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## Cost-Effectiveness and ROI of Proper PPE Provision



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A new analysis highlights the importance of ensuring the safety and health of medical workers through the use of personal protective equipment (PPE) as they help fight against the pandemic.

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Even as countries implement social distancing policies, when PPE is in short supply, it becomes difficult for frontline or essential healthcare workers (HCWs) to avoid getting infected.

"In scenarios where PPE remains scarce, 70-100% of HCWs will get infected, irrespective of nationwide social distancing policies," notes the study published in PLoS ONE (Risko et al. 2020). To keep HCW infection rates below 10% and mortality below 1%, governments' pandemic response should include a "PPE scale-up strategy", the study advises.

Days before COVID-19 was declared a global pandemic in March 2020 by the World Health Organization (WHO), there were already concerns about depletion of global PPE stock. As Europe and the US started to experience surges in COVID-19 transmission, even their resource-rich health systems were plagued by insufficient supply of PPE to protect frontline HCWs.

In this analysis, researchers focussed on the challenges faced by HCWs in low- and middle-income countries (LMICs), which account for more than 80% of the world's population. It's also in these countries where PPE scarcity is highest, the researchers said.

"Given the pre-existing shortage of HCWs, even minimal workforce depletion due to illness, death or absenteeism could threaten the stability of LMIC health systems," the authors point out.

The research team performed a cost-effectiveness and a return on investment (ROI) analysis to determine the health and economic impact of immediate scale-up in PPE production and distribution across 139 LMICs. Study data included inputs from the WHO's Essential Supplies Forecasting Tool and the Imperial College of London epidemiologic model.

Based on their decision-analytic model, the researchers estimate that, across all LMICs, there will be 166,689,862 HCW cases and 2,299,543 deaths if PPE supply remains constrained.

Meanwhile, an investment of over €8 billion (\$9.6 billion) is needed for all LMICs to provide adequate HCW protection. Such an investment, according to the researchers, can yield significant returns: 2,299,543 lives would be saved across LMICs, costing €50 (\$59) per HCW case averted and around €3,678 (\$4,309) per HCW life saved. Of note, the societal ROI would be €644.7 billion (\$755.3 billion), the equivalent of a whopping 7,932% return.

The research team, however, cited a major limitation to their analysis – that is the lack of data on the comparative risk of poor PPE to HCWs in LMICs. "However, in the absence of perfect data, we have endeavoured to make all assumptions as conservative as possible and to rigorously explore them in our sensitivity analysis," the team explained.

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While wide-scale procurement and distribution of PPE for LMICs is an essential strategy to prevent HCW infection, LMICs now face fierce market competition from wealthy countries. In some cases, rich countries activate legislation preventing exportation of domestically produced PPE. As such, "national governments will need to take proactive measures towards procuring and producing PPE", the authors point out.

Source: [PLoS ONE](#)

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