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# Licensed Practical Nurses in Rural Communities: Advancing Practice and Increasing Access to Infusion Therapy Services

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NUR 850: Integrated Clinical Capstone for Nursing Leaders

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## Abstract

In rural communities, critical access hospitals (CAH) are a crucial part of the healthcare delivery system. CAH leaders are challenged to provide quality care with limited resources. The provision of infusion therapy services for patients in their own community is in direct alignment with Healthy People 2030's determinants of health and healthcare in rural communities, focusing on high-quality care delivery to people within their own community. The purpose of this project was to implement a certified Licensed Practical Nurse (LPN) intravenous therapy training program to enable the provision of such infusion services in the CAH community. Coordination of care among an interdisciplinary team across care settings – including leaders and clinical staff of an academic medical center and a CAH in the state of New Hampshire – was key to the development of this training program. The result was an important contribution to both the accessibility of needed infusion services for patients and the professional development of LPN staff.


*Keywords:* critical access hospitals, licensed practical nurse, intravenous therapy training

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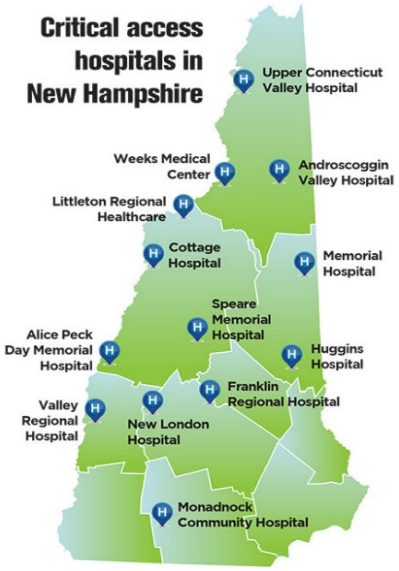
## Background

Healthcare facilities in rural communities often face many challenges in maintaining an adequate health workforce, while attempting to provide care closer to home for many patients. Being proactive and strategic about retaining nurses by developing their vascular access skills needed for delivering safe, quality care is essential for positive outcomes (Institute of Medicine, 2010). In New Hampshire (NH), there are 13 Critical Access Hospitals (CAH), making up 50 percent of the state's hospitals (Department of Health and Human Services, 2016; Flex Monitoring Team, 2020; Kitch, 2019). The map in Figure 1 illustrates the CAHs in NH. An important part of our healthcare structure, these hospitals are frequently the primary employer within rural communities to help balance care burdens across the system (Rural Health Information Hub, 2021). Some of the infusion therapy services provided by these organizations for medications infused range from rehydration, antibiotics, chemotherapy, antiemetics, blood and blood products. Facilitating the implementation of a certified Licensed Practical Nurse (LPN) intravenous (IV) therapy training program, within the CAH setting, will prepare nurses with the skills needed to advance their profession and provide patients with access to high quality health care services in our most vulnerable communities (Healthy People, 2020).

**Figure 1**

*Map of NH CAHs*



A crucial part of the healthcare delivery system, the CAH program was established in 1997 as part of the Balanced Budget Act (DHHS, 2016). This designation is given to eligible rural hospitals by the Centers for Medicare and Medicaid Services in response to several small hospital closures during the 1980s to early 1990s. The CAH designation was developed to keep essential care services in rural communities to improve access to healthcare by reducing their financial vulnerability with some benefits related to cost-based reimbursement for Medicare services (RHIH, 2021). Eligible hospitals must have 25 or fewer acute care inpatient beds, be located more than 35 miles from another hospital (exceptions may apply), provide 24/7 emergency care services, and maintain an average length of stay of 96 hours or less for acute care patients (DHHS, 2016).

These small, rural hospitals face a unique set of circumstances with very limited clinical and essential resources. They have become overburdened with a patient population that is older, sicker, and poorer with rising rates of chronic disease compared to the national average (American Hospital Association, 2019). CAHs play a vital role in providing access to healthcare in rural areas, yet several are at high risk for closure (Kitch, 2019; Goldsmith & Leibach, 2019). Addressing one of the key aspects corresponding to the determinants of health and healthcare in rural communities, Healthy People 2030 focuses on high-quality care services by helping more people get the care they need within their own community.

High-performing organizations recognize the significance of professional development and the importance of supporting LPNs to practice at the full extent of their education and training. Therefore, reducing workforce turnover rates and ensuring the delivery of safe, patient-centered care. With the intensifying need for overall healthcare services, the employment outlook for LPN's is projected to grow 9 percent from 2019 to 2029 resulting in 65,700 new positions

(U.S. Bureau of Labor Statistics, 2020). The rapid growth in job prospect is the result of a greater prevalence in chronic health conditions with patient needs becoming more complicated, creating further occupational opportunities for those willing to work in rural and underserved areas. In NH, LPNs are required to complete a postgraduate IV therapy course prior to "providing IV therapy under the direction of a physician or dentist, or as delegated by a registered nurse" (NH-Board of Nursing, 2009, section 326-B:13). To respond to these increasing demands LPNs should achieve higher levels of training to attain requisite competencies toward delivering high-quality patient care through specialty certification (IOM, 2010 & Working Nurse, 2021).

Dartmouth-Hitchcock Medical Center (DHMC) located in Lebanon, NH, is a nonprofit academic health system who partners with Infusion Knowledge, Inc© (IKI) to provide a comprehensive '32-hour IV Therapy Education Program' approved by the NH Board of Nursing (BON). With this partnership, the DHMC nursing instructors can offer IV therapy training to LPNs in the state, have access to the educational online portal content displaying the medical center logo, and provide up-to-date, evidence-based IV therapy instruction without their educators having to develop the curriculum. IKI provides the didactic online platform to include learner objectives, the course bibliography, a printable workbook, an online video presentation, and post-test. DHMC nurses are responsible for facilitating the 4-hour hands-on IV skills lab as part of the course outline. In addition, there is a unit specific IV associated checklist competency validation performance measure. A certificate of completion is available upon conclusion of the program representing their newly gained knowledge, and benefit to patients.

## Methods

The goal of this quality improvement initiative was to facilitate the implementation of a sustainable BON approved educational IV therapy training program for LPNs in rural areas. This

project was the consequence of an affiliated hospital administrator seeking support for their nursing staff to improve and expand vascular access services to patients. Employing a Logic Model identified resources for interventions needed to sustain this plan (see Table 1) (Centers for Disease Control and Prevention, 2018).

Using the Institute for Healthcare Improvement's Model for Improvement as a framework to guide the processes and outcomes, with collaboration among these facilities led to the program development and obtaining buy-in from stakeholders (Institute for Healthcare Improvement, 2021). This tool was valuable because of the systems focus with a teamwork approach to accelerate this process improvement within the CAH setting.

## Program Development

### *Collaboration*

Driving this practice change was the result of the coordination of care between interdisciplinary nursing leaders from DHMC and Alice Peck Day (APD). The collaborative engagement gave rise to the need for LPN IV therapy training at APD. Managing resource allocation prowess for vascular access education to provide needed infusion services for their patients was the driving force for this collective inclusive influence. Ensuing this correspondence was a videoconference with the director of continuing nursing education, a vascular access nurse from DHMC and members of the clinical nursing education team at APD to determine who was interested in serving as faculty candidates.

### *Learning Process*

The framework in facilitating the certified LPN IV therapy training program at APD was initiated from a recently implemented model at DHMC. Strategically using the practices and skills utilized from this existing program was the foundation for this quality improvement

initiative. Gaining an understanding of the step-by-step processes were crucial to learning each element and resource involved to support this organizational change. Learning was achieved through email correspondence and videoconferencing with the director of continuing nursing education, the program coordinator for nursing education, and a nurse educator from DHMC.

### *Faculty Approval*

To become a nursing instructor for the LPN IV therapy training program a registered nurse (RN) must receive faculty approval from the NH-BON by completing their designated application process, in conjunction with completion of a 28-hour online module-based learning instruction through IKI. This is a requirement for the RN to complete the clinical simulation skill check-off competency lists for the LPN participants. At APD there were three clinical nurse educators who expressed interest in becoming instructors and completed the requirements for faculty approval by the BON.

### *Training Simulation*

Development and implementation of a nursing instructor skills laboratory was performed in collaboration with the DHMC nurse educator. Instruction of various skills related to inserting peripheral IV catheters, maintaining all types of central lines, and IV infusion therapy was reviewed at this hands-on workshop. Prior to this workshop there was an LPN IV skills lab job aid created and used to guide the 4-hour simulation environment and documentation requirement for the mandatory clinical portion of the course. This instructor training simulation was to provide instructional support to the faculty approved RN educators for continuity in achieving skills competency to meet the course objectives of the certified LPN IV therapy training curriculum defined by the NH-BON and IKI.

***Implementation***

To jumpstart this training project, using the LPN IV therapy training flow chart as a visual aid to understand and manage the interdependent and parallel processes outlined will ensure implementation standardization (see Figure 2). Using a series of steps with corresponding swim lanes will illustrate the responsibilities and roles of each interdisciplinary team member highlighting which process steps are assigned to them within their organization. To increase performance, using the flow chart in a swim lane format to show the interconnection of steps between lanes and how the different members interact will help to integrate these processes efficiently with LPN IV therapy training.

***Evaluation***

Tracking performance of the LPNs new IV skills to provide infusion therapy to clinic patients can be accomplished through chart audits, a communication log, and weekly staff meetings. Monitoring and measuring patient satisfaction results for three months will help to refine the new program toward successful implementation. Key performance indicators (KPIs) related to employee performance, patient satisfaction, departmental efficiency processes, and revenue will be vital in optimizing the adoption of LPN IV therapy skills development within other areas of the healthcare organization.

This program will systematically prepare LPNs with the IV skills needed to advance their profession and provide high-quality infusion care services to patients in the CAH community. To test and refine the implementation aspect of this project it should be done initially in a small-scale trial, with two LPN participants. Using the Plan-Do-Study-Act (PDSA) cycle because it is at the core of the model for improvement used by the Institute for Healthcare Improvement will result in a sustainable implementation (IHI, 2021). To gain an understanding of the testing

process - this cycle involves four elements of testing, and when conducting the test these actions can guide the process:

- **Plan**: Planning the test for observation, using the flow chart as the objective of this test to observe the responsibilities of each discipline and their subprocesses. The goal of this test is to monitor the transfer of information and flow related to each discipline (swim lane) and their responsibilities. The NH-BON approved instructor(s) at APD will collect the data at each interval of this process. This can be measured by using a Likert scale to obtain qualitative data, to be easily analyzed, for each action within a swim lane.
- **Do**: Carry out the test on each interdisciplinary team member and the two LPN participants, as designed, and record what happened. Record what occurred in relation to any problem and/or unexpected observations.
- **Study**: Analyze the data to determine what was learned, while comparing the results with the prediction for any surprises.
- **Act**: Using the learned information from the Likert scale test questions to refine the change will help determine what modifications should be made, then prepare a plan for the next step.

Engaging the interdisciplinary team members (outlined on each swim lane) and the two LPNs most interested in this IV therapy training project will be most helpful in testing this change. Predicting a quantifiable outcome for each discipline and their subprocesses before beginning this test of change will provide a gauge against their expectations. Prior to the test of change, being specific about what will be done, where it will occur, how the test will be run, and what the expected outcome will be is crucial for overall success.

## Results

The aim of this project was to implement a certified LPN intravenous therapy training program to enable the provision of such infusion services in the CAH community. The online educational sessions and instructor simulation for the RN to become a NH-BON approved faculty required 32 hours of training. The hours of training for the LPN are the same along with a unit specific IV associated competency validation performance measure. During this project period three RN educators at Alice Peck Day Hospital became faculty approved instructors by the NH-BON. A single affiliated hospital was used for the implementation of the LPN IV training project and will begin with two LPNs in the first test cycle.

The timeframe within the provision of infusion therapy services for patients to see a change will be immediately upon the LPN completing the training program. This quality improvement initiative will be measured using KPIs related to surveys, chart audits, and staff interviews to analyze and evaluate any concerns, barriers, or problems with this implementation. Performing annual IV skill competencies with the LPNs will track and confirm a process measure for ongoing success. Using a defined workflow will help to successfully implement this project - the development and expansion of LPNs IV therapy skills to advance their profession and provide patients with access to high quality health care services in the CAH setting (see Appendix B).

## Discussion

The impact of this quality improvement project focused on the designated priority population, a rural community, to reduce disparities in health care needs related to infusion therapy services. Many people continue to face significant inequalities in access to and utilization of care; the importance of implementing an LPN IV therapy training program is not

only from an equity standpoint, but to provide more health services while improving the health of people living in this socioeconomic area. This project discovered large deficiencies in workforce and essential resources. Expanding and diversifying CAHs capacity to address determinants of health through the provision of enhanced outreach care partnerships with an academic medical center will decrease gaps in disparities.

Despite the challenges faced within the rural health care setting, there were several aspects of this collaborative project advocating a systematic approach to change improvements. Utilizing a conceptual design to identify the medically and socially complex patient population by refining the primary care services and structures for population health management, this project will use a cost control platform through system integration to fulfill the Institute of Medicine's Triple Aim approach toward optimization of health system performance. The purpose of implementing an LPN IV therapy training program in the CAH community was to improve the health of this populace, reduce the per capita cost of health care, and enhance the patient experience of infusion therapy services.

The next steps of this project implementation will include a single CAH site with two LPN participants. Once the LPNs begin the online didactic learning, they will have ninety days to complete the training program. The APD nurse educators will perform daily audits for three months of the LPN IV insertions on clinic patients receiving infusion therapy. To address any concerns with the LPNs, communicating frequently with daily huddles will allow for real time practice change. Planning a celebration to recognize the nurses new IV skills will be a confidence booster. The clinic nurse manager can recognize each nurse individually in person, in their performance evaluations.

## Implications

The implications of this quality improvement project are to develop and advance LPNs IV skills with resulting greater job satisfaction and nurse retention in the CAH community. Improving their clinical practice by providing patients with access to infusion therapy services will reduce determinants of health and healthcare in rural areas with better patient outcomes. Pooling resources to facilitate improvements through interprofessional collaboration is significant in the healthcare environment to meet the increasingly complex demands of patients within this geographic location. This project provides valuable information about implementing evidence-based IV therapy instruction strategies within the CAH setting to guide the professional development of LPNs care for patients in their own community.

## Limitations

Ongoing LPN competency is a concern, performance validity related to how many clinician attempts are made to insert an IV successfully will depend on accurate documentation. This is a concern given there can be gaps between evidence-based care and actual patient care delivered. Corresponding with this, collection of data using the key performance indicators may have limited results because they help attain short-term objectives. This could affect the LPNs in losing attention to providing a standard of care since the measures are somewhat result oriented. However, KPIs can help everybody remain aligned to tracking LPN performance and patient satisfaction since it makes the reported outcomes accessible to everyone involved and can aid in creating a strategy for future objectives. Impacted by the COVID-19 pandemic with social distance restrictions and remote working imposed, this project reflects collaboration between only one tertiary care center and one CAH.

## Conclusion

In rural communities, CAHs are a crucial part of the healthcare delivery system. They face many challenges with limited resources in being able to provide infusion therapy services closer to home for patients. Interprofessional collaboration is instrumental in a sustainable health care environment to optimize the health of the patients they serve, while enhancing the overall state of the healthcare organization. Equally, the individual contributions of each healthcare professional involved should be recognized. The knowledge gained by LPNs from this project represents how professional development is a priority, as the need for ongoing education is critical toward improving nursing practice and patient outcomes. Through the LPN IV therapy training each nurse will further develop their critical thinking skills while broadening their scope of practice. The level of change impact from this project implementation has a direct effect on the nursing staff, the hospital, and the patients they serve by improving access to healthcare in rural communities.

# References


Agency for Healthcare Research and Quality. (2021). *What is patient experience?* https://www.ahrq.gov/cahps/about-cahps/patient-experience/index.html

American Hospital Association. (2019). *Rural report: challenges facing rural communities and the roadmap to ensure local access to high-quality, affordable care.* https://www.aha.org/system/files/2019-02/rural-report-2019.pdf

Centers for Disease Control and Prevention. (2018). *Logic Models*. https://www.cdc.gov/eval/logicmodels/index.htm

Centers for Disease Control and Infection. (2015). *Summary of recommendations: guidelines for the prevention of intravascular catheter-related infections (2011).* https://www.cdc.gov/infectioncontrol/guidelines/bsi/recommendations.html

Dartmouth-Hitchcock. (2021). *Community outreach.* https://www.dartmouth-hitchcock.org/about-dhh/community-outreach.html

Flex Monitoring Team. (2020). *Critical access hospital locations list.* https://www.flexmonitoring.org/critical-access-hospital-locations-list

Goldsmith, J. & Leibach, J. (2019). The potential impact of a Medicare public option on U.S. rural hospitals and communities: A scenario analysis [Executive summary]. *Navigant Consulting, Inc.* https://americashealthcarefuture.org/wp-content/uploads/2019/10/Navigant-Rural-Public-Option-FINAL-8.19.pdf

Infusion Knowledge, Inc. (2015). *IV therapy education – "IV Certification".* https://infusionknowledge.com/iv-certification-2/

Infusion Nurses Society. (2021). *Mission & Values.* https://www.ins1.org/about-us/

Institute for Healthcare Improvement. (2021). *How to improve*. http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx

Institute of Medicine. (2010). *The future of nursing: leading change, advancing health.* https://www.nap.edu/resource/12956/Future-of-Nursing-2010-Report-Brief.pdf

Jakubowski, T.L. (2018). *Interprofessional collaboration improves healthcare.* Retrieved February 11, 2021, from https://nursingcentered.sigmanursing.org/features/more-features/interprofessional-collaboration-improves-healthcare

Kitch, M. (2019). Critical access hospitals in New Hampshire [Map]. NH Business Review. https://www.nhbr.com/critical-condition/

Kitch, M. (2019). Critical condition: New Hampshire's rural hospitals struggle to keep pace with changing market. NH Business Review. https://www.nhbr.com/critical-condition/

National Rural Health Resource Center. (2019). *Quality improvement implementation guide and toolkit for CAHs.* https://www.ruralcenter.org/resource-library/quality-improvement-implementation-guide-and-toolkit-for-cahs

Office of Disease Prevention and Health Promotion. (2020). *Healthy People 2020: access to health services.* U.S. Department of Health and Human Services. *https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Access-to-Health-Services*

Office of Disease Prevention and Health Promotion. (2021). *Healthy People 2030: health care access and quality*. U.S. Department of Health and Human Services. https://health.gov/healthypeople/objectives-and-data/browse-objectives/health-care-access-and-quality

Office of Professional Licensure and Certification. (2021). *Licensed practical nursing intravenous therapy course.* State of New Hampshire. https://www.oplc.nh.gov/nursing/lpn-intravenous.htm

Office of Professional Licensure and Certification. (2009). *New Hampshire Board of Nursing – 326-B:13 scope of practice; licensed practical nurse.* State of New Hampshire. http://www.gencourt.state.nh.us/rsa/html/XXX/326-B/326-B-13.htm

Rural Health Information Hub. (2021). *Critical Access Hospitals (CAHs).* https://www.ruralhealthinfo.org/topics/critical-access-hospitals#:~:text=%20Critical%20Access%20Hospitals%20%28CAHs%29%20must%20have%20and,plan%2C%20such%20%20as%20an%20accrediting…%20More%20

State of New Hampshire. (2016). *New Hampshire Department of Health and Human Services: New Hampshire critical access hospitals.* https://www.dhhs.nh.gov/dphs/bchs/rhpc/critical-access-hospitals.htm

State of New Hampshire. (2016). *New Hampshire Department of Health and Human Services: rural hospitals.* https://www.dhhs.nh.gov/dphs/bchs/rhpc/rural-hospitals.htm

The Joint Commission. (2021). *2021 hospital national patient safety goals.* https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2021/simplified-2021-hap-npsg-goals-final-11420.pdf

The Joint Commission. (2021). *National patient safety goals effective January 2021 for the hospital program.* https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2021/hap_npsg_jan2021.pdf

U.S. Bureau of Labor Statistics. (2020). *Licensed practical and licensed vocational nurses: job outlook.* https://www.bls.gov/ooh/healthcare/licensed-practical-and-licensed-vocational-nurses.htm#tab-6

Working Nurse. (2021). *The power of nursing specialty certifications.* https://www.workingnurse.com/articles/The-Power-of-Nursing-Specialty-Certifications

**Table 1**

*IV Therapy Training Program for LPNs*

Logic Model of Change Outline

Problem Statement: Healthcare facilities in rural communities often face many challenges with limited resources in attempting to provide infusion therapy services closer to home for patients.

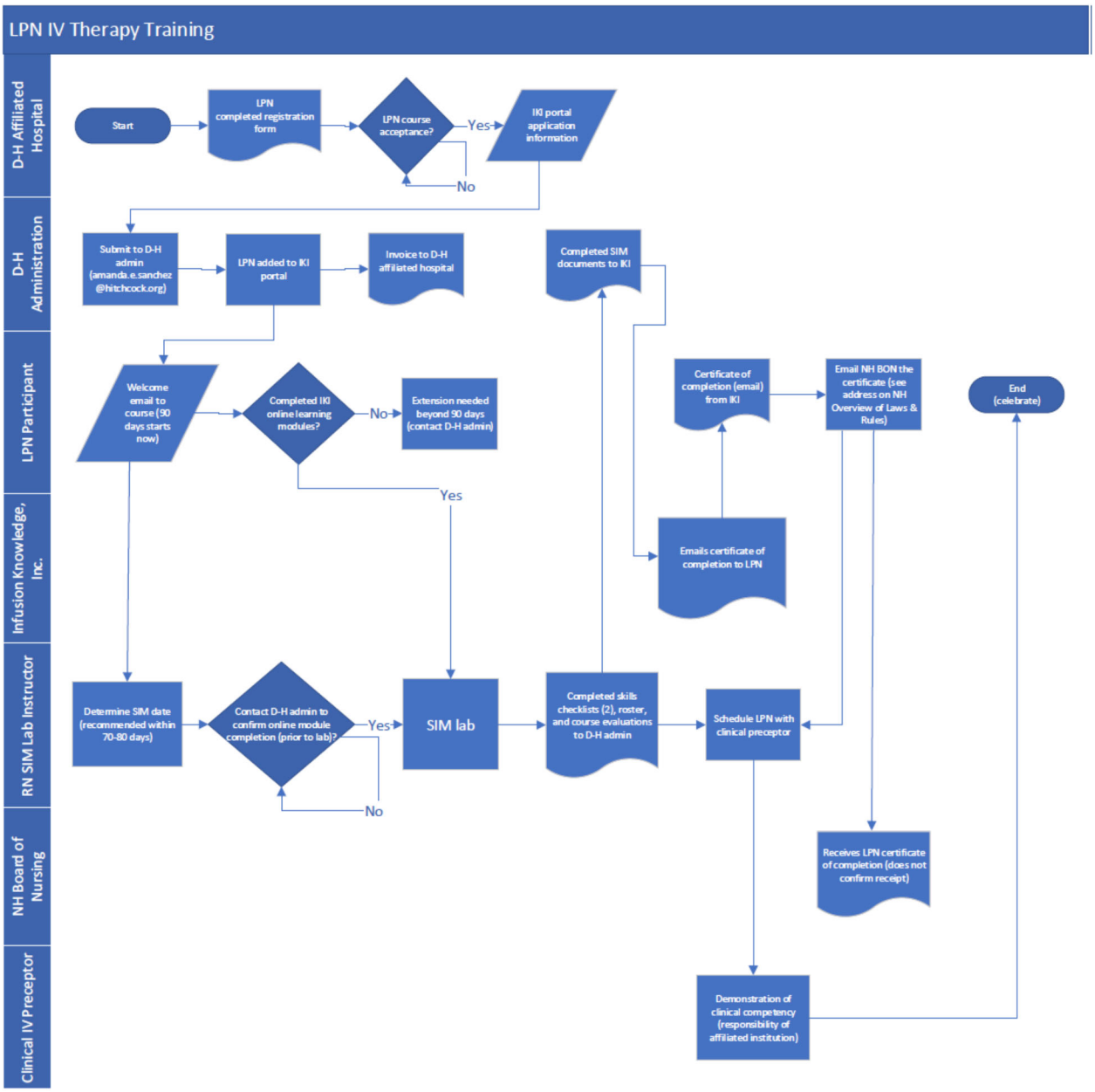
Goal: Facilitate the implementation of a sustainable BON approved educational IV therapy training program for LPNs in rural areas utilizing a logic model outline.

| **Resources** | **Activities** ⟹ | **Outputs** ⟹ | **Outcomes** |
|---|---|---|---|
| • Dartmouth-Hitchcock Medical Center<br>• Infusion Knowledge, Inc©<br>• New Hampshire – Board of Nursing<br>• Registered Nurses<br>• Licensed Practical Nurses<br>• Cost of program and IV related supplies<br>• Time to educate | • Implementation of IV therapy training program<br>• LPN education curriculum<br>• Didactic learning modules<br>• 4-hour IV skills simulation<br>• Competency validation performance measure<br>• Designated simulation area<br>• Review Laws & Rules Pertinent to LPNs practicing in NH | • Increase LPN skillset<br>• Improved care resources for patients<br>• Enhanced work satisfaction<br>• Patients satisfied with educational program<br>• Hospital administration pleased with NH BON approved program and level of LPN skills attainment | • LPN IV certificate of completion<br>• Improved patient care experience<br>• Expanded quality health care services to patients<br>• Revenue generating<br>• Professional development<br>• Greater occupational opportunities<br>• Better workforce retention<br>• Expanded patient care in their community |

*Note.* Identified resources for interventions needed to sustain the IV therapy training program.

**Figure 2**

*Flowchart of IV Therapy Training Program*




*Note.* Flowchart demonstrating the workflow for LPN IV therapy training. The process is divided into seven swim lanes horizontally based on the phase of the process.