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Introduction: Reusing PPE is not recommended but was common during COVID-19 pandemic. Limited guidance on proper PPE use and its reuse heightened the hazards to health care worker (HCW) safety. Emerging data on PPE use suggests that most HCWs were contaminated by donning and doffing of PPE while adhering to standards of care.

Method: A prospective observational study was conducted to understand HCW behaviors in donning, doffing, and reusing PPE. Emergency Department physicians and nurses were video-recorded donning, doffing, and reusing PPE within a simulated acute care environment. Participants performed five donning and doffing PPE procedures. PPE kit included gown, face shields, and N95 respirator masks. Participants had access to disposable gloves and hand sanitizer. Recordings were reviewed and coded independently by two trained coders based on checklist of key behaviors. Agreement between coders was high (81.9%). All participants reported completing PPE training.

Results: 28 videos of participants capturing 278 procedures were reviewed. None of the participants followed the CDC's order for donning across five scenarios. Majority of participants failed to perform hand hygiene before donning or re-donning PPE or when doffing PPE. For contaminant spread risk, 92.85% (n=26) touched patient-facing side of PPE during re-donning and/or doffing PPE (M= 3.75, SD= 2.37, Median = 4; 0-9 times). The most common area of self-contamination was hands (n= 111 across all participants in 5 donning/doffing sequences). Touching patient-facing side of PPE was more likely to occur during donning than doffing (70.5% vs. 20.1% of sequences).

Conclusion: The study found wide variation in PPE donning/doffing practices among HCW in violation of CDC guidance. This first study to review PPE reuse through a human factors lens, identified deviant behaviors that contribute to HCW self-contamination. Efforts are needed to redesign PPE and develop effective ways to train staff using PPE equipment safely.

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Impact of Access Block Is Increasing Mortality in Emergency Departments in Nepal

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Introduction: Emergency patients have to stay in the Emergency Department (ED) for hours to days to get ward admission for definite care in Nepal. Access block is a major issue in the ED of University Level Teaching Hospitals (ULTH) in Nepal. This study aimed to analyze the impact of access blocks in the EDs of Nepal.

Method: Meta-analysis of different publications on 'duration of ED Boarding' and 'mortality outcome of ED' of ULTHs of Nepal till November 15, 2022

Results: 9.7% of ED patients were admitted to the ward. The time period from ED arrival to respective ward team consultation is 5.7 hours, consultation to ward admission is 5.6 hours, and admission to ward transfer is 8 hours. The average ED boarding time is 18.1 hours. 38% of patients arrived in ED via Ambulances. The time period from ED arrival to ward team consultation for those who need transfer to another center are 6.9 hours, consultation to admission is 5.7 hours, and admission to transfer is 8.7 hours (ED Boarding time 21.3 hours). Meta-analysis of three major ULTH's showed mortality with respect to ED boarding time to be 17% in < 1 hour, 40.4% in 1 - 6 hours, 27.4% in 6-12 hours, 9.1% in 12-24 hours, 4% in 24-28 hours and 2.1% in >48 hours. Among them, higher age, greater mortality rate. The immediate causes of mortality comparing 2018 vs 2010 are Sepsis & Septic shock 32.2% vs 18%, Cardiac Causes 21.8% vs 14.8%, Aspiration Pneumonia 19.5% vs 14.8%, Severe Lung Diseases 12.7% vs 16.4%, Hypovolumic & Haemorrhagic Shock 9.2% vs 34.4% and Poisoning 4.6% vs 1.6%.

Conclusion: Prolonged ED boarding due to Access Block is triggering increased mortality in the ED.

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CHRONOS Project: The Transformation of Time-dependent Clinical Trajectories into Intelligent Ones Using an Innovative Technological Solution

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Introduction: The health system faces many challenges including the lack of personnel or resources and the overcrowding of emergency rooms. In this context, Real Time Locating Systems (RTLS) offer the possibility of improving the efficiency, safety and quality of care management. Clinical trajectories are currently very dependent on manual processes. We believe that real-time management systems that use geolocation can optimize time-dependent clinical trajectories, improve critical care and transform the health network for patients, caregivers and managers. Typically, RTLS tools require a significant investment in terms of installation, configuration, and integration.

Method: The Nano Data Center (NDC) system developed by *Humanitas Solutions* is equipped with an advanced and low-cost IT infrastructure. It is self-deploying, self-configurable and allows geolocation and autonomous telecommunication with multiple interfaces (WIFI, Bluetooth, electrical). It requires a power source and operates without requiring access to technological infrastructures, which is the major difference with similar products based mainly on cloud computing and dependent on internet connectivity. We tested, as a pilot project, the deployment of the NDC system in a complex hospital environment (*Centre intégré de la santé et des services sociaux de la*