Onboarding Home Infusion Anti-Infective Patients: A Descriptive Study of Nurse and Pharmacist Time

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Preface

This article is part of *Infusion Journal*'s nurse-time-themed issue. Because the methodology is thoroughly detailed in the issue's lead article, "A Multi-Center Time Study of Home Infusion Nurse Services During Therapy Initiation" by D. Haines, M. Simpson, and J. Charron, it is not repeated here. For the full methodological framework, please refer to the primary article.

ABSTRACT

Introduction

Home infusion anti-infective therapy is an important component of post-acute care, allowing patients to transition more quickly from facility-based treatment to home-based intravenous therapy. The patient onboarding phase is a critical and resource-intensive period that requires coordinated activities by nurses and pharmacists, including clinical assessment, care planning, medication preparation, patient education, documentation, and communication with prescribers and other care team members. Home infusion providers invest professional time toward patient onboarding before payment begins, and a significant proportion of referred patients may not ultimately receive billable home infusion services. Limited evidence exists quantifying the combined nursing and pharmacist time required to onboard home infusion anti-infective patients. This study evaluated the time and task distribution associated with nurse and pharmacist tasks during patient onboarding activities for home infusion anti-infective therapy.

Methods

The National Home Infusion Foundation conducted descriptive, observational time studies among home and specialty infusion providers. Nurses and pharmacists used standardized data collection tools to retrospectively record time spent on anti-infective patient care tasks. Patient onboarding tasks for nurses were defined as activities completed before the first nurse visit to the patient's home. Pharmacist onboarding time included patient care activities from referral through the first dispensing of the home infusion medication. Task frequencies, percentages, and mean time by task category were analyzed for anti-infective patients.

Results

Among 28 anti-infective patients in the nurse time study, 14 had patient onboarding tasks completed before the first nurse visit. Nurses completed 68 patient onboarding tasks, averaging 4.86 tasks per patient. The most common patient onboarding task category was care coordination and telephonic communication, accounting for 41.18% of nurse tasks, followed by patient assessment and documentation at 29.41%. Patient education required the greatest mean nurse time per task at 29 minutes. Pharmacist tasks for patient onboarding data included 22 anti-infective patients and 129 tasks, averaging 5.86 tasks per patient. Most pharmacist tasks involved drug preparation and compounding activities, representing 44.19% of pharmacist tasks for

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onboarding patients, followed by patient assessment and documentation at 27.13%. The most time-intensive pharmacist task category was patient assessment and documentation, averaging 45 minutes per task. Combined patient onboarding time demonstrated substantial multidisciplinary effort, with nurse and pharmacist activities contributing an average of more than 4 hours of professional time before or during therapy initiation.

Conclusion:
Onboarding home infusion anti-infective patients requires substantial nurse and pharmacist time before therapy is fully initiated in the home. Nurse activities were concentrated in care coordination, communication, assessment, and patient education, while pharmacist activities centered on drug preparation, compounding, assessment, documentation, and care coordination. These findings highlight the multidisciplinary and front-loaded nature of home infusion patient onboarding and provide data to inform staffing models, workflow planning, and reimbursement discussions for home-based anti-infective therapy.

Keywords: Home infusion, Outpatient Antimicrobial Therapy, OPAT, Nurse, Pharmacy, Pharmacist, Onboarding

Introduction

Home infusion therapy is a critical component of the post-acute care transition, enabling the delivery of complex anti-infective intravenous therapies to approximately 450,000 patients annually in the United States.[1] This model supports reduced hospital length of stay, improved patient satisfaction, and optimized health care resource utilization, while aligning with broader health care trends favoring lower-cost, patient-centered sites of care.[2-6] The demand for home infusion services continues to grow, driven by newly approved medications, new indications, increasing patient preference for home-based care, and payor initiatives promoting site-of-care optimization. Recent industry data demonstrate sustained use of traditional therapies, such as anti-infectives.[1]

The initiation of home infusion therapy, commonly referred to as patient onboarding, represents an important resource-intensive phase of care.[2,7] Patient onboarding requires coordinated, multidisciplinary activities, including clinical assessment, therapy planning, medication preparation, and communication among providers.[2] In health care, "patient onboarding" typically refers to the professional time prior to treatment. To ensure that the home infusion transition process is seamless, a team of infusion professionals, including nurses and pharmacists, work simultaneously to determine patient eligibility, verify insurance coverage, design the therapy and monitoring plan, compound/prepare the medications and supplies, establish the goals of treatment, and educate the patient on how to administer the medication.[2] The home infusion nurse and pharmacist perform a wide range of patient onboarding tasks, including consulting with the patient and physician, and initiating changes to the prescribed treatment and/or monitoring plan as needed. These processes are often completed within narrow timeframes, typically within 24 hours of hospital discharge, which adds to their complexity.[2,8]

Despite the central role of patient onboarding, there is limited published evidence quantifying the time and workload associated with these activities across disciplines. Existing studies have primarily focused on individual roles, such as nursing[9] or pharmacy[2,4] without fully capturing the combined effort required to transition patients from acute care to the home setting. This gap is particularly important given the front-loaded nature of home infusion services, where providers accept significant financial risk at the start of therapy and recover costs over the course of treatment. Providers may invest professional onboarding time before payment begins, and according to an analysis of the home infusion industry, a meaningful proportion of referred patients may not ultimately receive billable home infusion services.[10]

A clearer understanding of the time and task distribution involved in patient onboarding is essential for safe and effective patient care, informing staffing models and workflows, and supporting policy and reimbursement discussions. Therefore, the objective of this study is to quantify the time and tasks performed by nurses and pharmacists during the onboarding of home infusion anti-infective patients. The anti-infective therapy type was chosen for this study because, within the home infusion industry, anti-infectives are the most frequently administered therapy and are primarily used to treat acute infections in a home setting rather than in a hospital.[1,10] Patient onboarding tasks included the tasks conducted by the nurse prior to the first nurse

visit to the patient's home. Patient onboarding time for pharmacists involved tracking patient care time starting at the time of referral and continuing through the first delivery of the home infusion medication. By characterizing the multidisciplinary effort required during this critical phase, this study aims to provide foundational data to support sustainable, high-quality home infusion care.

Methods

The National Home Infusion Foundation (NHIF) conducted descriptive, observational time studies to analyze the tasks and time that nurses and pharmacists spend on caring for home infusion patients. The NHIF web page invited all home infusion providers to participate in a multi-center study. The pharmacist data was collected in 2021[5] while nurse time data was collected in 2025.[9] Using retrospective recall, pharmacists and nurses tracked the time spent on various tasks for each patient serviced. The tasks categories and task examples were provided by an expert nurse and pharmacy committee.

The nurses and pharmacists at the participating provider locations received an orientation video, a data entry guide, and patient-tracking Excel® spreadsheets. For this study, only patient nurse task data collected prior to the first nurse visit was analyzed. To obtain patient onboarding time for nurses, the non-patient contact nurse time was totaled for all patients and divided by the number of patients served.

The collected data included numerous therapy types of which the anti-infective data was used in this study. Furthermore, only the patient onboarding data was used in the task and time analysis.

For additional information on the study methodology see the first article in this issue of *Infusion Journal*, A Multi-Center Time Study of Home Infusion Nurse Services During Therapy Initiation.

IRB (Institutional Review Board) Status

No identifying patient data was provided by the participating provider locations. Furthermore, the provider's location was de-identified using a data participation code (DPC) provided by a 3rd-party consultant. This study was therefore exempted from IRB review. To ensure that both the provider and patients were de-identified, the patient code was the provider's unique DPC followed by a 2-digit patient identifier, known only to the participating nurse and 3rd-party research consultant.

Results

Of the 28 anti-infective patients in the nurse time study, 14 (50%) had patient onboarding tasks for nurses completed prior to the first nurse visit. There was a total of 68 patient onboarding tasks completed with each of the 14 patients averaging 4.86 nurse tasks. Pharmacist patient time was based on 22 anti-infective patients that had a total of 128 pharmacist tasks with an average of 5.86 pharmacist tasks per patient. Demographic data indicates 18 patients used IV push administration and 4 used ambulatory pumps.

Patient Onboarding Tasks for Nurses

As expected, most nurse tasks (41.18%) were in the care coordination and telephonic communications category followed by patient assessment and coordination (29.41%) (Figure 1). The task category that took the most time was patient education,

FIGURE 1 | Nurse Tasks (n=68) Completed During Patient (n=14) Onboarding

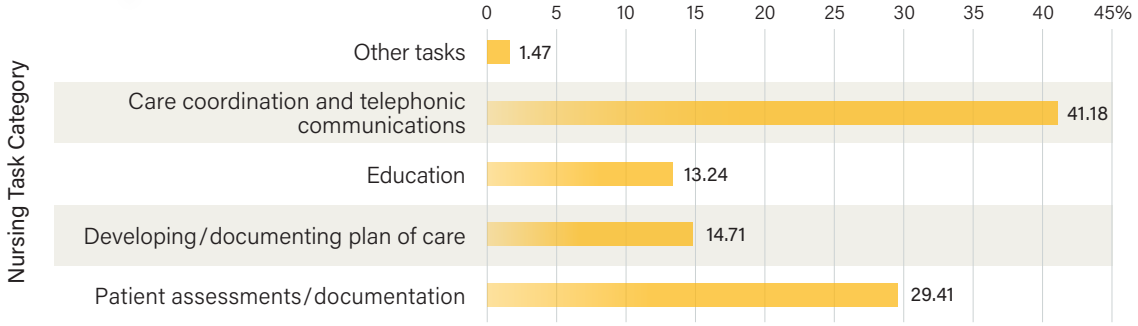


TABLE 1 | Patient Onboarding Task Time (Nurse)

Task Category	Mean Time	N	Std. Deviation	Median
Performing patient assessments and documentation	0:16	20	0:15	0:10
Developing and documenting plan of care	0:09	10	0:05	0:08
Education	0:29	9	0:16	0:30
Care coordination and telephonic communications	0:21	28	0:25	0:12
Other work-related tasks	0:01	1	.	0:01

averaging 29 minutes (SD= 0:16) to perform (Table 1). As noted by the standard deviations (SD), there is considerable variance in the amount of time to perform the tasks. It is surmised that variations in time are attributable to the distinct differences between individual patients and nurse environments. A better indicator of time is the median value for each of the tasks which indicates slightly less time for each task except for patient education.

Patient Onboarding Tasks for Pharmacists

Most (44.19%) of the patient onboarding tasks for pharmacists involved drug preparation and compounding activities followed by performing patient assessment and documentation (27.13%) (Table 2, Figure 2). The most time-consuming pharmacist task is 45 minutes (SD = 0:36) and involves performing patient assessment and documentation, followed by patient care coordination and telephonic communications, which averages 23 minutes (SD = 0:21) per task. As noted by the standard deviations (SD), there is considerable variance in the amount of time to perform the tasks. A better indicator of pharmacist time is the median value for each of the tasks which indicates slightly less time.

TABLE 2 | Patient Onboarding Task Time (Pharmacist)

Task Category	Mean Time	N	Std. Deviation	Median
Performing patient assessment and documentation	0:45	35	0:36	0:30
Developing, implementing, and documenting care plan	0:18	14	0:16	0:12
Remote monitoring and intervention activities	0:05	5	0:04	0:05
Drug preparation and compounding activities	0:23	57	0:27	0:15
Care coordination and telephonic communications	0:24	17	0:21	0:20
Other patient-related work tasks	0:20	1	.	0:20

Patient Onboarding Time for Nurses and Pharmacists

The home infusion patient onboarding time for an anti-infective patient is 1.50 hours for nurses, according to the lead article of this issue of *Infusion Journal,* A Multi-Center Time Study of Home Infusion Nurse Services During Therapy Initiation. The patient onboarding patient time was 2.74 hours for pharmacists.[2] The combined time for this home infusion service is 4.24 hours (Figure 3).

Discussion

This study provides a comprehensive evaluation of the time and tasks required to onboard home infusion anti-infective patients, demonstrating that this phase of care is both labor-intensive and highly dependent on coordinated multidisciplinary effort. The findings show that patient onboarding requires substantial investment from both nursing and pharmacy personnel, reinforcing the complexity of safely transitioning patients from the hospital to the home setting.

FIGURE 2 | Pharmacist Tasks (n=128) Completed During Patient (n=22) Onboarding

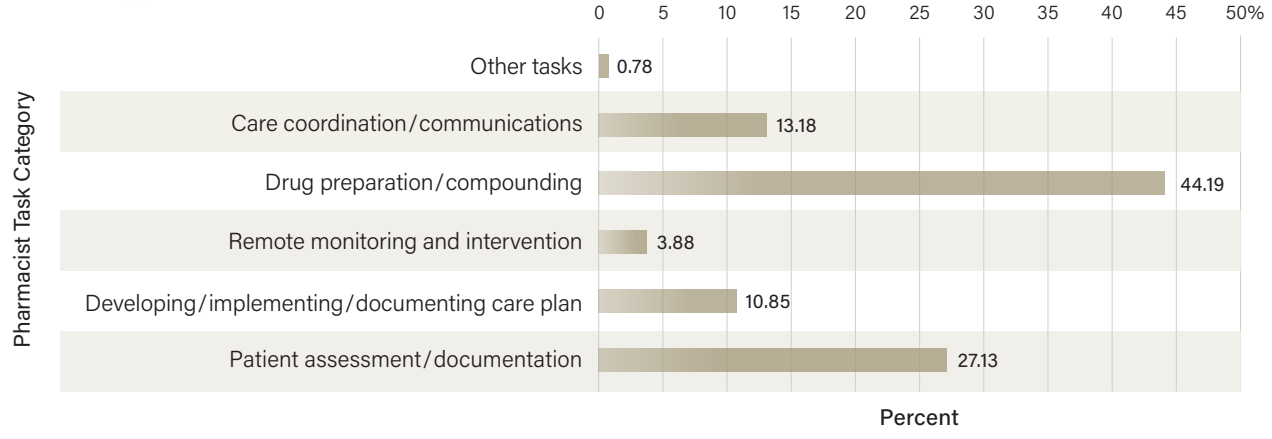
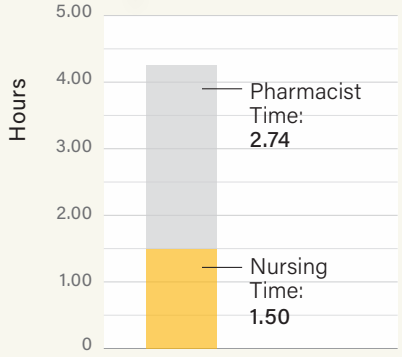


FIGURE 3 | Home Infusion Patient Onboarding Time



One of the most important insights from this study is the front-loaded nature of home infusion services. A significant proportion of time is spent prior to or during the earliest stages of care, including care coordination, assessment, and therapy preparation. This aligns with broader industry observations that providers dedicate considerable resources to initiating therapy, with costs often recovered over the duration of treatment. These findings highlight a potential mismatch between the timing of resource utilization and current reimbursement structures, particularly for short-duration therapies such as anti-infectives. This front-loaded investment creates financial risk because nurse and pharmacist patient onboarding work often begins before payment for home infusion services is allowable. When referred patients do not proceed to rendered services, providers may absorb unreimbursed professional time spent on assessment, care coordination, communication, and preparation. In one analysis, approximately 35% of patients referred for home infusion services did not ultimately receive services, while 65% proceeded to the first visit and continued with prescribed therapy.[10] This finding reinforces the importance of recognizing patient onboarding as a resource-intensive phase of care, particularly for anti-infective therapy, where referrals are often time-sensitive and may change rapidly based on payor coverage, discharge status, clinical response, or transition to oral therapy.

The distribution of tasks between nurses and pharmacists reflects the complementary roles required to support safe home infusion care. Consistent with findings from the nurse-focused analysis, a substantial portion of nurse time is dedicated to care coordination and communication, particularly during the pre-visit phase. These activities are critical to ensuring continuity of care, facilitating timely initiation of therapy, and addressing the complexities associated with transitions from acute care settings. Pharmacist time, in contrast, is driven by both clinical and technical responsibilities, including medication review, preparation, and documentation, emphasizing the dual clinical and operational role of pharmacy in home infusion.

The intensity of care coordination activities observed in this study is relevant given patient outcomes. Prior research has shown that effective coordination and early clinical engagement are linked to improved outcomes, including fewer hospital readmissions and better therapy adherence.[7,11] Given that home infusion patients often transition rapidly from hospital to home, the time invested in communication and coordination may be a critical determinant of patient safety and treatment success.[8]

These findings should also be considered within the broader context of industry trends. While demand for home infusion services continues to grow, providers face increasing financial pressures, including declining reimbursement for traditional therapies and rising operational costs.[1] At the same time, the ability to deliver timely, high-quality patient onboarding remains essential to maintaining access to home-based care. The significant time investment identified in this study underscores the need for staffing models and reimbursement frameworks that adequately reflect the complexity and value of these services. From a workforce perspective, this study highlights the importance of multidisciplinary collaboration and the need for adequate clinical staffing to support patient onboarding. As the home infusion industry continues to expand, understanding and addressing workforce demands will be critical to sustaining growth and maintaining consistent quality of care.

Several limitations should be considered. The study sample was limited to anti-infective patients and may not fully represent other therapy types, particularly specialty infusions with different administration patterns and monitoring requirements. Additionally, time data were self-reported and may be subject to variability in documentation. Finally, the analysis was restricted to a defined onboarding period and does not reflect the total time required across the full course of therapy.

Future research should explore the relationship between patient onboarding time and patient outcomes, including adherence, complications, and readmissions. Additional studies may also evaluate the impact of workflow optimization strategies and emerging technologies on reducing administrative burden and improving efficiency. Expanding this work across therapy types will further enhance understanding of resource utilization in home infusion care.

Conclusion

Onboarding home infusion anti-infective patients requires substantial time from nurses and pharmacists before therapy is fully initiated at home. Nurse activities were concentrated in care coordination, communication, assessment, and patient education, while pharmacist activities centered on drug preparation, compounding, assessment, documentation, and care coordination. The results of this study provide evidence for the need to re-evaluate reimbursement models for this therapy to mitigate provider risk and address the potential for reimbursement to deter outpatient anti-infective therapy. These findings highlight the multidisciplinary and front-loaded nature of home infusion patient onboarding and provide data to inform staffing models, workflow planning, and reimbursement discussions for home-based anti-infective therapy.

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