Increasing Supportive Care for Patients With COVID-19–Related Respiratory Deterioration in Non-ICU Settings

Courtney L. Stellpflug, MSN, APRN, CNS; Stephanie D. Olson, BSN, RN; Britta A. Balko, AD, RN; Victoria G. Mrowka, MS, RN; Gregory D. Focht, BSN, RN; Jennifer L. Elmer, DNP, APRN, CNS

ABSTRACT

Background: Prepandemic hospital guidelines were unable to support an acute influx of patients with respiratory deterioration. New processes for general care practice were needed to facilitate patient care.

Purpose: To develop and evaluate guidelines to safely treat patients with COVID-19 respiratory deterioration in the general care setting.

Methods: A quality improvement project with 2 PDSA (Plan-Do-Study-Act) cycles was used to develop guidelines for high-flow oxygen and prone positioning, along with frequent monitoring and collaboration with virtual critical care support.

Results: Over 6 months, 126 patients with COVID-19 were cared for on general care units. Zero intubations occurred on the general care units, with 211 patient hospital days spent in general care that previously would have required an intensive care unit bed.

Conclusions: Patients in the general care setting with respiratory decline can safely be managed with appropriate monitoring criteria, oxygen device settings, and nursing support utilizing technology.

Keywords: COVID-19, general care, high-flow nasal cannula, hypoxic respiratory failure, respiratory

High volumes of hospitalized patients with COVID-19–related respiratory deterioration have led hospitals to evaluate patient triage guidelines in the inpatient setting. As many intensive care units (ICUs) were at maximum capacity, there was a need to maximize patient care outside of the ICU for patients with COVID-19 who did not require mechanical ventilation. As such, a quality improvement (QI) initiative was developed to optimize use of heated humidified high-flow nasal cannula (HHFNC) and awake prone positioning for COVID-19–related respiratory deterioration on a medical pulmonary unit within a large academic center in the Midwest. Once a process was established, it was disseminated to all general units caring for patients with COVID-19.

Several studies found that HHFNC and awake prone positioning may stabilize respiratory status and reduce the need for intubation. The benefit of using prone positioning outside of the ICU setting has been found to both encourage alveolar perfusion and reduce ventilation-perfusion mismatch, resulting in increased oxygenation. Other studies attributed a decrease in respiratory rate and improvement in oxygenation with prone positioning. Patel et al found that patients initiated on HHFNC had decreased incidence of mortality compared with patients who were intubated, while Hernandez-Romieu et al reported no difference in mortality between patients who were intubated and those initiated on HHFNC. A ROX Index score is a validated tool that can be used for patients utilizing HHFNC to determine risk for intubation and is calculated using the oxygen saturation (as measured by pulse...
oximetry) (SpO2), fraction of inspired oxygen (FiO2), and respiratory rate. Roca et al10 found that patients with a lower ROX Index score demonstrated an increased risk for intubation, with a score of 4.88 or greater predicting a lower risk for intubation and a higher probability of HHFNC success.10

The purpose of this QI project was to evaluate the use of HHFNC and prone positioning for COVID-19–related respiratory deterioration on general care units, using 2 Plan-Do-Study-Act (PDSA) cycles. The following outcomes were measured: (1) number of patients with HHFNC and prone positioning initiated; (2) number of patients on the general units requiring intubation; (3) number of patients requiring transfer to the ICU and intubation within 1 hour of ICU transfer (counterbalance measures); (4) patient’s ROX Index calculations; (5) mortality rate; and (6) the registered nurse’s (RN’s) perceptions of the enhanced-ICU (eICU), and HHFNC and prone positioning interventions on the general care units.

METHODS

Prior to the first surge of hospitalized patients with COVID-19 in 2020, hospital leaders discussed ways to accommodate an influx of patients with respiratory deterioration. The threshold necessitating ICU transfer for escalation in oxygen support, specifically the initiation and titration of HHFNC, was reviewed. It was determined that to triage patients needing the highest level of respiratory support to the ICU, initiation and titration of HHFNC could be accomplished in the general care setting with continuous monitoring and multidisciplinary engagement to promote patient safety and prevent intubations outside of the ICU. The following processes were initiated to safely increase supportive care outside of the ICU for patients with COVID-19–related respiratory deterioration: (1) initiation and titration of HHFNC by a respiratory therapist (RT) with the support of nursing; (2) development of a non-ICU prone positioning guideline; (3) remote SpO2 monitoring; and (4) nursing collaboration between the general care unit and the hospital’s eICU for virtual support. These processes were tested for 6 months and led by a small multidisciplinary group, including nursing, pulmonary and hospital internal medicine physicians, critical care medicine leadership, RT, and the hospital’s emergency response team leadership. Education modules were developed and provided to the general care RNs specific to HHFNC and prone positioning before initiating practice changes.

The first PDSA cycle began in September 2020, allowing the initiation and up-titration of HHFNC in the general care setting. Maximum HHFNC device settings outside of the ICU were 60% FiO2 and 60 L. Additional patient vital sign monitoring, support from an RT, and collaboration with the hospital’s eICU were implemented. During this time, all patients receiving HHFNC were encouraged to lay prone for a minimum of 2 hours in the morning and 2 hours in the evening. The second PDSA cycle was implemented in December 2020. During this PDSA cycle, HHFNC maximum device settings allowed outside of the ICU were increased to 70% FiO2 and 60 L. This was done after reviewing all patients with COVID-19 requiring transfer to the ICU and recognizing that some patients needed their FiO2 increased to 70%, however, did not require other ICU-level interventions.

Initiating and titrating HHFNC

When nursing identified a patient was failing supplemental oxygen delivered via nasal cannula at 6 L/min as evidenced by increasing respiratory rate, multiple desaturation events, or increased dyspnea, the RT and the primary medical team were notified to evaluate the patient. An order was placed by the primary medical team for HHFNC settings and the desired SpO2 range. HHFNC was then initiated by the RT at 40 L, 40% FiO2, and titrated to the patient’s required level of support. If the patient needed to leave the unit for any reason, a nonrebreather device was used and the RT accompanied the patient.

An RT evaluated the patient every 4 hours through an in-person bedside assessment. If an RT was not available for a bedside assessment, it was completed virtually by an RT connecting to an electronic tablet in the patient room, while the patient’s RN was in the room to assist. All patients utilizing HHFNC were also monitored remotely (continuous SpO2 and pulse rate) by an RT. If the remote monitoring RT noticed acute and persistent desaturations, they would contact the RT in that area or the patient’s RN to evaluate the patient. If the patient was unable to maintain a satisfactory SpO2, respiratory rate, or work of breathing at maximum FiO2 for the
general care area, the patient would transfer to the ICU for additional respiratory support.

Prone positioning
During the 6-month project, all patients with COVID-19 using any amount of supplemental oxygen, including HHFNC, were encouraged to lay in the prone position. This was encouraged by the nursing staff in the general care setting to be performed at least twice daily for 2 to 3 hours at a time. An early prone positioning guideline was created with inclusion and exclusion criteria for early patient proning. The comprehensive guideline for prone positioning can be found in Supplemental Digital Content Figure 1 (available at: http://links.lww.com/JPHMP/B15).

Patient monitoring
Patients with COVID-19 admitted to a general care unit had continuous vital sign monitoring, including heart rate, SpO2, respiratory rate, and noninvasive blood pressure, with alerts to nursing when patients exceeded set limits. When an alert occurred, the RN would evaluate the patient. Vital sign parameters were wide to avoid alarm fatigue and reduce nonactionable alarms.

Nursing collaboration between the general care unit and the hospital’s eICU
The eICU is a virtual care unit staffed by critical care RNs and providers. Technology is used to assist with patient evaluations and provide recommendations in patient care. The general care units had tablets on stands located at the foot of the bed in all patient rooms. The eICU RNs had the capability to evaluate patients through the electronic tablet, review the patient’s electronic health record (EHR), view the continuous vital sign data, and discuss the patient’s case with the bedside RN.

The general care unit charge RN and eICU charge RN would formally connect twice daily to review patients on HHFNC and patients thought to be at greatest risk of deterioration. They could reconnect as needed throughout the day, utilizing a secure messaging function within the EHR. In addition, the eICU RN would become involved at any time when requested by the general care bedside RN. When this would happen, the eICU RN would review the patient’s chart, discuss the case with the bedside RN, provide recommendations, and follow up as needed. One of the established criteria for a general care RN to contact the hospital’s eICU RN was the initiation of HHFNC, or if a patient showed signs of respiratory deterioration while using HHFNC. This collaboration facilitated support to the general care nursing staff, recommendations for additional bedside interventions, and timely patient transfers to the ICU when appropriate.

Data collection and evaluation
Descriptive statistics were used to evaluate data. Data were primarily collected through manual review of the EHR. HHFNC and prone positioning data were collected from nursing and RT documentation. Notes were reviewed for transfers to the ICU and those who required intubation within 1 hour of transfer to the ICU. ROX Index data were retrieved from RT notes in the EHR. Two surveys were sent to general care nurses; one evaluated RN perception of collaboration with the eICU, and the other evaluated RN perception in caring for patients outside of the ICU requiring HHFNC and prone positioning. Survey data were collected at the conclusion of the 6-month project.

RESULTS
Data were collected from September 2020 through February 2021. All adult, non-ICU patients admitted to the hospital for treatment of COVID-19 were included. During this 6-month time frame, 960 patients were admitted to general care units for treatment of moderate to severe COVID-19. Of those 960 patients, 126 (13%) required initiation of HHFNC without otherwise meeting criteria for ICU admission.

The change in HHFNC initiation and titration practice resulted in 211 patient hospital days spent in general care that would have previously required patients to be bedded in an ICU. The ability for these patients to remain in the general care setting and not transfer to an ICU bed resulted in an approximate cost savings of $746,940 over 6 months. The savings primarily accounted for cost avoidance in respect to fewer ICU days and was deemed cost neutral in the amount of staff to care for the patient in general care, as well as no additional equipment purchases required for this practice change.

There were 43 patients initiated on HHFNC who also followed the guideline for prone positioning; 28 (65%) remained in the general care
setting, while 15 (35%) required transfer to the ICU. With a small sample size and unknown accuracy of nurses documenting this intervention, the significance of prone positioning while utilizing HHFNC is unable to be determined. The most common reason reported by patients choosing not to lay prone was due to back discomfort.

The counterbalance measures revealed 0 patients required intubation outside of the ICU, and 2 patients (1.5%) required intubation within the first hour of transfer to the ICU. Of the 126 patients with COVID-19 starting HHFNC in the general care setting, 52 (41%) later required transfer to the ICU during their hospitalization, while 74 (59%) were able to remain in the general care setting (see Supplemental Digital Content Figure 2, available at: http://links.lww.com/JPHMP/B16). Of the 52 patients who transferred to the ICU, 13 patients required HHFNC up to 70% FiO₂ (11 of these patients were hospitalized during the first 3 months of the project when the maximum FiO₂ setting outside of the ICU was 60%); 18 patients required HHFNC up to 100% and/or initiation of positive airway pressure (PAP), and 21 patients required intubation during their ICU stay. During the last 3 months of the project when HHFNC titration was allowed up to 70% on the general medical units, 29 patients required HHFNC at 70% FiO₂ outside of the ICU; 12 (41%) patients remained in the general care setting. Of the 17 (59%) patients who transferred to the ICU, 4 required greater FiO₂ via HHFNC, 7 required PAP support, and 6 required intubation and mechanical ventilation during their ICU stay.

When comparing ROX Index scores within the first 24 hours of HHFNC initiation, there was a difference noted between the patients who were able to remain in the general care setting, with an average score of 10, and the group of patients requiring transfer to the ICU, with an average score of 7.8 (Table). ROX Index scores were retroactively collected for 24 hours leading up to ICU transfer, which did not show a change (average score 7.8) from the day of HHFNC initiation. The actual time of transfer to the ICU did show a decrease in ROX Index scores, with an average score of 5.4.

The in-hospital mortality rate for patients with COVID-19 starting and up-titrating HHFNC outside of the ICU was 22%. Of this group, 1 patient mortality occurred without transfer to the ICU. In this case, a goals-of-care discussion with the medical team and family resulted in transition to a comfort-based approach.

An electronic survey was sent to COVID-19 general care RNs to evaluate their perceptions of nursing support from the eICU; 21 general care RNs responded, with 100% of nurses requesting to keep the process with eICU RN support. When asked what could improve the current process with the eICU, the most common request was to add critical care physician involvement. Subjective data via electronic surveys were also collected to gauge RN’s perceptions of caring for patients requiring HHFNC and proning outside of the ICU. A total of 40 RNs completed

| Time Following HHFNC Initiation | Average ROX Index Score for Patients Remaining in the General Care Setting | Average ROX Index Scores for Patients Later Requiring Transfer to the ICU |
|--------------------------------|-------------------------------------------------|-------------------------------------------------|
| 2 h                            | 9.4                                            | 8.2                                             |
| 6 h                            | 9.9                                            | 7.4                                             |
| 12 h                           | 10.2                                           | 8                                               |
| 16 h                           | 9.9                                            | 7.9                                             |
| 20 h                           | 10.5                                           | 7.6                                             |
| 24 h                           | 10.3                                           | 7.7                                             |
|                                | Average: 10                                    | Average: 7.8                                    |

Abbreviations: HHFNC, heated humidified high-flow nasal cannula; ICU, intensive care unit.
the survey. Survey data indicated 98% (n = 39) of RNs reported feeling comfortable caring for patients with COVID-19 when initiating or titrating HHFNC and 50% (n = 20) reported feeling comfortable when caring for patient requiring 70% FiO2. When caring for a patient requiring 70% FiO2, general care RNs noted that it was difficult to manage when intermittent nonrebreather use became more frequent to maintain SpO2 above 90%. Furthermore, general care RNs noted it was challenging to assist these patients with proning due to increased restlessness and shortness of breath. This group of patients tended to desaturate when attempting to eat a meal or reposition in bed. In contrast, some patients on 70% FiO2 appeared to be stable—they could eat and reposition with minimal desaturation or dyspnea.

Survey data also revealed 63% (n = 25) of RNs reported patients proning at least twice daily, which resulted in an observed improvement in patients’ respiratory symptoms and improved SpO2. Patients who usually slept prone at home were able to easily prone in the hospital. Patients who were obese, experiencing nausea/vomiting, having severe coughing episodes, were confused, or had chronic back pain, had more difficulty with proning. During the project, it was recognized that patients better tolerated and were more successful with proning if they started this intervention early, such as while requiring small amounts of supplemental oxygen rather than waiting until HHFNC was needed.

**Discussion**

There was limited available literature specific to COVID-19 therapies at the time this project was developed related to HHFNC utilization and prone positioning outside of the ICU. Therefore, practice changes were developed from reviewing internal data related to patients requiring transfer to the ICU for increasing respiratory support. It was recognized that patients with COVID-19 were transferred to the ICU for acute respiratory deterioration and required initiation of HHFNC. This project found that revised processes for triaging patients with COVID-19 to general care units were relatively safe and effective.

**Initiating and titrating HHFNC**

Additional studies discussing the utilization of HHFNC have become available following the conclusion of this project, which showed similar results. Calligaro and colleagues reviewed HHFNC use both in and out of the ICU for patients with COVID-19. Of the 293 patients included in the study, 47% were able to wean off HHFNC without requiring mechanical ventilation and a 44% mortality rate was reported. Jackson and colleagues described the use of HHFNC outside of the ICU prior to the COVID-19 pandemic, finding more than half (53%) of patients were able to remain out of the ICU, with a reported mortality rate of 13%. They attributed program success to having a clear protocol in place, structured staff education prior to implementation, and RTs completing patient evaluations every 4 hours with documentation in the EHR. None of the studies describe HHFNC setting thresholds outside of the ICU. Similarly, this project found patient monitoring and standardized times to frequently evaluate patients important to prevent delays in escalating respiratory support when needed.

**Prone positioning**

Prone positioning was encouraged for patients meeting guideline inclusion criteria. Patients unable to fully prone were encouraged to reposition right and left while avoiding supine when possible. Although not measured, nurses reported observed benefits (primarily SpO2 improvements) in patients who were either able to prone or be repositioned to their right to left side. One study found prone positioning of nonintubated patients with COVID-19 to improve SpO2, respiratory rate, and FiO2; this is similar to what nurses described in this project. This study reported no significant differences with the following variables in either the ICU or general care environment: amount of time spent in the prone position; the number of times patients would prone per day; or the type of respiratory support the patient required (PAP vs HHFNC).

**ROX index**

ROX Index scores on the day of HHFNC initiation may help identify patients who will require oxygen device escalation or transfer to the ICU, as lower scores on the day of HHFNC initiation were identified in the group of patients who later transferred to the ICU. Results also demonstrated an acute decrease in scores at time of patient transfer to the ICU when increases in respiratory support were required. Trending ROX
Index scores indicated patients with a score of 5.6 or less should transfer to the ICU, as they have a high likelihood of requiring oxygen device escalation. Other literature found ROX Index scores used for patients with COVID-19, specifically measured at the 2, 6, and 12 hours marks following HHFNC initiation, were useful to help determine HHFNC success. Scores could help identify a patient’s potential to wean from HHFNC without needing mechanical ventilation.

**Nursing collaboration between the general care unit and the hospital’s eICU**

Because of the success of eICU and general care nurse virtual collaboration with this project, this process has been extended to patient deterioration not only related to COVID-19 but also to include other conditions, such as concern for sepsis. It is difficult to compare results of this project with other literature, as current studies focus on eICU support specifically for ICU staff. This initiative was successful using internal eICU nurses to support general care nurses when caring for patients with early signs of deterioration or at high risk of deterioration. One eICU-related study found that nurses with fewer years of experience reported more value in eICU support than nurses with more experience. Another study reported nurses finding eICU support as useful, easy to use, and had an overall positive attitude regarding eICU collaboration.

**Implications to nursing**

Overall, implementing expanded HHFNC practices outside of the ICU was deemed both safe and beneficial to patients and the organization in a time of need. This process has become the standard of care for hospitalized patients with COVID-19 and has extended to patients with non–COVID-19-related respiratory deterioration. In July 2021, the practice to initiate and titrate HHFNC outside of the ICU expanded to include patients with non–COVID-19-related hypoxic respiratory deterioration. The maximum HHFNC setting allowed outside of the ICU reverted back to 60% FiO2 as the hospital COVID-19 patient surge decreased. The maximum general care HHFNC setting of 70% FiO2 will be reengaged during times of subsequent COVID-19 surges. This decision was based on review of the patients outside of the ICU requiring 70% FiO2. Although patients were safely managed, they could be more tenuous and potentially require more nursing support when completing activities such as eating or repositioning, with longer recovery times following simple activities. Future endeavors could model these implementation strategies and evaluation methods.

**Limitations**

Limitations of this project include a small sample size and only selecting patients hospitalized for treatment of COVID-19. The completeness of nursing documentation was also difficult to determine the actual time patients spent in a prone position. Patients may have been proning more often than what was documented in the EHR. Finally, a prenursing survey would have been helpful to serve as a comparison of results.

**CONCLUSION**

General care units were able to safely increase respiratory support outside of the ICU by expanding the use of HHFNC, thereby successfully keeping patients out of the ICU and reserving ICU beds for higher acuity patients. This was safely completed as determined by 0 out-of-ICU intubations and only 2 intubations within 1 hour of transfer to the ICU. Technologies such as continuous vital sign surveillance with alerts to nursing, SpO2 and pulse rate remote monitoring by the RT, and virtual eICU nursing collaboration with general care nurses were imperative to the success of this project.

**REFERENCES**

1. Tu GW, Liao YX, Li QY, et al. Prone positioning in high-flow nasal cannula for COVID-19 patients with severe hypoxemia: a pilot study. *Ann Transl Med*. 2020;8(9):598. doi:10.21037/atm-20-3005
2. Ferrando C, Mellado-Artigas R, Gea A, et al. Awake positioning does not reduce the risk of intubation in COVID-19 treated with high-flow nasal oxygen therapy: a multicenter, adjusted cohort study. *Crit Care*. 2020;24(1):597. doi:10.1186/s13054-020-03314-6
3. Raoof S, Nava S, Carpaci C, Hill NS. High-flow, noninvasive ventilation and awake (non-intubation) proning in patients with coronavirus disease 2019 with respiratory failure. *Crit Swet*. 2020;138(5):1992-2002. doi:10.1016/j.cheest.2020.07.013
4. Winck JC, Scala R. Non-invasive respiratory support paths in hospitalized patients with COVID-19: proposal of an algorithm. *Pulmonology*. 2021;27(4):305-312. doi:10.1016/j.pumc.2020.12.005
5. Sztajinbok J, Maselli-Shoueri JH, Cunha de Resende Brasil LM, et al. Prone positioning to improve oxygenation and relieve respiratory symptoms in awake, spontaneously breathing non-intubated patients with COVID-19 pneumonia. *Respir Med Case Rep*. 2020;30:101096. doi:101016/j.rmcr.2020.101096
6. Koeckerling D, Barker J, Mudalige NL, et al. Awake prone positioning in COVID-19. *Thorax*. 2020;75(10):833-834. doi:10.1136/thoraxjnl-2020-215133

7. Qadri SK, Ng P, Toh T, et al. Critically ill patients with COVID-19: a narrative review on prone position. *Pulm Ther*. 2020;6(2):233-246. doi:10.1007/s41030-020-00135-4

8. Patel M, Gangemi A, Marron R, et al. Retrospective analysis of high flow nasal therapy in COVID-19 related moderate-to-severe hypoxemic respiratory failure. *BMJ Open Respir Res*. 2020;7(1):e000650. doi:10.1136/bmjresp-2020-00065

9. Hernandez-Romieu AC, Adelman MW, Hockstein MA, et al.; the Emory COVID-19 Quality and Clinical Research Collaborative. Timing of intubation and mortality among critically ill coronavirus disease 2019 patients: a single-center cohort study. *Crit Care Med*. 2020;48(11):e1045-e1053. doi:10.1097/CCM.0000000000004600

10. Roca O, Caralt B, Messika J, et al. An index combining respiratory rate and oxygenation to predict outcome of nasal high-flow therapy. *Am J Respir Crit Care Med*. 2019;199(11):1368-1376. doi:10.1164/rcrm.201803-0589OC

11. Calligaro GL, Lalla U, Audley G, et al. The utility of high-flow nasal oxygen for severe COVID-19 pneumonia in a resource constrained setting: a multi-centre prospective observational study. *EClinicalMedicine*. 2020;28:100570. doi:10.1016/j.eclinm.2020.100570

12. Jackson JA, Spilman SK, Kingery LK, et al. Implementation of high-flow nasal cannula therapy outside the intensive care setting. *Respir Care*. 2021;66(3):337-365. doi:10.4187/respcare.07960

13. Reddy MP, Subramaniam A, Afox A, et al. Prone positioning of nonintubated patients with coronavirus disease 2019: a systemic review and meta-analysis. *Crit Care Med*. 2021;49(10):1001-1014. doi:10.1097/CCM.0000000000005086

14. Chandel A, Patolia S, Brown AW, et al. High-flow nasal cannula therapy in COVID-19: using the ROX Index to predict success. *Respir Care*. 2021;66(6):909-919. doi:10.4187/respcare.08631

15. Kaplow R, Zellinger M. Nurses’ perceptions of telemedicine adoption in the intensive care unit. *Am J Crit Care*. 2021;30(2):122-127. doi:10.4037/ajcc2021205

16. Beasley B, Barone CP, Heo S, et al. Factors associated with nurses’ acceptance of the electronic intensive care unit. *J Healthc Qual*. 2020;42(1):46-54. doi:10.1097/JHQ.0000000000000198

From Clinical Nurse Leaders

**Bridging the Gap: A Diabetes CNL Role**

In December 2020, our leadership team decided to focus on educating and equipping bedside nurses to manage care of patients with diabetes and become skilled in providing diabetes education and resources. Realizing the strong impact a clinical nurse leader (CNL) could have on improving diabetes outcomes, the Diabetes CNL role was created in February 2021.

An in-depth assessment was conducted to evaluate the current state of diabetes education provided in our level 1 Trauma Center with more than 900 beds. The CNL was incorporated into the leadership team with the diabetes liaison meetings and introduced with an outline of the new and expanded role to include diabetes education. The Diabetes CNL took on projects that would provide updated resources for nurses such as a diabetes resources webpage, updating diabetes unit reference charts, creating a clinical case management (CCM) diabetes readmission discharge pathway, tracking and trending data to drive quality metrics, and having monthly meetings with unit liaisons to educate and discuss issues or needs of bedside staff.

The daily routine for this CNL includes reviewing the hospital’s diabetes census report to identify blood glucose trends or elevated hemoglobin A1c levels and connecting with the nurse to implement effective care coordination and risk management. An example of a project completed by the Diabetes CNL is a new CCM discharge readmission risk pathway. A modified example is provided in Supplemental Digital Content Figure (available at: http://links.lww.com/JNCQ/B44). This pathway includes prescriptions lists, educational needs and resources, and additional recommendations for patients who may have financial or social determinants of health. In conclusion, a CNL is a diverse role that can be applied to many aspects of inpatient and outpatient care to improve the standards of care.

By Brandy Santana, MSN, RN, CNL, Diabetes Clinical Nurse Leader, Atrium Health, Charlotte, North Carolina, brandy.santana@atriumhealth.org

The author declares no conflicts of interest.

Supplemental digital content is available for this article. Direct URL citation appears in the printed text and is provided in the HTML and PDF versions of this article on the journal’s website (www.jncqjournal.com).

DOI: 10.1057/JNCQ.0000000000000668