

# Pharmacists' Role in Onboarding Patients for Home Infusion Therapy

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## ABSTRACT

### Introduction

The home infusion patient onboarding process is essential to patient care. For the pharmacist, the patient onboarding process is uniquely extensive, time-consuming, and inherently complex. A literature review shows a void in studies focusing on pharmacist time and the tasks used to onboard a home infusion patient. Time utilization data is valuable for understanding the typical work required to efficiently provide a high-quality health care service. The objectives of this study were to quantify the categories of professional services (tasks) the pharmacist provides and to determine the amount of time and the number of days the pharmacist spends onboarding the patient. The results from this investigation will determine the home infusion pharmacist's time commitment to tasks involved with onboarding a home infusion patient.

### Methodology

Data collection was completed from January 2021 through October 2021. It involved tracking pharmacist time spent on patient care starting at the time of referral and continuing through the first dispensing of the home infusion medication. A home infusion pharmacist expert committee determined the pharmacist onboarding tasks, task categories, and examples of tasks for each category. This information was included in the pharmacist data entry Excel® file. Using retrospective recall, pharmacists tracked the start and end time for each task category for each patient serviced.

### Results

Pharmacists completed 163 patient onboarding tasks for a total of 30 patients in this study. The mean completed tasks per patient is 5.40 (SD=1.90) with each task averaging slightly more than a half hour with the mean total time being 2:43.34 (SD= 0:50.46). Performing patient assessment and documentation is the most time-consuming task category. The number of days to onboard a home infusion patient ranged from 1 to 6 days, with 89.57% of the patients being onboarded in 1 day.

### Discussion

The time invested up front by the pharmacist, and other personnel, is instrumental in achieving the goals of therapy, avoiding adverse events, and ensuring a positive overall experience for the patient. While different individuals such as nurses, pharmacy technicians, reimbursement staff, administrative support, and warehouse personnel are typically involved in the onboarding process, this study provides the first assessment of the pharmacist's time spent onboarding the home infusion patient.

### Conclusions

The home infusion pharmacist's role in patient care extends beyond dispensing medications. It involves many tasks that begin with the initial referral and conclude once the therapy is completed. Having data supporting the pharmacist time commitment to the patient onboarding process will assist with scheduling home infusion pharmacists. Finally, this data is evidence of the involvement and importance of the home infusion pharmacist contributions to home infusion patient care.

**Keywords:** *Time study, patient onboarding, home infusion pharmacist, patient assessment, infusion*

## Introduction

The home infusion patient onboarding process is essential to the patient's success. It involves extensive multidisciplinary tasks that begin once the patient is referred for services. Onboarding is a term typically associated with newly hired employees and is the process by which employees gain the knowledge and skills they need to become effective members of an organization.<sup>1</sup> Within health care, "patient onboarding" is a term typically used when the patient needs to be taught skills and knowledge prior to treatment. In the home infusion context, the term is broadened to include activities professional staff performs to arrange the home treatment. To ensure that the home infusion onboarding process is seamless, a team of infusion experts works simultaneously to determine patient eligibility, verify insurance coverage, design the therapy and monitoring plan, compound/prepare the medications and supplies, establish treatment goals, and coordinate the home nursing services. The home infusion pharmacist performs a wide range of onboarding tasks, including consulting with the patient, physician, and nurse as needed and initiating changes to the prescribed treatment and monitoring plan.

For the pharmacist, the patient onboarding process is uniquely extensive, time-consuming, and inherently complex. The pharmacist must be knowledgeable of vascular access devices, infusion pumps, administration protocols and supplies, and maintain expertise in sterile compounding. Designing an effective infusion therapy requires adapting the prescribed medication to the individual patient's needs and abilities while also considering the administration methods that are cost effective and suitable for the drug's physical and chemical properties. Additionally, these functions are often completed in a short timeframe to facilitate an expeditious and seamless transition from hospital to home.

A review of the literature shows a void in studies focusing on pharmacist time to onboard a home infusion patient. Studies that investigate tasks and quantify the amount of time to complete are known as time utilization or time and motion studies. They are common in health care because they assist in understanding the time requirements specific to a health care profession.<sup>2</sup> These studies were initially used to determine costs and inefficiencies in health

care delivery and then expanded the focus toward patient safety and quality.<sup>2</sup> Time utilization studies offer a precise standard in quantifying health care workers' time expenditures on clinical activities and provide valuable insight into system specifications<sup>3</sup> and workflow design.<sup>4</sup> In brief, time utilization data is valuable for understanding the tasks required to provide a high-quality health care service efficiently.

There is a common understanding of the home infusion pharmacist's professional contributions to onboarding the home infusion patient. However, the pharmacist's overall time commitment to the various onboarding tasks is unknown. In 2022, the National Home Infusion Foundation (NHIF) conducted a time study that tracked 400 pharmacist tasks associated with 30 home infusion patients from 5 unique provider locations.<sup>5</sup> The study concluded that pharmacists spend an average of 35.85 minutes per patient per day for an average of 12.23 study days per patient.<sup>5</sup> However, this study did not delineate pharmacist onboarding tasks, or the amount of time or days needed to complete these tasks. A literature review shows that pharmacist time has been the main focus of some studies.<sup>3,6</sup> Unfortunately, the investigations did not include home infusion pharmacy as the work setting and did not delineate onboarding time.

This multi-center descriptive study was conducted by NHIF to better understand the pharmacists work required to onboard a home infusion patient. The study objectives were to quantify the categories of professional services (tasks) the pharmacist provides, determine the amount of time the home infusion pharmacist spends onboarding the patient, and the number of days it takes to onboard a home infusion patient. This descriptive study will improve understanding of the type of work, amount of time, and number of days a pharmacist spends onboarding the home infusion patient.

## METHODOLOGY

The NHIF web page invited all home infusion providers to participate in this descriptive study involving the self-reported time spent by their pharmacists on clinical tasks related to patient care. The pharmacists at these locations received an orientation video, data entry guide, and patient

FIGURE 1.  
Onboarding Task Categories with Examples

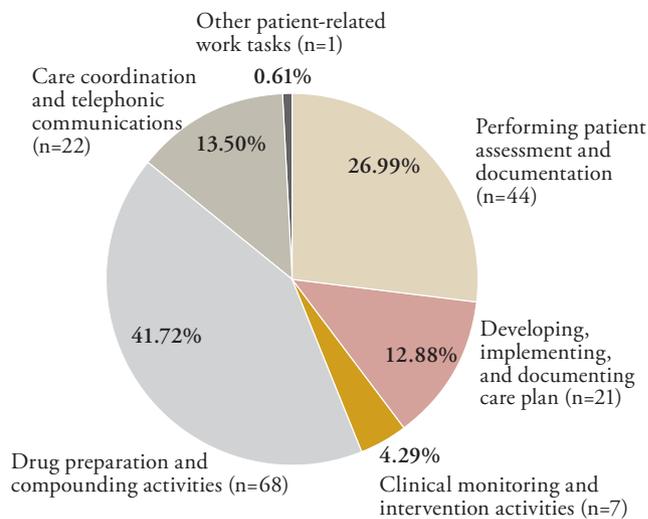
Task Category	Examples
<p>1. <b>Performing patient assessments and documenting the assessment results in the patient EMR</b></p>	<ul style="list-style-type: none"> <li>• Review of current illness</li> <li>• Review of past medical history</li> <li>• Review of current medication list</li> <li>• Review of prescribed infusion medication</li> <li>• Assessment of home environment/caregiver status</li> <li>• Assessment of ambulatory status and other physical limitations that may interfere with self-administration</li> <li>• Assessment of vascular access device compatibility with prescribed medication</li> <li>• Interventions to facilitate initiation of home infusion therapy</li> </ul>
<p>2. <b>Developing, implementing, and documenting the plan of care</b></p>	<ul style="list-style-type: none"> <li>• Selection of administration method</li> <li>• Establishing goals of therapy</li> <li>• Reviewing existing, and obtaining supplemental physician orders for prevention of acute infusion reactions, access device de-clotting agents, access device maintenance solutions, etc.</li> <li>• Developing a monitoring plan</li> <li>• Developing an access device maintenance plan</li> <li>• Patient education plan</li> <li>• Interventions performed</li> <li>• Documenting and updating the care plan in the EMR</li> </ul>
<p>3. <b>Remote monitoring and related intervention activities</b></p>	<ul style="list-style-type: none"> <li>• Obtaining, tracking, and trending lab results</li> <li>• Lab evaluations</li> <li>• Interventions performed</li> <li>• Recommendations made because of monitoring activities</li> <li>• Documentation of monitoring and interventions in the EMR</li> </ul>
<p>4. <b>Drug preparation and compounding activities</b></p>	<ul style="list-style-type: none"> <li>• Dispensing</li> <li>• Determining appropriate beyond-use dates</li> <li>• Compounding process oversight (patient specific)</li> <li>• Supply selection</li> <li>• Shipping</li> <li>• Documentation of compounding, dispensing, and delivery activities</li> </ul>
<p>5. <b>Care coordination and communication</b></p>	<ul style="list-style-type: none"> <li>• Telephonic interactions and the time spent performing the task</li> <li>• Patient communication</li> <li>• Prescriber communication</li> <li>• Internal communication (i.e., billing)</li> <li>• Only include if not able to fit into a category above</li> </ul>
<p>6. <b>Other patient-related work tasks</b></p>	<ul style="list-style-type: none"> <li>• Case conferences</li> <li>• Work not covered above</li> </ul>

tracking Excel® spreadsheets. Since the providers, pharmacists, and patient data was deidentified before submission to NHIF, this study was exempt from Institutional Review Board (IRB) review.

### Data Collection

Data collection was completed from January 2021 through October 2021. It involved tracking pharmacist patient care time starting at the time of referral and continuing through the first dispensing of the home infusion medication. Patient demographic data was collected, including age, therapy, and administration method. Prior to data collection, a home infusion pharmacist expert committee was utilized to determine the pharmacist onboarding tasks, task categories, and examples of tasks for each category (Figure 1). This information was included in the pharmacist data entry Excel® file with a separate file for each patient. Pharmacists tracked the start and end time for each task category for each patient serviced. For example, if the pharmacist reviewed the prescribed infusion medication, the task category was “1” and the start time for the task was noted. After completing the task, the pharmacist noted the end time for the task in the Excel® tracking form (Figure 2). The design of the time study (time data were tracked at the start and end of each task) ensured that the risk of recall bias was minimized. Once the onboarding process was completed for the patient, as noted by the first drug dispense, the

FIGURE 3. Pharmacist Onboarding Tasks by Category (n=163)



data collection tracking form went through a deidentification process and was submitted to NHIF via a data submission portal.

Researchers calculated the patient total onboarding days, total patient minutes for each onboarding task category, and total patient onboarding minutes for pharmacist professional services, all within the Excel® file. Next, the data for all submitted forms was combined and compiled into a single Excel® file. This file was imported to IBM SPSS (Statistical Product and Service Solutions) for additional analysis.

FIGURE 2. Home Infusion Pharmacist Onboarding Professional Services Excel® Tracking Form

Temp						
Location DPC		Patient ID #				Patient Therapy Type Codes 1: Antiinfective using an ambulatory infusion pump 2: Antiinfective utilizing IV push administration 3: Inotropic using an ambulatory infusion pump 4: Anti-neoplastic chemotherapy (i.e.5-Fu) using ambulatory infusion pump 5: Parenteral nutrition patient 6: Monoclonal antibody administered intravenously with initial home dose 7: Subcutaneous immune globulin-pump administered 8: Intravenous immune globulin-pump administered
Patient Age		Patient Data Start Date				
Patient Data Stop Date		Patient Therapy Type Code				Care Activity Task Codes 1: Performing patient assessments and documentation 2: Developing, implementing, & documenting care plan 3: Remote monitoring and intervention activities 4: Drug preparation and compounding activities 5: Care coordination and telephonic communications 6: Other patient related works tasks
Patient Data Start Date		Secondary Therapies (IV)				
	Therapy	Medication	Date Added	Administration Method		
Data Entry						
*Please enter start time and end time in military time (00:00-24:00)						
Date	Task Code #	Start Time	End Time	Comments/Notes		

### Results

This multi-center study focused on determining the mean pharmacist onboarding time per patient, mean pharmacist time per task category, and the number of days the pharmacist spends onboarding the patient. To meet the objectives of this investigation, pharmacists tracked their time providing professional services for 30 home infusion patients representing five self-selected provider locations. Patient therapy category and administration type was the following: anti-infective using an ambulatory infusion pump (n=4); anti-infective using an IV push administration (n=18), inotropic using an ambulatory infusion pump (n=1); and parenteral nutrition using an ambulatory infusion pump (n=7). The mean patient age was 59.53 (SD=13.81), with a range of 27 to 77 years of age.

TABLE 1.  
Mean Onboarding Task Time by Task Category

Pharmacist Onboarding Task Category	Mean	N	Std. Deviation
1. Performing patient assessment and documentation	0:43:15.00	44	0:36:08.55
2. Developing, implementing, and documenting care plan	0:21:08.57	21	0:18:38.20
3. Clinical monitoring and intervention activities	0:07:08.57	7	0:03:58.56
4. Drug preparation and compounding activities	0:29:04.41	68	0:34:38.57
5. Care coordination and telephonic communications	0:23:19.09	22	0:20:44.51
6. Other patient-related work tasks	0:20:00.00	1	
<b>Total</b>	0:30:06.26	163	0:32:05.40

A total of 163 pharmacist onboarding tasks were completed for the 30 home infusion patients. Drug preparation and compounding tasks comprised 41.72% of all onboarding tasks, while 26.99% of the tasks involved performing patient assessments and documentation, as shown in Figure 3. The mean number of onboarding tasks per patient was 5.40 (SD=1.90), with a range of 3 to 9 pharmacist tasks per patient. The number of days required for the pharmacist to complete onboarding tasks ranged from 1 to 6 days, with 89.57% of the patients being onboarded in 1 day while 5.52% were onboarded in 2 days.

The mean time for each of the 163 pharmacist tasks performed for the home infusion patient was 30.06 (minutes/seconds). The task category that took the most time was “Performing patient assessments and documentation,” followed by “Drug preparation and compounding activities,” as observed in Table 1. The mean total pharmacist time to onboard a home infusion patient was 2:43.34 (SD=50.46), with a range of 1:24.00 to 4:20.00.

#### Study Limitations

As with any research, this study is not without its limitations. The most common limitation of this self-report time study is the potential for the pharmacist to be more productive since their tasks and time were tracked. This phenomenon is noted as the Hawthorne effect and is common in self-report research.<sup>7</sup> Even so, self-report is commonly used to collect time utilization data. Provider locations were self-selected rather than from a random sample, thus affecting the generalizability of the data. The study results were limited to the following types of infusion patients,

which are most often referred after a hospitalization (referring entity information was not collected): anti-infectives using an ambulatory infusion pump, anti-infective utilizing IV push administration, inotropic using an ambulatory infusion pump, and parenteral nutrition using an ambulatory infusion pump. The sample size for each therapy type was insufficient to determine how the therapy type may influence the onboarding time. Chronic (i.e., specialty) therapies were not included in this study, thus it is unknown if patients referred for non-acute therapies would have similar onboarding times.

#### Discussion

From the results of this study, it was revealed that the mean number of pharmacist tasks needed to onboard a home infusion patient is 5.40 (SD=1.90) with each task averaging slightly more than a half hour with the mean total time being 2:43.34 (SD= 0:50.46). Performing patient assessment and documentation is the most time-consuming task category, followed by drug preparation and compounding activities. Data has supported that pharmacist professional services are far more multifaceted than drug preparation and compounding alone. Home infusion providers make significant up-front financial investments in onboarding new patients.

#### Home Infusion Provider Response Time

Despite the extensive work required to onboard a home infusion patient, most were onboarded in 1 to 2 days which is typical for the therapies and administration methods represented in this study. This data is consistent across the different providers and reflects expectations of referral sources that infusion providers can execute a rapid response once home infusion is

prescribed. Being responsive to new referrals requires significant infrastructure and availability of staff to perform the onboarding functions. Infusion providers can use the data from this study to quantify and evaluate their ability to recover the up-front costs associated with bringing a new patient to service.

### Impact on Patient Outcomes

The time invested up-front by the pharmacist and other personnel is instrumental in achieving the goals of therapy, avoiding adverse events, and ensuring an exceptional overall patient experience. Previous studies have demonstrated the importance of a thorough pharmacist assessment for home infusion patients. In one study of 94 patients with orders for home infusion of vancomycin, 50% of patients required a dose reduction after evaluation by a pharmacist.<sup>8</sup> Time spent by pharmacists designing an individualized care plan contributes to the overall positive experience patients report in home infusion satisfaction surveys. Results from the 2019 and 2020 NHIF Patient Satisfaction Survey Benchmarking Program showed that 97.53% of the patients in 2019 (n=6,353) and 97.85% in 2020 (n=7,381) “Agreed” or “Strongly Agreed” to the statement, “Overall, I was satisfied with the overall quality of the services provided.”<sup>9</sup> Just as important, Home Infusion Status at Discharge Benchmarking Results conclude that 91.23% of the anti-infective patients (n=4,412), which represent nearly half of all home infusion patients<sup>10</sup>, were discharged after completing the therapy as prescribed by their physician.<sup>11</sup>

### Pharmacist Time – A Partial Picture of the Onboarding Process

The investigators speculate that the study data may provide a conservative estimate of the pharmacist onboarding time since onboarding stopped with the first dispensing of medications, and data was not collected to document when the first actual dose of medication was received in the home. In most cases, this would be the same day as the initial dispense or the next day. Additional work by the pharmacist may be performed beyond the initial dispensing and when the home nurse finally admits the patient.

In reviewing the data, it is difficult to overlook the fact that the mean pharmacist times had a large standard deviation. It is somewhat expected given the complex and individual nature of the home infusion patient and the variety and difficulty of the pharmacist tasks performed. Even so, it is known that as the sample size increases, the standard deviation of the means decreases. A study with a larger home infusion patient sample is needed to ensure that the data is generalizable and to determine whether a significant difference exists between therapy type and the time required to onboard the patient. Furthermore, it needs to be investigated if patient age, gender, and past medical history make a significant difference in the onboarding time and number of tasks needed to complete the process. While other individuals, such as nurses, pharmacy technicians, reimbursement staff, administrative support, and warehouse personnel, are typically involved in the onboarding process, this study provides the first assessment of the pharmacist’s time spent onboarding the home infusion patient.

### Conclusions

Patient onboarding typically occurs over 1 to 2 days, with the most time-consuming pharmacist task being patient assessments and documentation. Of the total pharmacist onboarding tasks (n=163), 58.28% are considered patient care tasks (Task Category 1-3, 5, and 6), while the remaining task category, drug preparation, and compounding, involved 41.72% of the tasks. Having data that describes the type of tasks the home infusion pharmacist provides during the onboarding process and the time commitment for each illustrates the significant contributions of home infusion pharmacists to the home infusion onboarding process and ultimate outcomes for the patient. Furthermore, knowing that the mean time to onboard a home infusion patient is almost 3 hours, this data provides insight into the home infusion pharmacist’s workload and will assist in evaluating the up-front costs associated with onboarding patients.

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