Infection Prevention & Control (IPC)

Coronavirus infections among health care workers: what we know about COVID-19

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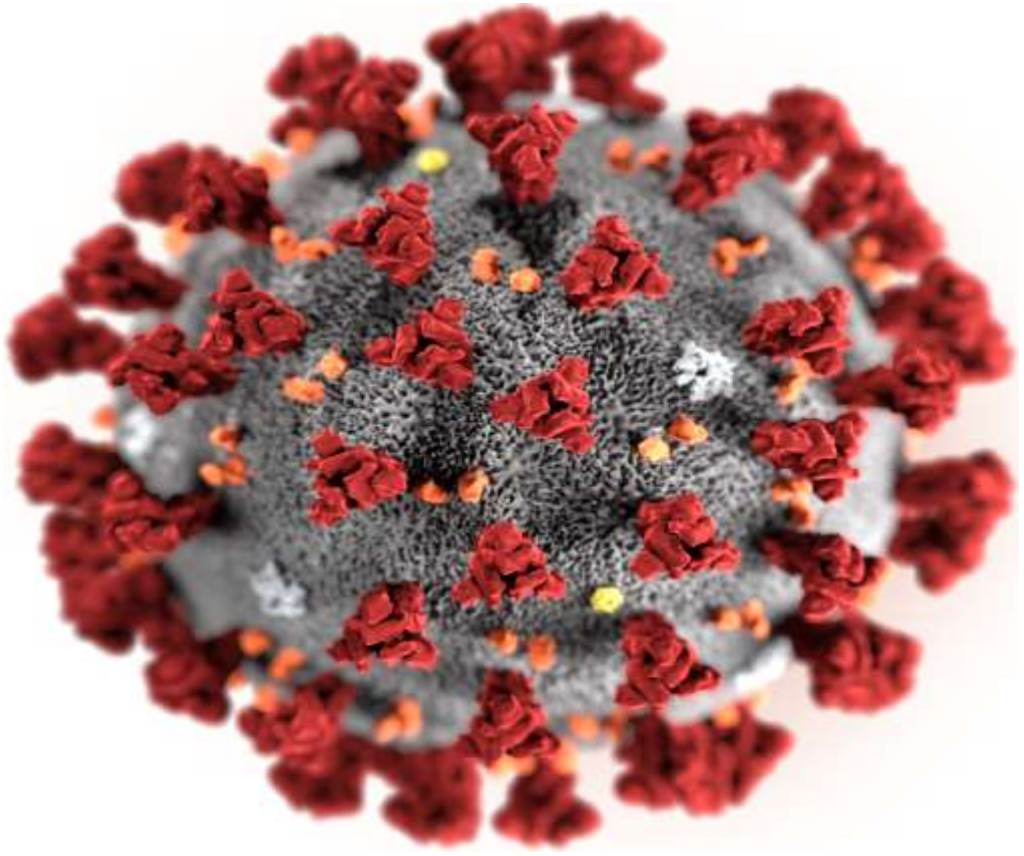
WHO Health Emergencies
IPC Pillar Lead
12 May 2020

Topics to cover

1. Epidemiology, burden of disease
2. Risk factors
3. Psychological impact
4. Available tools



Health Workers (HWs) infection: epi data

APRIL 21st Global Surveillance Case Reporting – Epi Data				
Region	**HCW Count**	**Average Age**	**Total Count in List (HCW + Non HCW + Unknown)***	**% Healthcare worker**
EUR	18900	45.3	380074	5%
PAH	8461	39.4	637216	1%
EMR	378	35.5	7047	5%
SEAR	4	43	11468	2%
WPR	30	44.2	13465	5%
AFR	0	N/A	0	0%
TOTAL	**27,773**	**42.55**	**1,049,270**	**2.6%**
*** Unknown are cases where it is not specified in case report if HCW or non-HCW**				

Situation Report 82 on HCW infections:

Lack of HCW infection surveillance data –no systematic reporting of HCW COVID-19 infections to WHO

Update as of 30-Apr-2020

N= 39,885 HW cases reported

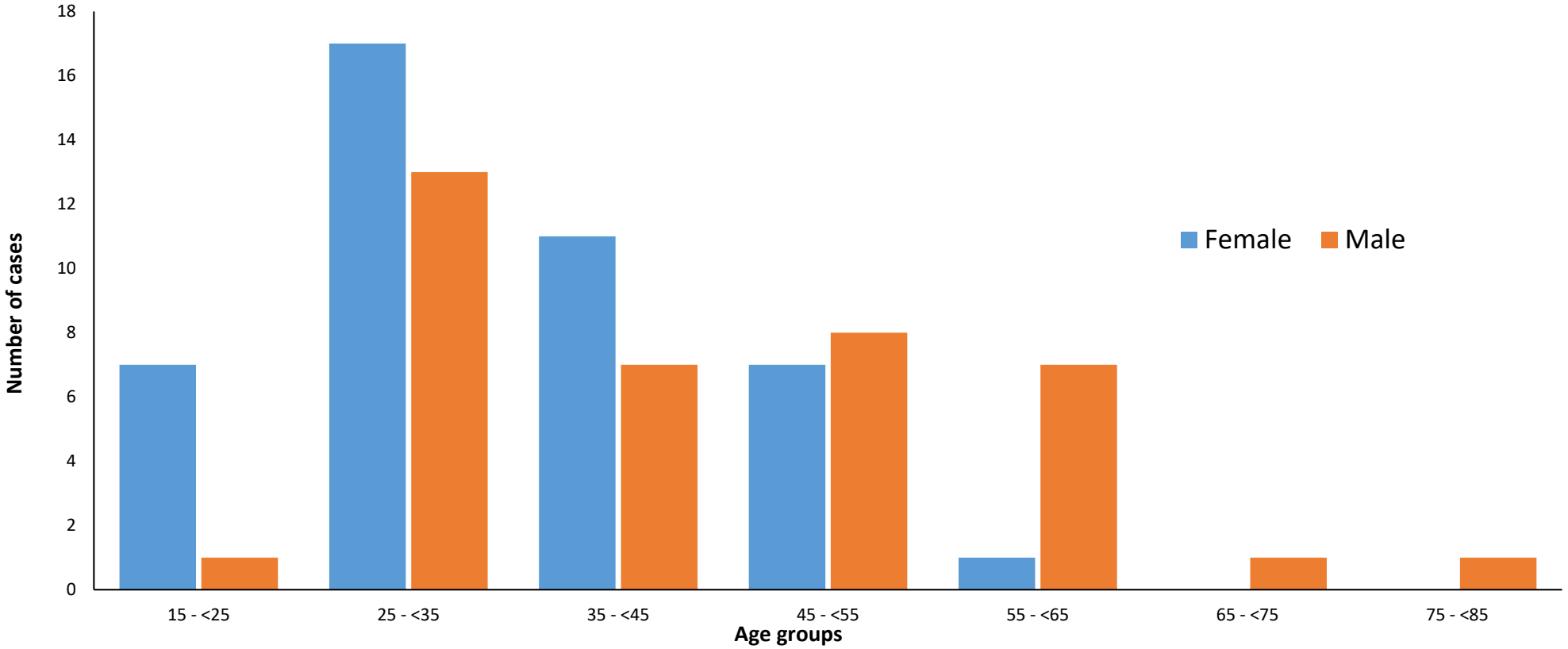
Includes probable and suspected cases

HWs infection: demographics

APRIL 21st Global Surveillance Case Reporting – Epi Data

Characteristics	HCW	TOTAL CASES	% HCW (n=27,773)
Sex			
Male	8328	64717	30%
Female	19370	60355	70%
With known comorbidity	3290	16851	12%
Severity			
Admitted to hospital	1968	21327	7%
Required ICU care	237	3953	1%
Required ventilator support	72	1266	0%
Required ECMO	0	23	0%
Outcome			
Death	137	10687	0%
Recovered	996	4574	4%

WHO: Distribution of HCW by age and sex (N= 81)



Source= EMFLU

WHO: Health Care Workers

In the EMFLU database, 87 cases (5.5%) are HCWs from the following countries:
Afghanistan (1); Egypt (70); Iraq (8); Lebanon (7); Kuwait: 1

According to information collected from WCO Iran:
On 18/03, 2,548 cases among HCWs (15% of cases) including 52 (2%) deaths
49 were working in hospital and 3 in community clinics
Breakdown of the 52 health care workers that died is as follows:

- Physician: 24 (46%)
- Nurse: 8 (15%)
- Pharmacist:1 (2%)
- Midwife: 2 (4%)
- Anesthesia Technician: 1 (2%)
- Medical Record Technician: 1 (2%)
- Laboratory technician: 1 (2%)
- Clerks: 11(21%)
- Community Health Workers: 3 (6%)

Morbidity and Mortality Weekly Report

Characteristics of Health Care Personnel with COVID-19 — United States, February 12–April 9, 2020

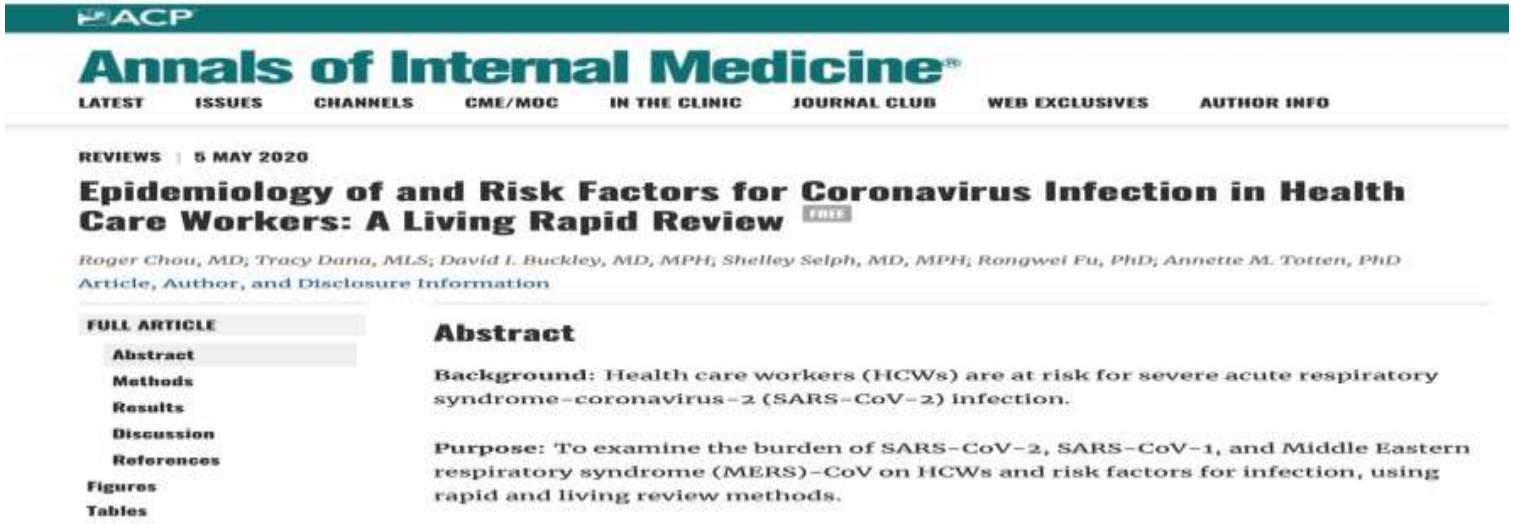
CDC COVID-19 Response Team

- US study of 315,531 cases, only 16% had occupation information,
  - 19% of which were HW (9,282)
  - median age 42 years
  - 73% female
  - 38% which had at least one underlying medical condition
- Contact with COVID-19 patient – setting:
  - 55% reported in the health care setting
  - 27% reported household contact
  - 13% reported community contact only
- Potential for exposure in multiple settings especially as community transmission increases
- Screening all HW for fever and respiratory symptoms at the beginning of their shifts, prioritizing HCP for testing, and ensuring options to discourage working while ill – are all measures that may reduce the risk for infected HW transmitting the virus to others

TABLE 1. Demographic characteristics, exposures, symptoms, an underlying health conditions among health care personnel wit COVID-19 (N = 9,282) — United States, February 12–April 9, 2020

Characteristic (no. with available information)	No. (%)
Age group (yrs) (8,945)	
16–44	4,898 (55)
45–54	1,919 (21)
55–64	1,620 (18)
≥65	508 (6)
Sex (9,067)	
Female	6,603 (73)
Male	2,464 (27)
Race (3,801)	
Asian	199 (5)
Black	801 (21)
White	2,743 (72)
Other*	58 (2)
Ethnicity (3,624)	
Hispanic/Latino	372 (10)
Non-Hispanic/Latino	3,252 (90)
Exposures†,§ (1,423)	
Only health care exposure	780 (55)
Only household exposure	384 (27)
Only community exposure	187(13)
Multiple exposure settings¶	72 (5)
Symptoms reported§, (4,707)**	
Fever, cough, or shortness of breath††	4,336 (92)
Cough	3,694 (78)
Fever§§	3,196 (68)
Muscle aches	3,122 (66)
Headache	3,048 (65)
Shortness of breath	1,930 (41)
Sore throat	1,790 (38)
Diarrhea	1,507 (32)
Nausea or vomiting	923 (20)
Loss of smell or taste¶¶	750 (16)
Abdominal pain	612 (13)
Runny nose	583 (12)
Any underlying health condition§,* (4,733)**	1,779 (38)

HW infections: burden of SARS-CoV-2



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Annals of Internal Medicine

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REVIEWS | 5 MAY 2020

Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers: A Living Rapid Review FREE

Roger Chou, MD; Tracy Dana, MLS; David I. Buckley, MD, MPH; Shelley Selph, MD, MPH; Rongwei Fu, PhD; Annette M. Totten, PhD

Article, Author, and Disclosure Information

FULL ARTICLE

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Purpose: To examine the burden of SARS–CoV–2, SARS–CoV–1, and Middle Eastern respiratory syndrome (MERS)–CoV on HCWs and risk factors for infection, using rapid and living review methods.

Mental health:

- 14% - 15% depression
- 12% - 24% anxiety
- 30% - 39% psychological distress
- 8% - 60% sleep issues

HWs experience significant burdens from coronavirus infections, including SARS-CoV-2

Burden of disease on HWs:

- Netherlands: 6.4%
- China: 3.8%, 5.1%
- Females > Males

World Health Organization

HEALTH EMERGENCIES programme

HW infections: risk & protective factors

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Associated risk factors:

- Working in a high risk vs general department
- Suboptimal handwashing before/after patient contact
- increased work hours
- Improper PPE use
- Having a diagnosed family member was associated with increased risk (suggesting community exposure)

Protective factors:

- Appropriate PPE use
- IPC training

[Qualitative Review]

Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis

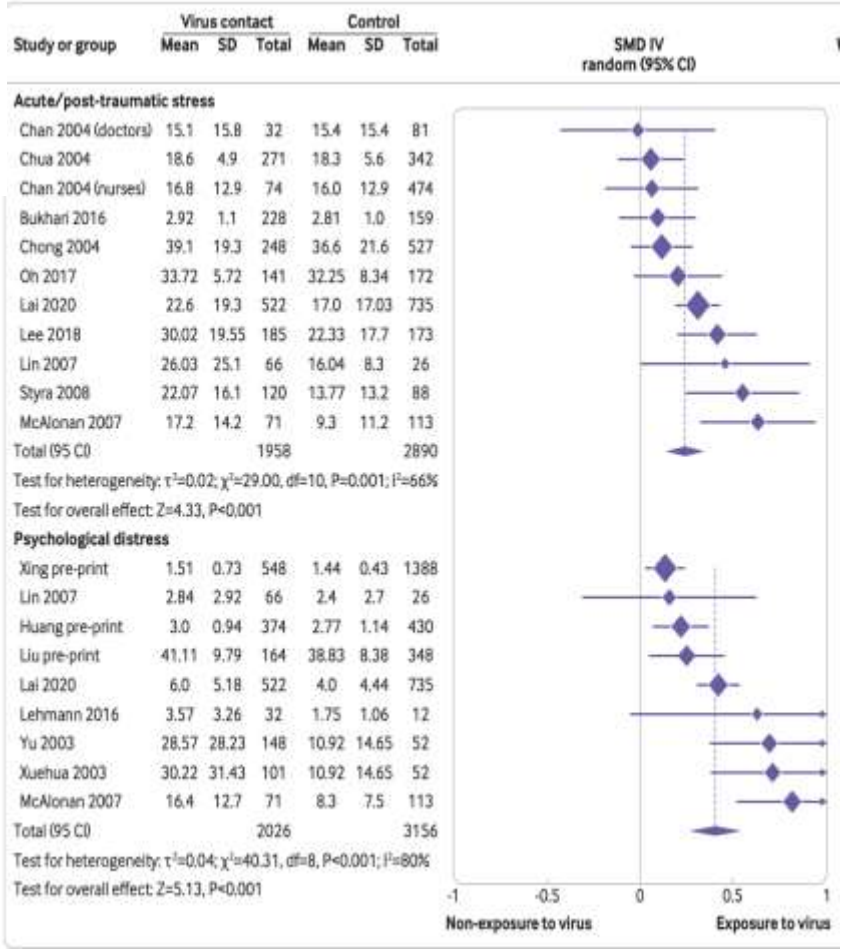
- Barriers to healthcare workers' adherence to IPC guidelines for respiratory infectious diseases:
  - When local guidelines long and ambiguous or did not reflect national or international guidelines.
  - local guidelines were constantly changing
  - increased workloads and fatigue, for instance because they had to use PPE and take on additional cleaning
  - level of support received from their management team
  - Clear communication about IPC guidelines was seen as vital
  - lack of training about the infection itself and about how to use PPE (not mandatory)
  - Sufficient space to isolate patients: isolation rooms, anterooms and shower facilities was a problem. Other important practical measures described by healthcare workers included minimising overcrowding, fast-tracking infected patients, restricting visitors, and providing easy access to handwashing facilities
  - lack of PPE, and equipment that was of poor quality, was a serious concern for healthcare workers and managers
  - Made patients feel isolated, frightened or stigmatised
- Facilitators to healthcare workers' adherence to IPC guidelines for respiratory infectious diseases:
  - minimising overcrowding, fast-tracking infected patients, restricting visitors, providing access to handwashing facilities
  - fear of infecting themselves or their families, or because they felt responsible for their patients
  - When all staff, including cleaning staff, porters, kitchen staff and other support staff implement IPC guidelines

Psychological impact

Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis

Steve Kisely,[1,2,3,4] Nicola Warren,[1,3] Laura McMahon,[3] Christine Dalais,[3] Irene Henry,[1] Dan Siskind[1,2,5]

- Compared with lower risk controls, staff in contact with affected patients had greater levels of both acute or post-traumatic stress (OR 1.71) and psychological distress (1.74)
- Risk factors for psychological distress included:
  - being younger
  - more junior
  - parents of dependent children
  - longer quarantine
  - having an infected family member
  - lack of practical support
  - stigma
- Service and societal factors included inadequate staff training, organizational support, and compensation as well as stigma against health care workers



Study or group	Virus contact Mean	SD	Total	Control Mean	SD	Total	SMD IV random (95% CI)
Acute/post-traumatic stress							
Chan 2004 (doctors)	15.1	15.8	32	15.4	15.4	81	
Chua 2004	18.6	4.9	271	18.3	5.6	342	
Chan 2004 (nurses)	16.8	12.9	74	16.0	12.9	474	
Bukhari 2016	2.92	1.1	228	2.81	1.0	159	
Chong 2004	39.1	19.3	248	36.6	21.6	527	
Oh 2017	33.72	5.72	141	32.25	8.34	172	
Lai 2020	22.6	19.3	522	17.0	17.03	735	
Lee 2018	30.02	19.55	185	22.33	17.7	173	
Lin 2007	26.03	25.1	66	16.04	8.3	26	
Styra 2008	22.07	16.1	120	13.77	13.2	88	
McAlonan 2007	17.2	14.2	71	9.3	11.2	113	
Total (95 CI)			1958			2890	
Test for heterogeneity: τ^2=0.02; χ^2=29.00, df=10, P=0.001; I^2=66%							
Test for overall effect: Z=4.33, P<0.001							
Psychological distress							
Xing pre-print	1.51	0.73	548	1.44	0.43	1388	
Lin 2007	2.84	2.92	66	2.4	2.7	26	
Huang pre-print	3.0	0.94	374	2.77	1.14	430	
Liu pre-print	41.11	9.79	164	38.83	8.38	348	
Lai 2020	6.0	5.18	522	4.0	4.44	735	
Lehmann 2016	3.57	3.26	32	1.75	1.06	12	
Yu 2003	28.57	28.23	148	10.92	14.65	52	
Xuehua 2003	30.22	31.43	101	10.92	14.65	52	
McAlonan 2007	16.4	12.7	71	8.3	7.5	113	
Total (95 CI)			2026			3156	
Test for heterogeneity: τ^2=0.04; χ^2=40.31, df=8, P<0.001; I^2=80%							
Test for overall effect: Z=5.13, P<0.001							

Psychological impact

Recommendations to deal with psychological problems

- Individual factors
- Service factors
  - Communication & training
  - Infection control
  - Workload
  - Support
  - access to adequate personal protection,
- Societal factors
- Can develop strategies to mimize psychological distress of HWs

Box 3: Recommendations to deal with psychological problems in healthcare workers in novel outbreaks

Individual factors
- Staff "buddy" system to support personal precautionary measures[40]
- Encouragement among peers[43]
- Sufficient rest and time off[35 43]
- Opportunities for reflection on the effects of stress[56 66]
- Increased support from family and friends[16 17]

Service factors
- *Communication and training*
  - Clear communication with staff[12 30 33 34 38 56 66]
  - Training and education around infectious diseases[16 18 25 26 35 37 39 42 43]
- *Infection control*
  - Clear direction and enforcement of infection control procedures[13 23 34 35 40 41 43 67]
  - Screening stations to direct patients to relevant infection treatment clinics[56]
  - Sufficient supplies of adequate protective equipment[12 13 17 23 25 35 41 43 56 67]
  - Redesigning nursing care procedures that pose high risks for spread of infections[34 67]
  - Improving safety such as a better ventilation system or constructing or negative pressure rooms to isolate patients[34 67]
  - Reducing the density of patients on wards[34 67]
- *Psychological*
  - Recognition of staff efforts[13]
  - Training to deal with identification of and responses to psychological problems[22 28]
  - Minimising time in quarantine[22 33 38]
  - Access to psychological interventions[16 21 22 23 26 29 33 35 38 43 55 60 62 65]
- *Workload*
  - Appropriate work shifts and regular breaks[12 13 40 43]
  - Avoidance of compulsory assignment to caring for patients with coronavirus[35 55]
  - Rearranging hospital infrastructure, such as redeployment of wards and human resources[34 67]
  - Availability of hospital security to help deal with uncooperative patients[22]
- *Personal support*
  - Guaranteed food and daily living supplies[13 22 43]
  - Alternative accommodation for staff who are concerned about infecting their families[22 33 67]
  - Video facilities for staff to keep in contact with families and alleviate their concerns[22]

Societal factors
- Attention to media portrayal of healthcare workers[66]
- Minimisation of stigma and discrimination[15 40 41 50 51 66]

All studies cited in box are high quality apart from references 13, 26, 30, 39-41, 45, and 52

What tools we have for HW

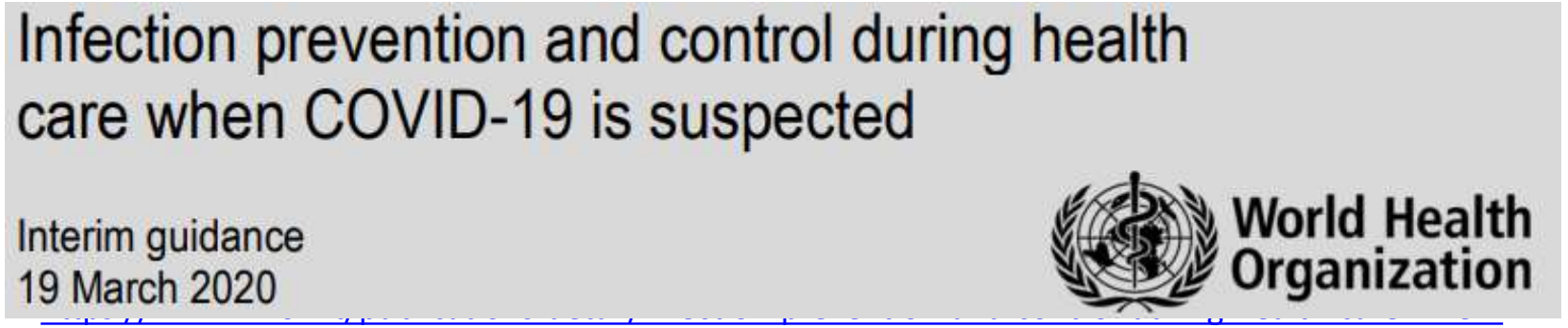
Risk assessment and management of exposure of health care workers in the context of COVID-19

Interim guidance
19 March 2020

World Health Organization

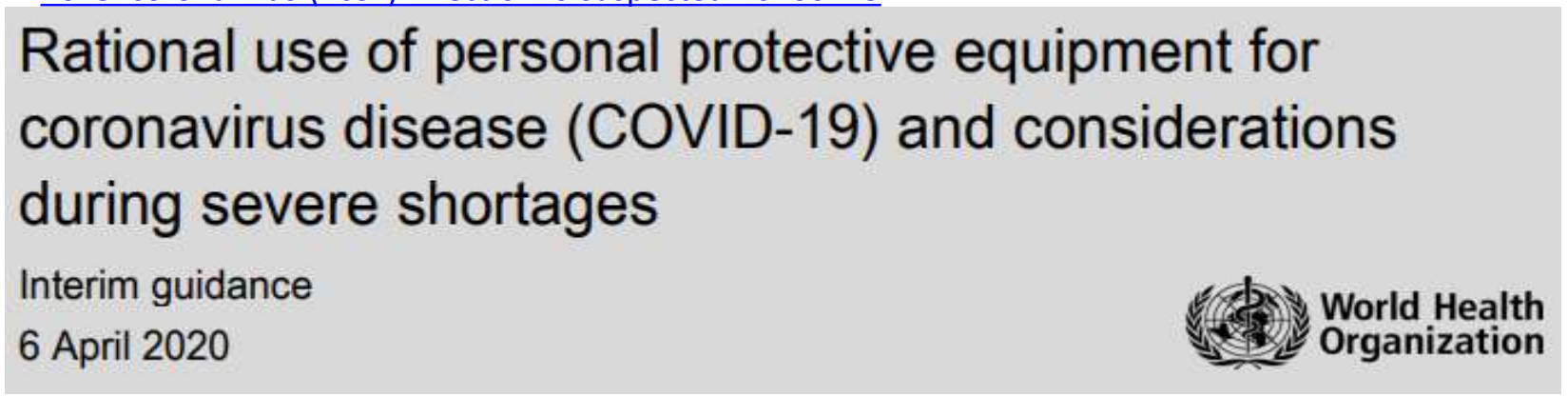
A case-control study to assess potential risk factors for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection among health personnel

Surveillance protocol for epidemiological investigation of health workers with SARS-CoV-2 infections

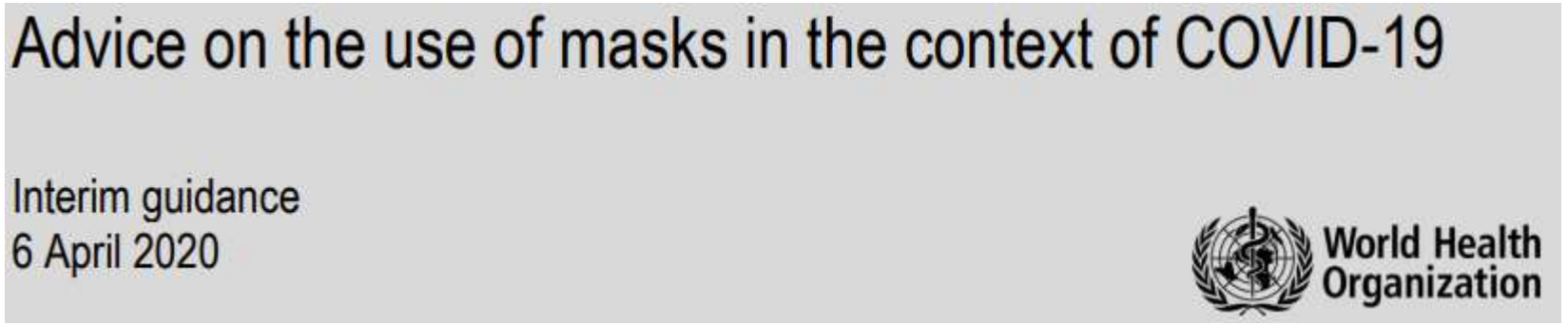


World Health Organization

novel-coronavirus-(ncov)-infection-is-suspected-20200125



https://apps.who.int/iris/bitstream/handle/10665/331695/WHO-2019-nCov-IPC_PPE_use-2020.3-eng.pdf

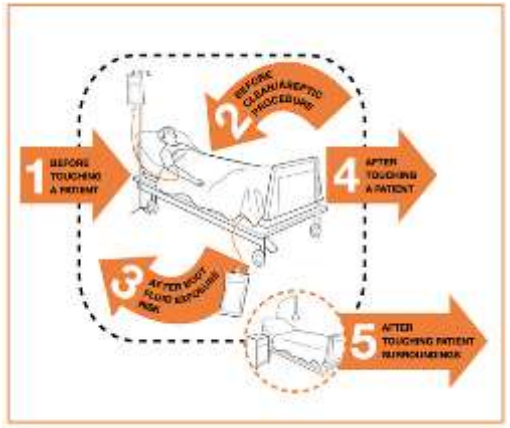


https://www.who.int/publications-detail/advice-on-the-use-of-masks-the-community-during-home-care-and-in-health-care-settings-in-the-context-of-the-novel-coronavirus-(COVID-19)-outbreak

- What to wear?
- By whom?
- When?
- How?

Online training options

https://openwho.org/channels/covid-19



Standard precautions: Hand hygiene
Self-paced English
Most health care-associated infections are preventable through good hand hygiene – cleaning hands at the right times and in the right way. The WHO Guidelines on hand hygiene in health care support hand hygiene promotion and improvement in health care facilities worldwide and are complemented by the WHO multimodal hand hygiene improvement strategy, the guide to implementation, and implementation toolkit, which contain many ready-to-use practical tools. This module has been prepared to help summarize the WHO guidelines on hand hygiene, associated tools and ideas for effective implementation.
Show course details Enroll me for this course

How to put on and remove personal protective equipment (PPE)
Self-paced English
This is a guide for healthcare workers involved in patient care activities in a healthcare setting. It aims to show the type of personal protective equipment or PPE needed to correctly protect oneself. Based on the current available evidence, the WHO recommended PPE for the care of COVID patients are CONTACT and DROPLET precautions, with the exception of aerosol producing procedures, which require CONTACT and AIRBORNE (hence, a respirator mask such as N95, FFP2, FFP3). Keeping in mind, PPE is part of a larger infection prevention and control bundle of measures and should be implemented as part of a multimodal strategy of management of COVID-19 patients. Only clinical staff who are trained and competent in the use of PPE should be allowed to enter the patient's room.
Show course details Enroll me for this course

Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19))
Self-paced English
This course provides information on what facilities should be doing to be prepared to respond to a case of an emerging respiratory virus such as the novel coronavirus, how to identify a case once it occurs, and how to properly implement IPC measures to ensure there is no further transmission to HCW or to other patients and others in the healthcare facility.
This training is intended for healthcare workers and public health professionals, as it is focused on infection prevention and control.
Show course details Enroll me for this course

World Health Organization
REGIONAL OFFICE FOR Europe

Thank you !

Acknowledgements

- Alice Simniceanu
- Madison Moon
- Maria Van Kerkhove