Table 1. Diarrhea Assessments Based on Patient Interviews and Documentation in Medical Records for 100 Patients Tested for *Clostridioides difficile* Infection

Variable	Total (N=100), No. (%)	Meeting Criteria for Diarrhea[a] (N=60), No. (%)	Not Meeting Criteria for Diarrhea[a] (N=40), No. (%)
Patient interview			
Self-reported diarrhea[b]	86 (86)	60 (100)	26 (65)
≥3 unformed stools per day	60 (60)[c]	60 (100)	0 (0)
<3 unformed stools per day	20 (20)	0 (0)	20 (50)
Formed stool but with increased frequency	6 (6)	0 (0)	6 (15)
No diarrhea (normal stool frequency and consistency)	14 (14)	0 (0)	14 (35)
Practitioner documentation[d]			
Diarrhea	75 (75)	51 (85)	24 (60)
No. of bowel movements	46 (46)	33 (55)	13 (33)
Consistency of stools	46 (46)	32 (53)	14 (35)
Nursing documentation			
Diarrhea	18 (18)	11 (18)	7 (18)
No. of bowel movements	20 (20)	11 (18)	9 (23)
Consistency of stools	24 (24)	12 (20)	12 (30)

[a]Diarrhea defined as 3 or more unformed (Bristol scale 6 or 7) stools in a 24-hour period as determined by patient interview.[b]Patients were first asked if they had diarrhea without any comment on how diarrhea should be defined.[c]Of 60 patients with ≥3 unformed stools per day, 8 (13%) did not meet criteria for clinically significant diarrhea because they had a clear alternative explanation for diarrhea (eg, laxatives, chronic diarrhea due to chronic pancreatitis).[d]Practitioners included physicians, nurse practitioners, and physician assistants.

stools. Education of patients could empower them to participate in efforts to reduce inappropriate CDI testing.[8,9] Education of personnel to obtain information on frequency and consistency of stools could improve the accuracy of diarrhea documentation.

Our study had some limitations. Only one healthcare facility was included. At the time of the study, no interventions were in place to limit inappropriate CDI testing. The lack of documentation by nurses in outpatient settings is not unexpected. Finally, in some cases, the information on bowel movements provided by patients or family members may have been inaccurate.

In conclusion, education of personnel and patients about the definition of clinically significant diarrhea and efforts to improve documentation of diarrhea are needed to support CDI diagnostic stewardship interventions.

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Cost of personal protective equipment during the first wave of the coronavirus disease 2019 (COVID-19) pandemic

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To the Editor—As the world prepared and responded to the coronavirus disease 2019 (COVID-19) pandemic in early 2020, a rapid increase in demand for personal protective equipment (PPE) led to severe shortages worldwide. The PPE demand rose as a result of panic purchasing, hoarding, and misinterpretation of public health information.[1–3] This led to shortages so wide that the World Health Organization released several memorandums regarding 'rational use' of PPE to try and reconcile the spike in utlization of PPE as

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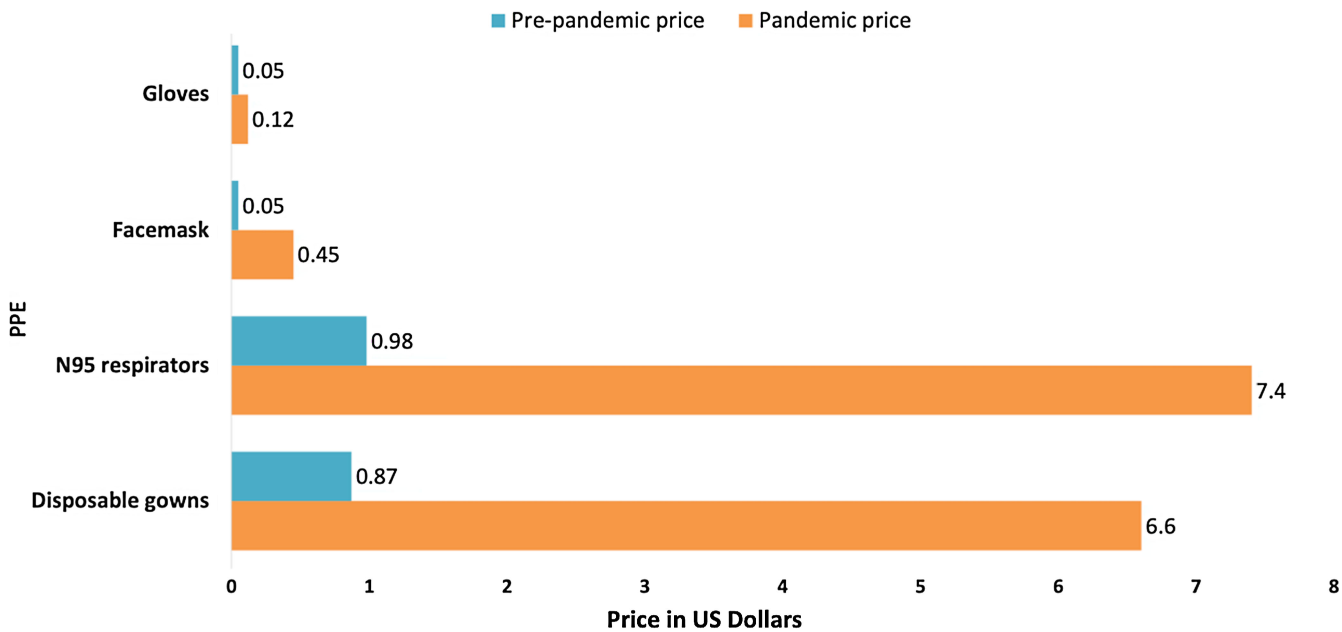

Fig. 1. Cost of personal protective equipment per unit in US dollars.

well as the inevitable increase in prices.[1,4] Our 151-bed safety-net hospital, like many other facilities, navigated a major rise in prices as part of our pandemic preparedeness and response. In this study, we performed a review of PPE market prices paid by our facility during the first surge of the pandemic (April–June 2020). Our hospital is located in Chicago, Illinois. We have reported cost and emphasized the importance of PPE supply resilience for pandemic preparedness. The maximum cost per unit (CPU) of PPE was tabulated and compared with prepandemic (April–June 2019) prices to establish an increase in CPU in US dollars for the various PPE items. The maximum CPU of PPE was tabulated for each week and the average cost throughout the first wave of COVID-19 pandemic was calculated. Disposable gowns, washable gowns, N95 respirators, face masks, and gloves were included in our analysis.

PPE prices were significantly higher during the first wave of the pandemic compared to prepandemic prices (Fig. 1). The CPU for gloves increased from $0.05 to $0.12; the CPU for face masks increased from $0.05 to $0.45; the CPU for N95 respirators increased from $0.98 to $7.4; and the CPU for disposable gowns increased from $0.87 to $6.60. The CPU for gloves averaged 2.5 times higher than prepandemic prices. The CPU for face masks peaked at $0.55, 11 times higher and an average of 9 times higher than the prepandemic price. N95 respirators had a peak CPU of $12, and the average CPU was 8 times higher than prepandemic prices. The average CPU for gowns was 7.5 times higher than prepandemic prices; the CPU for disposable gowns peaked at $12 during the first week of March 2020, a price 13.7 times higher than the prepandemic price.

Before the pandemic, hospitals were spending ~$7 per patient on PPE, with an increase to $20.40 during the first wave of COVID-19 in the spring of 2020.[5] The Society for Healthcare Organization Procurement Professionals conducted a study during the same period showing that PPE costs increased 1,064% in their 5,000 skilled nursing facilities and assisted living centers across the United States.[2] Multiple factors likely contributed to high prices, including demand shock, disrupted supply chains, and a rush to acquisition by healthcare systems and the general population alike. The global PPE supply chain did not properly operate to meet the demands of healthcare systems across the world during the first wave of the COVID-19 pandemic. In 2020, many factors such as the shortage of raw materials, export bans, and restraints in logistics contributed to 4–6 month backlogs for global supply orders of PPE.[6]

Several major sources of PPE backlogs were identified by the Asian Development Bank during the early wave of the pandemic in 2020. N95 mask surges led to shortages in nonwoven polypropylene. Export bans in 22 countries limited PPE access to millions of people worldwide. Transport and shipping constraints were implemented. Fewer workplace personnel were available due to COVID-19. Availability of various shipping containers was lower, and more.[6] Along with price gouging and competitive bidding among hospitals, these factors inevitably contributed to soaring PPE prices. Cohen et al[3] elaborated on 4 other contributing factors to PPE shortages: the way that hospitals budget for PPE, domestic demand shocks, federal government failures, and disruptions to global supply chain.[3]

The PPE supply challenges during COVID-19 led to several important conversations regarding policy changes and mitigation strategies. The *International Journal of Operations and Production Management* identified 4 specific strategies for pandemic-specific supply-chain management: global PPE standards, production changeover, joint procurement, and multiple sourcing.[7] The Asian Development Bank also outlined several policy recommendations to ensure PPE preparedness for a global pandemic: monitoring PPE use and visibility of orders, improving supply systems and sharing responsibility, improving domestic manufacturing surge capacity during the event, strengthening trade finance programs for micro, small, and medium-sized enterprises, and more.[6] To develop resilient supply chains, local capacity for essential items should be developed, along with an increase and diversification in international production sites.[8]

The COVID-19 pandemic has highlighted the need for policy reconciliation to prevent future supply chain failures and inevitably price surging for essential materials such as PPE.

The Society for Healthcare Epidemiology of America (SHEA) Outbreak Response and Incident Management guidelines provide a high-level overview of incident management for infectious diseases outbreaks.[9] Our facility navigated these challenges by centralizing and

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securing our PPE stocks, ensuring accountability and evidence-based use of our supplies, and diversifying our procurement as much as possible to ensure adequate stocks. Resilient supply chains and standardized guidelines for PPE reuse may be necessary for future pandemics.

This study had several limitations. For example, the data presented were limited to the geographic scope of Chicago, Illinois. Despite these limitations, the results of this study are generalizable to hospitals across the United States.

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