Infection prevention and control in patient and health workers safety during the COVID-19 pandemic

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World Patient Safety Day
virtual, September 18, 2020
# Infection prevention and control and quality of care

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<th>Perspective</th>
<th>Infection control</th>
<th>Continuous quality improvement</th>
<th>Patient safety</th>
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<td>Indicators</td>
<td>Errors, near misses</td>
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<td>Determinants</td>
<td>Risk factors</td>
<td>Patient mix</td>
<td>Root cause, human factors, reporting, learning</td>
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<td>Monitoring</td>
<td>Surveillance, response</td>
<td>Performance measurement, improvement</td>
<td>System improvement</td>
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<tr>
<td>Goal</td>
<td>Prevention</td>
<td>Performance improvement</td>
<td>System improvement</td>
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<tr>
<td>Key professional</td>
<td>Health-care epidemiologists, infection control professionals</td>
<td>Quality managers, accreditation officials</td>
<td>Engineers, health-care purchasers, consumers</td>
</tr>
</tbody>
</table>

*Tempora mutantur, nos et mutamur in illis.*  
(Times change, and we change with them.)  
Owen’s Epigrammata, 1615

Infection prevention and control and quality of care

https://www.who.int/infection-prevention/tools/core-components/en/

https://iris.paho.org/handle/10665.2/51621
WHO IPC Core Components and its challenges for implementation

Strategic Line of Action 1: Implement continuous processes to improve the quality of care to people, families, and communities in the delivery of comprehensive health services (PAHO – CD57/12, 2019)

<table>
<thead>
<tr>
<th>Core Component</th>
<th>Comment</th>
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<tr>
<td>1 – IPC programmes</td>
<td>• Political commitment for IPC in MoH&lt;br&gt;• Organized and functional IPC program at the hospital level</td>
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<tr>
<td>2 – IPG guidelines</td>
<td>• Implementation science and knowledge transfer</td>
</tr>
<tr>
<td>3 – IPC education and training</td>
<td>• Surveillance data – lack of standards and trendlines / regular surveillance x HAI surveillance&lt;br&gt;• Laboratory support: readiness / data misinterpretation&lt;br&gt;• AMR Agenda and Pillar 3</td>
</tr>
<tr>
<td>4 – Surveillance</td>
<td>• Local contexts</td>
</tr>
<tr>
<td>5 – Multimodal strategies</td>
<td>• M&amp;E culture / environment&lt;br&gt;• M&amp;E of IPC Program</td>
</tr>
<tr>
<td>6 – Monitoring/ audit of IPC practices and feedback</td>
<td>• Trained human Resources&lt;br&gt;• High turnover of HCW</td>
</tr>
<tr>
<td>7 – Workload, staffing and bed occupancy</td>
<td>• Lack of allocation of specific funds</td>
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</table>
Implementation of WHO Core Components in the Region

Median score (%) of CC in healthcare facilities (aggregated by country)

(l = health facility / country)  | median score / CC

CC1  | CC2  | CC3  | CC4  | CC5  | CC6  | CC7  | CC8

preliminary data, April 2020 – not published
Infection Prevention and Control: practices and hierarchies

MOST EFFECTIVE

1. Elimination
2. Substitution
3. Engineering controls
4. Administrative controls
5. Use of PPE

LEAST EFFECTIVE

- Hand hygiene (water and soap or alcohol-based solutions)
- Use of personal protective equipment (PPE) according to risk
- Respiratory hygiene (or cough etiquette)
- Safe injection practices
- Sterilization / disinfection of medical devices
- Environmental cleaning

Adapted from NIOSH, 2020

PAHO. Prevention and Control of Healthcare associated infections – Basic Recommendations” - PAHO, 2018
COVID-19 and the shortage of PPE

Optimize PPE availability

Minimize PPE need
Use PPE appropriately
Coordinate PPE supply chain

Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19)

Interim guidance
19 March 2020

Background
This document summarises WHO’s recommendations for the rational use of personal protective equipment (PPE) in health care and community settings, as well as during the handling of waste in the context of COVID-19. PPE includes gloves, medical masks, eyeglasses or face shields, and gowns, as well as for specific procedures, respirators (i.e., N95 or PPEP standard or equivalent) and aprons. It is intended for those involved in distributing and managing PPE, as well as public health authorities and individuals in health care and community settings, and it provides information about when PPE use is most appropriate.

WHO will continue to update these recommendations as new information becomes available.

Preventive measures for COVID-19 disease

Based on the available evidence, the COVID-19 virus is transmitted between people through close contact and droplets, not by airborne transmission. The people most at risk of infection are those who are in close contact with a COVID-19 patient or who care for COVID-19 patients.

Preventive and infection control measures are key. The most effective preventive measures in the community include:
- performing hand hygiene frequently with an alcohol-based hand rub if your hands are not visibly dirty or with soap and water if hands are dirty,
- avoiding touching your eyes, nose, and mouth,
- practicing respiratory hygiene by coughing or sneezing into a bent elbow or tissue and then immediately disposing of the tissue,
- wearing a medical mask if you have respiratory symptoms and performing hand hygiene after dispersing of the mask,
- maintaining social distance (at least 1 metre) from persons with respiratory symptoms.

Additional precautions are required by health care workers to protect themselves and prevent transmission in the healthcare setting. Precautions to be implemented by health care workers caring for patients with COVID-19 include using PPE appropriately, this involves selecting proper PPE and being trained in how to put on, remove, and dispose of it.

PPE is only one effective measure within a package of administrative and environmental and engineering controls, as described in WHO’s Infection prevention and control of epidemic- and pandemic prone acute respiratory infections in health care. These controls are summarised here.

Administrative controls include ensuring sources for infection prevention and control (IPC) measures, such as appropriate infrastructure, the development of clear IPC policies, facilitated access to laboratory testing, appropriate triage and placement of patients, adequate staff to patient ratios, and training of staff.

Environmental and engineering controls aim at reducing the spread of pathogens and the contamination of surfaces and maintain objects. They include providing adequate space to allow social distance of at least 1 m to be maintained between patients and between patients and health care workers, and ensuring the availability of well-ventilated isolation rooms for patients with suspected or confirmed COVID-19.

COVID-19 is a respiratory disease that is different from Ebola virus disease (EVD), which is transmitted through infected bodily fluids. Because of these differences in transmission, the PPE recommendations for COVID-19 are different from those required for EVD. Specifically, overalls (sometimes called Ebola PPE) are not required when managing COVID-19 patients.

Disruptions in the global supply chain of PPE

The current global stockpile of PPE is insufficient, particularly for medical masks and respirators; the supply of gowns and goggles is seen to be expected to be insufficient also. Keeping global demand—driven not only by the number of COVID-19 cases but also by misinformation, panic buying, and stockpiling—will result in further constraints of PPE globally. The capacity to expand PPE production is limited, and the current demand for respirators and masks cannot be met, especially if widespread inappropriate use of PPE continues.

https://apps.who.int/iris/handle/10665/331498
Beyond the appropriate use of personal protective equipment (PPE)

<table>
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<td>2 – IPG guidelines</td>
<td>Develop, adapt and implement guidelines and / or SOPs</td>
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<tr>
<td>3 – IPC education and training</td>
<td>Inclusion of other health workers</td>
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<tr>
<td>5 – Multimodal strategies</td>
<td>Train health workers in the proper use of PPE</td>
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<tr>
<td>8 – Built environment, materials and equipment for IPC at the facility level</td>
<td>Display signs in the isolation area indicating how don and doff PPE</td>
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<td></td>
<td>Guarantee an adequate supply of PPE in the health services, with the recommended specifications</td>
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Use of masks and COVID-19

Figure 4: Forest plot showing unadjusted estimates for the association of face mask use with viral infection causing COVID-19, SARS, or MERS.

SARS=severe acute respiratory syndrome. MERS=Middle East respiratory syndrome. RR=relative risk. aOR=adjusted odds ratio. aRR=adjusted relative risk.

Use of masks and COVID-19

- Key concept:
  - Respiratory protection (HCW)
  - Source control (cases/patients/exposed)

- Countries have the final decision on the decision-making process

“(...) The following potential harms and risks should be carefully taken into account when adopting this approach of targeted continuous medical mask use, including: self-contamination due to the manipulation of the mask by contaminated hands, false sense of security, leading to potentially less adherence to well recognized preventive measures such as physical distancing and hand hygiene (...)”

https://apps.who.int/iris/handle/10665/332293
The burden of COVID-19 among health workers in the Region of the Americas

627,020 cases

2,585 deaths

Source – Line list of reported cases with exception of Brazil, Mexico, Panama, Paraguay, USA (sit reps) – 10 Sept 2020
## Occupational risks for infections in healthcare settings

<table>
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<th>Risk Factor</th>
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<td>Late recognition or suspicion of COVID-19 in patients</td>
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<tr>
<td>Work in high risk department</td>
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<td>Longer duty hours</td>
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<tr>
<td>Suboptimal IPC – hand hygiene</td>
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<tr>
<td>Lack of or improper use of PPE</td>
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<tr>
<td>Insufficient training</td>
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<tr>
<td>Long exposure to large number of COVID-19 patients</td>
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Data synthesis:

- Depression, anxiety, and psychological distress were common in HCWs during the coronavirus disease 2019 outbreak.
- The strongest evidence on risk factors was on PPE use and decreased infection risk.
- The association was most consistent for masks but was also observed for gloves, gowns, eye protection, and handwashing;
- Certain exposures (such as involvement in intubations, direct patient contact, or contact with bodily secretions) were associated with increased infection risk.
- Infection control training was associated with decreased risk.

Conclusion:

- Health care workers experience significant burdens from coronavirus infections, including SARS-CoV-2.
- Use of PPE and infection control training are associated with decreased infection risk, and certain exposures are associated with increased risk.
Activities to protect health workers and patients from COVID-19

**CASE CONTROL STUDY ON HEALTH WORKERS COVID-19: A RESEARCH PROTOCOL**

Final remarks

• Quality care in health service delivery depends on the health workforce;

• Implementation of the WHO IPC Core Components is vital to maintain resilient health services, with provision of quality care and guarantee a safe and decent environment for both health workers and patients.
Thank you