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Practice Points

Non-COVID co-morbidity: potential indirect consequences of the SARS-CoV-2 pandemic in a neonatal intensive care unit

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The emergence of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has had an unparalleled impact on health care across the globe. Neonatal intensive care units (NICUs) have faced new challenges of a different nature than paediatric and adult critical care units, especially with regards to clinical workflows and parent–infant interactions [1]. These include uncertainty in dealing with exposure risk for maternal and neonatal populations, re-organization of process and operations aimed at minimizing risks to staff and patients, and frequently changing clinical landscapes. This article reports the authors' experience from a tertiary NICU, where the bedside changes required from a hospital-level response to supply shortages during the coronavirus disease 2019 (COVID-19) pandemic were temporarily associated with an unprecedented increase in nosocomial infections (NIs) from non-SARS-CoV-2 pathogens, threatening to undermine 1 year's worth of quality improvement (QI) efforts.

NIs are among the most serious preventable complications in NICUs [2]. Preterm infants, in particular, are susceptible to NIs because of their immature immune system and prolonged need for indwelling catheters [3]. Practice bundles to minimize NIs constitute a significant part of NICU QI work [4]. In March 2019, recognizing the increasing NI rates in the study NICU, an NI Task Force was commissioned. One of the key components of this multi-pronged strategy was the roll-out of several education campaigns on performing hand hygiene prior to entering infants' immediate care environment. Alcohol-based hand rubs (ABHRs) were placed at multiple easily accessible points in the 'path' between caregivers and patients; four dedicated ABHR units were located in each patient room, and several wall-mounted units were installed throughout the NICU. Over the next 14 months, QI work was associated with a significant and sustained reduction in NI rates in the NICU.

In May 2020, as part of hospital-mandated resource management, hospital-level availability of ABHR and routinely used cleaning supplies were reduced across all clinical units and common areas. Over the next several weeks, a major NI outbreak (16 infections over 6 weeks) was experienced. These were unprecedented numbers for the study NICU. The NI Task Force held an emergency meeting to strategize a solution, and a root cause analysis was performed. The following contributors were discussed:

- ABHR availability. ABHR units in the NICU were reduced from four to one per patient room, and 50% of wall-mounted ABHR units were decommissioned. Containers of surface cleaning wipes were also reduced from one per patient room to shared supply between multiple rooms.
- Service attendant workflows. Due to the decommissioning of ABHR units, the available NICU stock was depleted more rapidly, and refilling of empty wall-mounted units by service attendants was delayed due to lack of immediate access to supply. Task Force leadership ensured a

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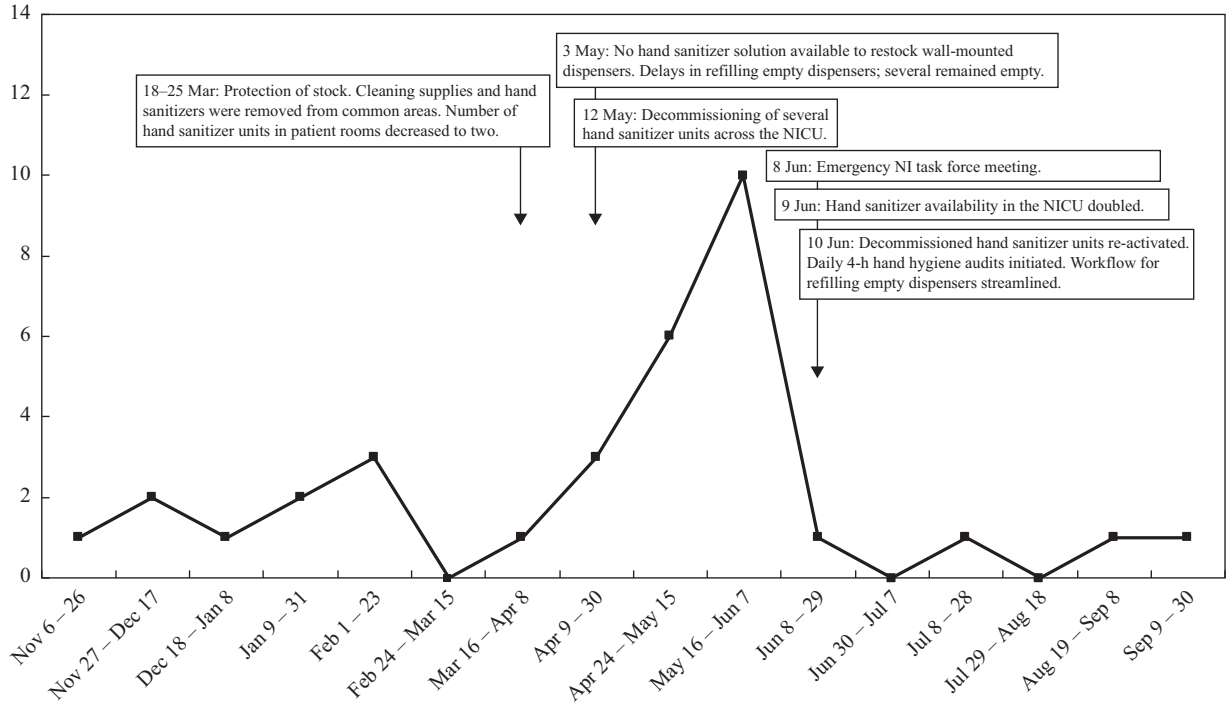

Figure 1. Central-line-associated bloodstream infections November 2019—September 2020. NICU, neonatal intensive care unit; NI, nosocomial infection.

protected central supply and sensitization of service attendants to urgent NICU needs.

- Milk bank. Hand hygiene re-education of milk bank personnel and protection of sanitizing supply were enacted.
- Personal protective equipment (PPE). Use of clean gloves for routine patient care was discussed. While the hospital's PPE stores were acceptable during this time, concerns were raised that the glove supply would deplete rapidly through this approach, which did not have any demonstrable evidence-based benefit.
- Other. Scheduling of nurses, physicians and respiratory therapists was reviewed, and no staffing issues were identified at the time. The NICU visitor policy (parents only) was also discussed, and the existing practice was found to be non-contributory.

The team decided to prioritize advocating for increasing ABHR units for the NICU with hospital administration. The following day, the number of ABHR units in the NICU was doubled, and the process for refilling empty ABHR units and replacing surface cleaning wipes was streamlined. Multiple interdisciplinary huddles to educate staff regarding the current situation, inform of recommissioned ABHR units, and re-enforce hand hygiene were conducted. Fortunately, these measures were associated with a return of NI rates to baseline (Figure 1).

The COVID-19 pandemic has placed extraordinary demands on healthcare systems worldwide. Similar unintended consequences of the pandemic have been seen in other settings, including delayed diagnosis of common diseases such as type 1 diabetes [5] and an increase in stillbirth rates [6]. The study centre's experience with infection prevention has provided much food for thought as the fight against this pandemic continues. NICUs, despite having one of the lowest COVID-related caseloads among all intensive care units, are not immune to secondary adverse effects. The required allocation of resources and administrative attention to pandemic-related activities may result in unintended consequences for other vulnerable patient populations. These may be preventable, to some extent, by ongoing vigilance and concerted efforts to reinforce best practices. It is hoped that this article will generate awareness of these potential challenges in the care of preterm infants during this ongoing pandemic, and help neonatal clinicians and hospital administrators to anticipate and ameliorate some of the downstream impacts which may not be recognized immediately.

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