my favourite part because I knew that something better was coming ... like velvety chocolate cake or deep-dish apple pie. Something wonderful, and with substance! So, I just want people to see me there in that casket with a fork in my hand and I want them to wonder 'What's with the fork?' Then I want you to tell them: 'Keep your fork ... the best is yet to come."

The Pastor's eyes welled up with tears of joy as he hugged the young woman goodbye. He knew this would be one of the last times he would see her before her death. But he also knew that the young woman had a better grasp of Heaven than he did. She had a better grasp of what Heaven would be like than many people twice her age, with twice as much experience and knowledge. She KNEW that something better was coming.

At the funeral people were walking by the young woman's casket and they saw the cloak she was wearing and the fork placed in her right hand. Over and over, the Pastor heard the question, 'What's with the fork?' And over and over he smiled. During his message, the Pastor told the congregants of the conversation he had had with the young woman shortly before she died. He also told them about the fork and about what it symbolised to her. He told the people how he could not stop thinking about the fork and told them that they probably would not be able to stop thinking about it either. He was right. So the next time you reach down for your fork let it remind you, ever so gently, that the best is yet to come. Friends are a very rare jewel. They make you smile and encourage you to succeed. Cherish the time you have, and the memories you share. Being friends with someone is not an opportunity, but a sweet responsibility.

We need to remember to give each other the grace to navigate the uncertainties that life brings and together, seek ways of restoration and calm through all kinds of resilience-building activities. We cannot deny or discount the emotional impact that COVID-19 has had on our healthcare colleagues. As many are staggering under a possible additional wave of the virus and its offshoots, the anticipation of what we will face can seem daunting.

When I asked if there was a particular need for this article, I was charged with writing something uplifting. My sincere hope is that you will build on the strength of each other, ask for help if needed, and be resilient and uplifting to each other ... always remembering to Keep the Fork.

References:

Allen S. Are you Running on Empty?*, APPSA Journal. 2020; 6(4): 11-15.*
https://www.aorn.org/Blog/Optimize-Your-Energy?utm_campaign=periop-life-blog&utm_medium=promotional&utm_source=email&utm_content=energy-210722&mkt_tok=NTQ1LUtDUC0xNjMAAAF-fZVhKWk_rx2-xQ7O1W9rX8IIMAy2_C_di2awZ_SDVtuPN4QZHIx4WxsCSKHCu8ygKUlydW8E19Fj_aPAXKiexFfngyFDLKrYQs22wn15h
https://www.aspen.edu/altitude/ways-to-support-nurses-during-covid-19/
https://www.aha.org/issue-landing-page/2020-06-02-stories-front-lines
https://www.gofundme.com/f/covid19-nursing-support
https://www.gofundme.com/f/noshesfornurses
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https://www.myamericannurse.com/resiliency-rising/
https://online.nursing.georgetown.edu/blog/support-covid-19-nurses/
Personal correspondence between author and Madeleine Hicklin, editor APPSA Journal.
Stephens TM. Building personal resilience: Develop skills to overcome daily challenges and prepare for the future. *American Nurse Today. 2019; 14(8): 10-15.*
Woodhead K. The Courage of Compassion*, APPSA Journal. 2021; 7(2): 16-20.*

Sheila Allen served as the National AORN President between 2001 and 2002 and the IFPN Secretary between 2001 and 2007. She is a regular contributor to the APPSA Journal and offers contemporary studies and opinions of great value and interest. She wrote this paper specifically for the APPSA Journal.

PERI-OPERATIVE FLUID MANAGEMENT:
Concensus Statement From The Enhanced Recovery Partnership

By Monty G Mythen, Michael Swart, Nigel Acheson, Robin Crawford, Kerri Jones, Martin Kuper, John S McGrath and Alan Horgan

INTRODUCTION

Enhanced Recovery (ER) after Surgery (or Fast Track) is a bundle of 'best evidence-based practices' delivered by a multi-professional healthcare team, with the intention of helping patients recover faster after surgery[1]. Professor Henrik Kehlet, a surgeon from Denmark, pioneered the concept more than a decade ago but practitioners in the UK remained sceptical of his amazing results and adoption in the NHS had been slow[1,2]. The Enhanced Recovery Partnership Programme (ERPP) was set up by the Department of Health in England in May 2009, to encourage the widespread adoption of ER with the aim of improving recovery from major surgery[1,3].

The Programme initially concentrated on elective major surgery in four specialities - Colo-rectal, Musculo-skeletal, Gynaecology and Urology. Audit of ER practice by the early adopters demonstrated greater than 80% compliance with the majority of elements recommended by the ERPP. However, peri-operative fluid management including the administration of pre-operative carbohydrate drinks and individualised goal-directed fluid management guided by advanced haemodynamic monitoring (including, for example, Oesophageal Doppler) had lower levels of compliance[3]. A pilot study using Commissioning for Quality and Innovation (CQUIN) to encourage practice change showed a dramatic improvement in outcomes in North Central London, with very high levels of compliance with the ERPP recommended principles of peri-operative fluid management, in particular goal-directed fluid management[4].

The National Programme has evolved into the Enhanced Recovery Partnership (ERP), and the most recent guide published by the ERP includes evidence of widespread adoption of ER in the NHS in England, and achievement of stated goals - that is reduced length of hospital stay after surgery, resulting in more operations being performed despite fewer bed days, no increase in re-admissions and high levels of patient satisfaction[5] [5]. Peri-operative fluid management is at the heart of Enhanced Recovery and the use of intra-operative fluid management technology, such as Oesophageal Doppler, is supported by the ERP in line with the National Institute of Clinical Excellence (NICE) Guidance (MTG3), the NHS Operating Framework 2012–13 and the Department of Health Innovation Health and Wealth Review 2011[5, 6, 7]. Despite concordance in the guidelines, the veracity of the evidence has been challenged[8, 9].

The ERP thought it was timely to produce a consensus statement from the National Clinical Leads and Specialist Advisors within the specific context of Enhanced Recovery and, for the purpose of widespread dissemination, the general principles and key recommendations outlined in the

latest guide are re-iterated in this article[5]. Of note, no particular evidence-based methodology was used aside from seeking unanimous agreement from the authors. A practical and pragmatic set of guidelines and recommendations was the aim. The conclusions do align with the GIFTASUP guidelines and NICE guidance where established EBM methodologies were utilised[6, 8, 10]. In making this consensus statement we agree that larger, more definitive studies of peri-operative fluid management and, in particular, the relative contribution of haemodynamic monitoring compared with fluid restriction would be welcomed[11, 12]. However, to be useful, such studies must be conducted in the context of a fully implemented Enhanced Recovery Programme.

GENERAL PRINCIPLES OF ENHANCED RECOVERY FLUID MANAGEMENT AND RECOMMENDATIONS OF THE ENHANCED RECOVERY PARTNERSHIP.

For further details see latest ERP guide[5].

Pre-operative

- Maintain good pre-operative hydration
- Give carbohydrate drinks
- Avoid bowel preparation

Peri-operative

- Use fluid management technologies to deliver individualised goal-directed fluid therapy
- Avoid crystalloid excess (salt and water overload). 'Maintenance' fluid, if utilised, should be limited to less than 2ml/kg/hr including any drug infusions. The use of isotonic-balanced electrolyte solution - for example, Hartmann's - will minimise hyperchloraemic acidosis

Post-operative

- Avoid post-operative IV fluids when it is possible
- Always ask the question: 'What are we giving fluids for?:
  - Maintenance fluid? - Push early drinking and eating
  - Replacement fluid? - Consider oral before IV and consider 'prescribing' oral fluids
  - Resuscitation fluids? - Use goal-directed fluid therapy

The Enhanced Recovery Partnership recommends the development of local guidelines and algorithms for fluid management and regular audit of compliance, in line with national guidelines, NICE recommendations and the Innovation, Health and Wealth Review (2011)[6, 8] .

AIMS OF ER FLUID MANAGEMENT (BY THE END OF SURGERY)

- Patients core temperature is normal (circa 37°C)
- No evidence of hypovolaemia, tissue hypo-perfusion or hypoxia
- No evidence of hypervolaemia or excess fluid ('zero balance')
- Hb>7 g/dl
- No clinically significant coagulopathy
- Minimal use of vasopressors

Predictors of poor outcome include: greater age, higher ASA status, high blood loss, longer than expected surgery, evidence of hypovolaemia or hypo-perfusion (for example metabolic acidosis,

blood lactate >2 mmol/litre, central venous O_2<70%), greater use of vasopressors, high volumes of IV fluids (> 3.5 litres total), positive fluid balance (> 2 litres positive on day of surgery) [13, 14, 15, 16, 17, 18]. In an individual patient, failure to achieve these aims should prompt a review of the need for on-going care in a higher care environment (for example, extended recovery, HDU or ITU). If audit of a group of patients shows that these aims were not achieved, this suggests that the delivery of care should be reviewed.

INDIVIDUALIZED GOAL-DIRECTED FLUID THERAPY

The Enhanced Recovery Partnership recommends the use of intra-operative fluid management technologies to enhance treatment with the aim of avoiding both hypovolaemia and fluid excess. This should be decided on a case-by-case basis adhering to local guidelines in the context of NICE recommendations, national guidelines and the Innovation, Health and Wealth Review[6, 8].

Indicators of central hypovolaemia include:

- Blood loss or fluid loss
- Tachycardia
- Hypotension
- Cool peripheries
- Low CVP
- Low cardiac output
- Reduced stroke volume
- Pulse pressure variation (during IPPV)
- Pre-load responsiveness
- Low central venous O_2 saturation
- Raised blood lactate

Central hypovolaemia should respond to volume therapy (in other words, a fluid bolus)[13, 14, 15, 16, 17, 18].

The Enhanced Recovery Partnership recommends that all anaesthetists caring for patients undergoing intermediate or major surgery should have cardiac output measuring technologies immediately available and be trained to use them.

The use of intra-operative fluid management technologies are recommended from the outset in the following types of cases:

- Major surgery with a 30 day mortality rate of >1%
- Major surgery with and anticipated blood loss of greater than 500ml.
- Major intra-abdominal surgery
- Intermediate surgery (30 day mortality >0.5%) in high-risk patients (age >80 years, history of LVF, MI, CVA or peripheral arterial disease)
- Unexpected blood loss and/or fluid loss requiring >2 litres of fluid replacement
- Patients with ongoing evidence of hypovolaemia and or tissue hypoperfusion (for example, persistent lactic acidosis)

Perceived lack of resources is not a viable excuse. NICE have concluded that we can't afford NOT to use intra-operative fluid management technologies where indicated[6]. Practitioners should not be constrained by lack of availability of such technology.

PrionTex

WHEN IT COMES TO CHOOSING YOUR NEXT SET OF SCRUBS...

It is important to first consider your options. What fabrics are there to choose from? And how knowing the difference could help you make an informed decision. We have to agree that reading an article on fabric types for medical uniforms, is probably not the first thing to do on your bucket list. However, we hope that the following short, informative summary, will assist you in deciding which scrubs fabric is best suited for you.

KNOWING WHAT IS OUT THERE

There are a variety of scrub suit fabric options in our healthcare market such as cotton, polyester and blends. The choices can be very confusing if you are not a textile guru, but for the sake of keeping things simple, let's take a closer look at 100% cotton scrubs vs 100% polyester scrubs.

100% COTTON SCRUBS

Cotton is a soft, fluffy, natural fiber that grows in a protective case, around the seeds of the cotton plant. The fiber is almost pure cellulose. The fluffy white fibers are then harvested, spun into yarn, and woven into fabric.

It is important to point out that the market also offers different types of cotton, ranging in quality, texture and price. You may have received a high-quality organic cotton piece of clothing as a gift at some point in time, yet it doesn't mean every piece of cotton clothing will compare equally.

Generally, cotton is lightweight, breathable and freely available. As a natural fiber it has limitations.

Being in a profession where you are required to wear scrubs for long hours with lots of movement and daily washing, the disadvantages of cotton scrubs may become clear.

THE COTTON DOWNSIDE

Keep in mind, cotton shrinks! Caring for your cotton scrubs will require special care.

Unfortunately, any natural fiber will wear down faster than its synthetic fiber counterparts. Your cotton scrubs will not be as durable, and sooner or later may have holes, especially when the same set of scrubs are worn day after day.

Cotton fabric is absorbent, but not in a good way. If you require barrier protection, cotton when wet creates a pathway for bacteria and possible infectious agents. Unforeseen spills will take longer to dry and sweat stains are inevitable. Because it is very absorbent, cotton requires more water for washing than most synthetic alternatives.

Cotton releases fluff, sometimes referred to as lint. These particles can become airborne and are a potential carrier of bacteria. Lint should be avoided in a healthcare environment.

100% POLYESTER SCRUBS

Cotton and polyester are worlds apart. Let's compare them quickly. Polyester is man-made or synthetic fiber created in a laboratory. The process of manufacturing polyester fabric involves melting down small polyester pellets, which are then forced through tiny-tiny holes and then stretched.

Once the process of cooling and solidifying is complete, it produces a very strong fiber. These synthetic fibers are then spun and woven into the polyester fabric.

Polyester fabric date back to the 1940's and technology has played a great role in its development. Today, we have high-quality performance polyester fabrics, with amazing touch-and-feel properties.

THE POLYESTER UPSIDE

Polyester is a very strong fiber that will withstand heavy washing. Polyester scrubs are colourfast, lightweight, and durable. Your polyester scrubs will look newer for longer.

Polyester scrubs will offer very low linting compared to cotton scrubs - a key factor for consideration in the operating theatre environment.

Polyester is hydrophobic. In other words, polyester scrubs will dry faster, wicking moisture away from your skin, and leaving you cool and comfortable for longer periods of time.

Polyester fabric is naturally wrinkle-resistant and will not shrink. A professional look is easily achieved with polyester scrubs.

So, the next time you are considering buying a set of scrubs, think of them as your endurance uniform. They need to withstand far more wear and tear than your average dress or shirt. Just like an athlete needs the very best garment for optimal performance, so do you!

As a leading manufacturer of performance medical textiles, PrionTex recommends scrubs that are manufactured from a high quality 100% polyester microfiber fabric.

Choose your scrubs, demand the best.

PrionTex

SUPPORTING FRONTLINE SUPERHEROES

What NICE said about cardio-Q Doppler

"... The case for adopting the CardioQ-ODM in the NHS ... is supported by the evidence. The CardioQODM should be considered for use in patients undergoing major or high-risk surgery or other surgical patients in whom a clinician would consider using invasive cardio-vascular monitoring. This will include patients undergoing major or high-risk surgery or high-risk patients undergoing intermediate-risk surgery."[6]

The GIFTASUP guidelines said

"In patients undergoing some forms of orthopaedic and abdominal surgery, intra-operative treatment with intravenous fluid to achieve an optimal value of stroke volume should be used where possible as this may reduce post-operative complication rates and duration of hospital stay."[10]

What the 2010 ER implementation guide: Delivering enhanced recovery said

"Individualised goal-directed fluid therapy... When intravenous fluid is given, the benefits of maintaining circulatory filling and organ perfusion must be weighed against the risk of excess fluid accumulation in the lungs causing hypoxia, and, in the gut, causing nausea and delayed return of gut motility (ileus). When there is not enough fluid in the bloodstream, the stroke volume falls - that is, there is a fall in the volume of blood ejected by the heart each heartbeat ...

"In a typical regime enough colloid is given to maintain the stroke volume, but no more. This allows circulatory volume and organ perfusion to be maintained with the minimum of administered fluid, which minimises fluid accumulation in the tissues."[1]

The Enhanced Recovery Partnership recommends the regular audit of practice and outcomes benchmarked against national data for surgical procedures.

This should ideally include:

- 30 and 90 day mortality rate (ideally risk adjusted)
- Length of hospital stay
- Same-day admission rate
- Re-admission rate
- Patient-reported outcomes.

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Authors' Contributions:
Each author contributed equally to this consensus statement. All authorsread and approved the final manuscript. Received: 28 May 2012 Accepted: 27 June 2012 Published: 27 June 2012

References:

1. DH: *Delivering enhanced recovery: Helping patients to get better after surgery.* Department of Health, March 2010. 2010, [http://www.dh.gov. uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_119382.pdf]
2. Kehlet H: *Multimodal approach to control postoperative pathophysiology and rehabilitation.* Br J Anaesth 1997, 78:606–617.
3. *Enhanced Recovery Partnership Programme Report.* DH, March 2011. [http://www.improvement.nhs.uk/cancer/LinkClick.aspx?fileticket=9takAGdSB14%3d&tabid=278]
4. Grace C, Kuper M, Weldon S, Lees J, Modasia R, Mythen M: *Service redesign. Fitter, faster: improved pathways speed up recovery.* Health Serv J 2011, 121:28–30.
5. *Fulfilling the Potential: A better Journey for Patients a better Deal for the NHS.* [http://www.improvement.nhs.uk/documents/er_better_journey.pd]
6. NICE: *CardioQ-ODM oesophageal doppler monitor: Medical Technology guidance 3.* National Institute for Health and Clinical Excellent, March 2011. 2011, [http://www.nice.org.uk/nicemedia/live/13312/52624/52624.pdf]
7. NHS Operating Framework 2012–13. [http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131428.pdf]
8. DH Innovation, Health and Wealth Review. 2011, [http://www.midtech.org.uk/wp-content/uploads/2010/05/InnovationHealthandWealth.pdf]
9. Soni N: *British Consensus Guidelines on Intravenous Fluid Therapy for Adult Surgical Patients (GIFTASUP): Cassandra's view.* Anaesthesia 2009, 64:235–238.
10. Pearse RM, Ackland GL: *Perioperative fluid therapy.* BMJ 2012, 26:344. e2865.
11. *British Consensus guidelines on intravenous fluid therapy for adult surgical patients.* March 2011. [http://www.bapen.org.uk/pdfs/bapen_pubs/giftasup.pdf]
12. MacDonald N, Pearse RM: *Peri-operative hemodynamic therapy: only large clinical trials can resolve our uncertainty.* Crit Care 2011, 15:122.
13. Corcoran T, Rhodes JE, Clarke S, Myles PS, Ho KM: *Perioperative fluid management strategies in major surgery: a stratified meta-analysis.* Anesth Analg 2012, 114:640–651.
14. Bennett-Guerrero E, Welsby I, Dunn TJ, Young LR, Wahl TA, Diers TL, Phillips-Bute BG, Newman MF, Mythen MG: *The use of a post-operative morbidity survey to evaluate patients with prolonged hospitalization after routine, moderate-risk, elective surgery.* Anesth Analg 1999, 89:514–519.

15. Brandstrup B, Tønnesen H, Beier-Holgersen R, Hjortsø E, rding H,Lindorff-Larsen K, Rasmussen MS, Lanng C, Wallin L, Iversen LH, GramkowCS, Okholm M, Blemmer T, Svendsen PE, Rottensten HH, Thage B, Riis J, Jeppesen IS, Teilum D, Christensen AM, Graungaard B, Pott F: *Danish Study Group on Perioperative Fluid Therapy. Effects of intravenous fluid restriction on post-operative complications: comparison of two peri-operative fluid regimens: a randomized assessor-blinded multi-center trial.* Ann Surg 2003, 5:641–648.
16. Webb AR: *Recognizing hypovolaemia.* Minerva Anestesiol 2001, 67:185–189.
17. Nisanevich V, Felsenstein I, Almogy G, Weissmann C, Einav S, Matot I: *Effect of intra-operative fluid management on outcome after intraabdominal surgery.* Anesthesiology 2005, 103:25–32.
18. Shepherd SJ, Pearse RM: *Role of central and mixed venous oxygen saturation measurement in perioperative care.* Anesthesiology 2009, 111:649–656. doi:10.1186/2047-0525-1-2

This article first appeared in Perioperative Medicine, an open access journal available at http://www.perioperativemedicinejournal.com/content/1/1/2, published by BMC. Twenty years ago, the world of scientific publishing was very different, with articles available primarily through a subscription model. At BMC, we sensed it was time to develop a new model that would not only maximize the exciting potential of emerging digital technologies, but also meet the needs of those who rely on our industry – authors, funders, libraries, and the wider academic community.

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Cite this article as: Mythen *et al:* Perioperative fluid management:
Consensus statement from the enhanced recovery partnership.
Perioperative Medicine 2012 1:2.

REVISITING ENHANCED RECOVERY
Surgical Pathways

By Kate Woodhead, RGN, DMS

INTRODUCTION

Enhanced Recovery is a quality improvement programme with a complex number of different elements which are evidence-based and have an impact on the patient's recovery after elective surgery. NHS Improvement describes it as designed to improve the patient experience, improve clinical outcomes, and reduce the demand on in-patient beds[1].

It is very much a planned process, involving the whole surgical team and the patient and their family. The main aim being to speed up recovery after surgery and to ensure that patients get the best possible experience. Enhanced recovery programmes are widespread around the country - although far from ubiquitous. The most common areas of care where research has demonstrated the most improvement, are breast care, colo-rectal, gynaecological, musculo-skeletal and urological surgery. There are a few hospitals where thoracic and cardiac surgery utilise enhanced recovery principles. You might ask why this is not practiced as a matter of routine for every speciality and in every hospital.

Greenshields and Mythen,[2] writing in January of 2020, reviewed the progress of the last 10 years in adoption of the Enhanced Recovery (ERAS) principles and state that while there has been significant progress across multiple surgical specialities, there is difficulty in sustaining a target of more than 80% compliance. However optimistically they state that the current interest in peri-operative medicine and prehabilitation, that more focus is landing on enhanced recovery.

WHAT IS ERAS?

Henrik Kehlet, the originator of the programme, was a colo-rectal surgeon who published a paper in the British Journal of Anaesthesia in 1997. He described a multi-modal approach to control pathophysiology and rehabilitation. He suggested the use of evidence-based interventions which were targeted to the different peri-operative periods to improve patient outcomes. The impact was largely down to reducing the surgical stress response which would reduce morbidity and accelerate recovery.

PRE-OPERATIVE

- Optimisation of medical condition
- Cessation of alcohol and smoking
- Patient education

STRESS REDUCTION

- Regional anaesthesia and opioid sparing techniques
- Minimally-invasive surgical techniques
- Normothermia
- Pharmacological modifiers

POST-OPERATIVE

- Minimisation of nasogastric tubes and drains
- Early mobilisation
- Early oral nutrition
- Pain relief
- Prevention and treatment of nausea and vomiting

The ERAS society was formed later that year and has continued to provide a forum for, and leadership to those who espouse the principles. It produces speciality guidelines for different pathways which help those peri-operative teams. The society was joined in 2009 by the Enhanced Recovery Partnership Programme to work as clinical champions to engage medical teams and support implementation of ERAS programmes in the NHS. They also provide data on implementation progress and give national improvement targets each year, where the data suggests that aspects of ERAS need new focus.

For 2019/2020 the targets include pre-operative assessment - specifying individualised risk assessment, finding any anaemias and providing treatment, as well as optimising lifestyles and co-morbidities. There is a series of targets for diabetic management to ensure that Hb1AC is measured, that compliance is identified according to the local protocol and restoring nutrition as soon as possible after surgery. Communication and multi-disciplinary team working come in for some particular focus with emphasis on building discussions into clinical routines, with team briefs, staff meetings and multi-disciplinary meetings.

Managing the patients' pain is an important focus, citing the use of multi-modal analgesia, potentially adding local anaesthetic techniques, distraction therapy and early post-operative review by the pain team. Enhanced recovery includes a particular focus on education and empowerment of the patient including attendance at surgery school, pre-operative nutritional assessment with carbohydrate loading and minimising pre-operative starvation and dehydration. In addition specific attention should be paid to early resumption of eating and drinking after surgery with an emphasis on early mobilisation. Drains and tubes which restrict early mobilisation are to be avoided and there should be as much of a reduction of institutionalisation as possible.

One of the critical elements of the programme is to reduce variation in treatment, using the best evidence for the best outcomes. It would seem to be an anomaly that ERAS has not just been implemented everywhere, across all specialities as the practice of 'best practice' in accordance with the evidence. But life was never meant to be simple. Different aspects have led to this, a lack of specific clinical data compounded by a lack of sophisticated data analysis and a certain amount of resistance to external scrutiny as well as a realisation of the complexity of variables down to each individual patient and their disease and equally the effectiveness of the teams that treat them[3].

SPREAD OF ERAS

The Peri-operative Quality Improvement Programme provides an annual report and ERAS is a central tenet of their programme. It is reported in their first annual report[4] that between 40% and 73% of elective patients were on an enhanced recovery pathway with a national average of 61.4% with enormous variation among hospitals, with one having all patients enrolled and one having not a single patient enrolled. There is also great variation demonstrated in care across different sites, only two out of ten ERAS components had a greater than 80% compliance within colo-rectal surgery. The following years' annual report identified that 124 hospitals in the NHS were contributing to the programme.

PROTOCOLS AND PATHWAYS

The guidance for pathways in the different surgical specialities are published by the ERAS society and are easily accessible on-line. The most recent publication is for neonatal intestinal surgery states that there are few guidelines for neonates and that they suffer considerable number of post-operative complications. The guideline, developed and published internationally is to be welcomed[5]. There are many other pathways for use by all the multi-disciplinary teams.

However following the development of integrated care systems (ICSs) and their priorities from the NHS Long Term Plan, there are now many different pathways and protocols some of which are designed to encompass greater patient empowerment and focus on peri-operative medicine. These integrated care pathways will - or should - replace or contribute to discussions about how to improve the integration of services to improve value and outcomes, but they are a 'management' activity and therefore not necessarily focused on clinical outcomes, but of creating more integration across primary and secondary care.

However, the Long Term NHS Plan also contains a clear vision that patients should be at the centre of decisions about their own care, which chimes nicely with the principles of ERAS. The Plan focuses on personal responsibility and on prevention guided by the principle of 'prevention is better than cure'. This can be applied to smoking cessation, exercise regimes, and obesity - the list goes on. Much emphasis is placed on helping people to lead healthier lives and therefore avoid the need for surgery. However, we know there is a huge pent up demand following COVID-19 and with a greater percentage of the population older and living with more co-morbidities, when surgery is required, it should be a planned process, if at all possible.

The Royal College of Anaesthetists launched a cross speciality national centre for the advancement and development of peri-operative care in May 2019, entitled the Centre for Peri-operative Care (CPOC). They intend to create a variety of work streams, working together with other Royal Colleges and multiple stakeholders to champion the 'prehab-to-rehab' model which is at the core of peri-operative care. The launch document states that 'CPOC will work to inspire professionals and hospitals to better prepare patients for their surgery, increase co-ordination between specialities and provide a comprehensive aftercare programme to enhance recovery and improve quality of life following surgery'. There is recognition of ERAS within one of the initial documents published by CPOC[6] but the movement seems, in my opinion, to be taking the exact same ground as ERAS. It is difficult to see why CPOC is necessary and wouldn't the energy devoted to CPOC be better diverted to ERAS effectiveness?

HEALTHCARE STAFFS VIEWS

Herbert and colleagues investigated the rather slow implementation of ERAS in 2017[7] and focused in particular on the facilitating factors and the challenges of implementing the programme. The interviews were held with a range of different professionals who had been involved in ERAS, across a variety of specialities.

Key facilitators for successful implementation such as teamwork and collaborative working, meetings to provide opportunities for programme development, networking and clarification together with patient involvement and education as well as staff education are all evidence-based factors. Leadership was also described as an important facilitating factor - particularly the presence of a 'clinical champion' as being central to success. The multi-modal approach requires diverse professional groups to collaborate across differing disciplines and suggests that several different champions may be required to drive progress forward.

Challenges included Individual-level resistance, overcoming traditional perceptions of peri-operative care, a lack of resources in terms of staffing, space and time, gaining buy-in from others, and sustaining this engagement and maintaining implementation post-project. The CPOC project leads might well spend some time understanding the challenges identified in this study. It might save them a great deal of time and energy. The study recognises that ERAS is a complex set of interventions which require leadership and support from a number of different stakeholders. It will be of great interest to watch the progress that the Centre for Peri-operative Care makes as it negotiates this complex set of activities.

CONCLUSION

What seems to be clear is that pathways which involve many different healthcare professionals working with the patient, is the way forward. The pre-assessment clinic must be the first obvious way to take the patient's views into account and delivering education for the pathway; although some pathways take a step further back and identify inclusion by the patient's GPs on effective preparation for surgery by encouraging patients to tackle their poor lifestyle choices, before they attend hospital.

It should be noted that clear communication to the patient about how they may self help and education regarding their surgery and post-operative recovery is essential at the pre-assessment stage, if not before. Pre-surgery school is a not uncommon event prior to surgery, particularly in musculo-skeletal surgery and certainly provides patients with an awareness of all the expectations the teams have for them, as well as providing opportunities for useful input by the patients themselves.

There is no doubt that in the post-COVID-19 era, we will have a need to be effective and efficient with the surgical pathway. There is huge pent-up demand for resuming surgery as soon as possible. One study suggests that the pandemic has led to the cancellation of an estimated 516 000 surgeries, including 36 000 cancer procedures[8] while additional research suggests the NHS treatment backlog could reach 10-million later this year[9].

There is no doubt that good communication and teamwork - as well as patient-centred pathways which are evidenced-based - would provide the best mechanism for effective surgical care.

Engagement of patients who have been waiting is even more important to their recovery and satisfactory outcomes; it is to be hoped that we can deliver this effectively using whichever chosen pathway.

References:

1. NHS Improvement. ACT Academy. Quality, Service Improvement and Redesign Tools enhanced recovery. *Accessed at https://improvement.nhs.uk/documents/2111/enhanced-recovery.pdf*

2. Greenshields N., Mythen M. 2020. Current Anesthesiology Reports. Enhanced Recovery after Surgery. *(2020) 10: 49-55 Accessed at https://link.springer.com/content/pdf/10.1007/s40140-020-00372-y.pdf*

3. NHS Confederation. 2004. Variation in healthcare. Does it matter and can anything be done? *Accessed at https://www.nhsconfed.org/-/media/confederation/files/publications/documents/variation-in-healthcare.pdf*

4. Perioperative quality improvement programme. *Annual report 2018/19 Accessed at https://pqip.org.uk/FilesUploaded/PQIP%20Annual%20Report%202018-19.pdf*

5. Intestinal Surgery: Enhanced Recovery After Surgery (ERAS®) Society Recommendations. *World J Surg 44, 2482–2492 (2020). Accessed at https://doi.org/10.1007/s00268-020-05530-1*

6. Centre for Perioperative Care. A teachable moment: delivering perioperative medicine in integrated care systems. *2019 https://cpoc.org.uk/sites/cpoc/files/documents/2019-11/Integrated%20Care%20Systems%202019.pdf*

7. Herbert, G., Sutton E.,Burden S et al, BMC Health Services Research (2017). Healthcare professionals' views of the enhanced recovery after surgery programme: a qualitative investigation. *Accessed at https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/s12913-017-2547-y*

8. BJSS Journals. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *May 2020*
Accessed at https://bjssjournals.onlinelibrary.wiley.com/doi/full/10.1002/bjs.11746

9. Independent. NHS on life support: Up to one in six will be on waiting lists as health service turns to private hospitals. *6 June 2020 Accessed at https://www.independent.co.uk/news/health/coronavirus-nhs-waiting-times-surgery-privatisation-a9550831.html*

This article first appeared in the Clinical Services Journal in August 2020. It appears here, courtesy of the author.

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APPSA GUIDELINES

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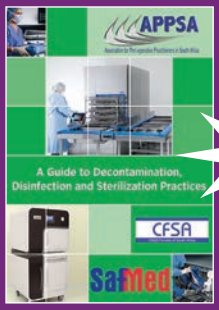

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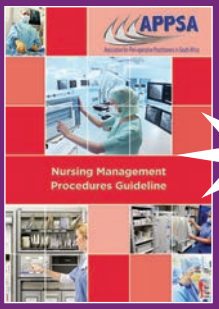

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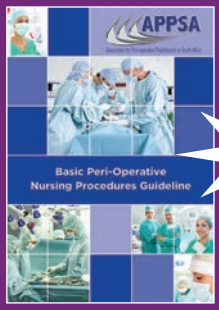

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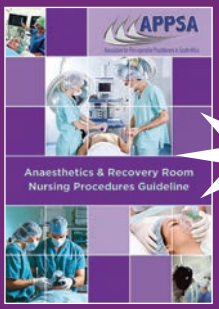

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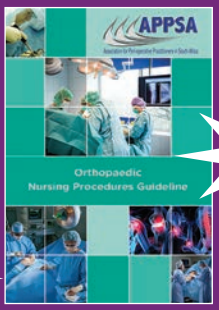

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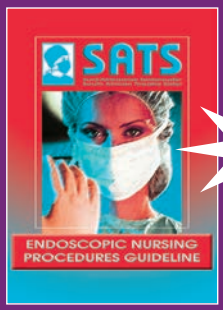

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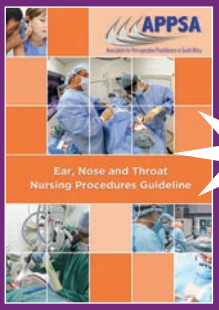

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