



Home Infusion: Advancing Oncology Care Beyond Traditional Settings in the United States

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Disclosures

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Learning Objectives



Care Coordination

Review Home Infusion Services and the multidisciplinary approach in transitioning patients to home setting



Site of Care Shifting

Share current shifting from traditional settings to Home Infusion place of services



Home Chemotherapy Administration and Safety

Examine key aspects of providing chemotherapy safely in the home environment



Home Infusion Overview

1 Origin

Emerged in the 1980s primarily for acute therapies, mostly antimicrobial and parenteral nutrition needs

2 Evolution

Expanded to treat both acute and chronic conditions with advanced protocols

3 Structure

Functions as a comprehensive pharmacy program with ancillary services integration



Teaching Home Infusion 1987!

1

Historical Limitations

- No needleless connectors
- No prefilled syringes
- No PICCs or midlines

2

Historical Catheters

- PIVCs
- Sutured subclavian/Intra-Jugular catheters
- Surgically placed cuffed Central Vascular Catheters

3

Current State

- Smart pumps with remote monitoring capabilities
- Antimicrobial catheter technology
- Implantable Ports and Power-Injectable PICCs
- Telehealth integration for virtual assessments



Home Infusion Trends in the United States



Utilization Growth

Significant increase in patients receiving infusion services at home for multiple therapies



Reimbursement Expansion

Broader coverage from both private and government insurance programs-lower cost of care



Pipeline Development

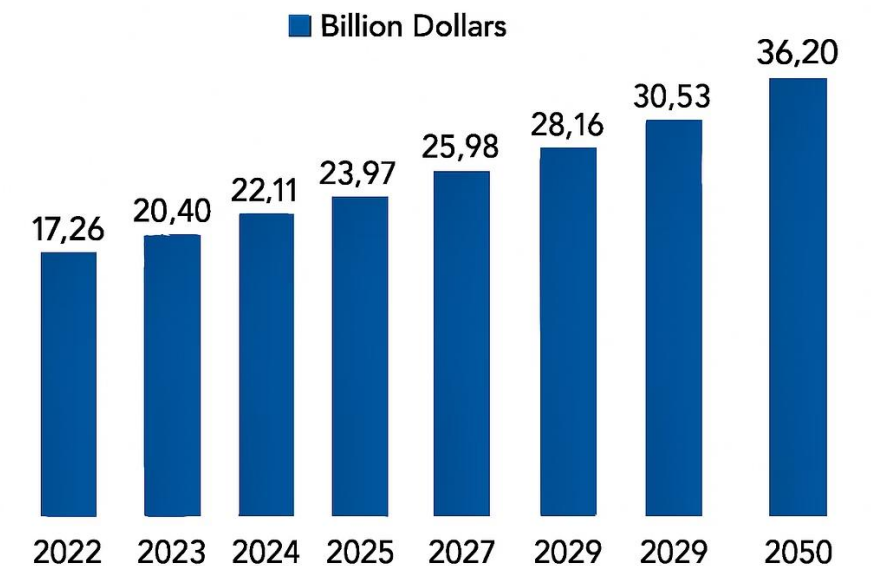
Growing number of intravenous infusion medications entering the market



Oncology Program Growth

Expanded in-home cancer therapy options with dedicated centers

U.S. Home Infusion Therapy Market Size





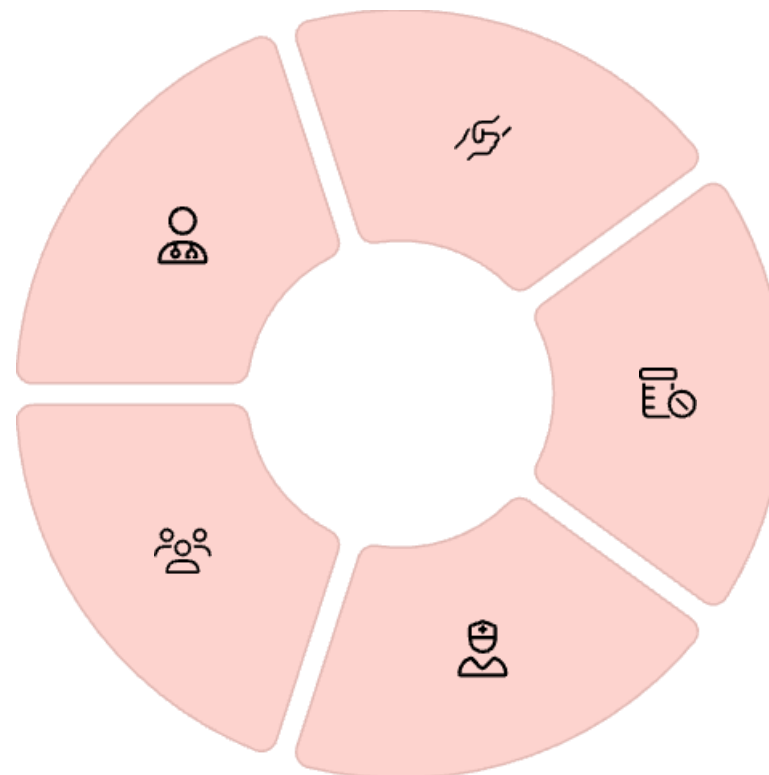
Interdisciplinary Approach

Prescribing Physicians

Determine treatment plans and monitor clinical outcomes

Patient & Caregivers

Active participants in treatment process and self-monitoring



Case Managers

Coordinate services and monitor overall care plan effectiveness

Infusion Pharmacy Team

Oversee medication preparation, stability, and clinical protocols

Home Health Nurses

Provide direct care, education, and assessment in the home

Workflow: Referral to Infusion



Referral

Pharmacy receives Prescription, Demographics and Progress Notes



Eligibility Assessment

Clinical stability and home environment evaluation



Insurance Authorization

Benefit verification and coverage approval process



Pharmacy Dispensing

Rx adjudication through the Insurance
Generate Compounding Records and Delivery Tickets
Establish Therapy Care Plan



Nurse Scheduling

Coordination of home visits based on treatment protocol



Pharmacy Compounding

Sterile preparation of medications according to USP standards



Medication Administration in the Home Setting

Home Infusion Overview



Clinical Functions

- Patient assessment
- Medication education
- Clinical monitoring
- Pharmacy dosing
- IV compounding
- 24/7 pharmacist access



Operational Functions

- Patient intake
- Supply provision
- IV pump management
- Home delivery services
- Financial services
- Billing and collections



Multidisciplinary Coordination

- Hospital Case Management
- Home Health Nursing Integration
- Durable Medical Equipment
- Referring Physician Collaboration
- Family Education
- Care Plan and Progress Reporting

Home Infusion Pharmacy Staff



Infusion Pharmacists

- Clinical assessment
- Lab monitoring
- Medication dosing
- Patient education
- Care coordination
- 24/7 on-call support



Pharmacy Technicians

- Prescription processing
- Sterile compounding
- Medication delivery
- Inventory management
- Equipment tracking



Support Staff

- Intake coordinators
- Clinical nurses
- Logistics personnel
- Billing specialists
- IT support

Integration with Home Health

Initial Assessment

Comprehensive evaluation of patient needs and home environment

Care Plan Development

Creation of personalized treatment protocols and schedules

Home Infusion Setup

Installation of necessary equipment and supply delivery

Ongoing Monitoring

Regular assessment of treatment efficacy and patient response



Benefits of Home Infusion Therapy



Patient Comfort

Familiar environment reduces stress and anxiety



Improved Satisfaction

Higher reported quality of life and treatment experience



Convenience

Reduces travel time and disruption to daily routines



Decompressed Facilities

Reduces burden on traditional healthcare settings



Cost Effectiveness

Lower overall healthcare costs while maintaining quality of care

Determining Suitability for Home Infusion Therapy

Patient eligibility for home-based treatment depends on several key factors:



Medication Factors

- Drug stability after Compounding
- Administration complexity and infusion duration
- Refrigeration requirements (2-8°C)
- Frequency of labs and vital sign monitoring



Patient Factors

- Absence of acute symptoms requiring immediate intervention
- Vascular Access Compatibility
- Ability to understand and participate in care plan
- Caregiver availability and training readiness



Environmental Factors

- Safe physical layout for equipment and mobility
- Clean area for medication preparation
- Reliable electricity and clean water supply
- Secure, temperature-controlled medication storage



Financial Factors

- Pre-authorization for specialty oncology medications
- Coverage for infusion pumps and administration sets
- Home nursing visit reimbursement verification
- Patient out-of-pocket responsibility assessment

Medication Factors

Stability Factors

- Assess post-mixing stability for most chemotherapeutics
- 2-8°C refrigeration requirements for biologics
- UV-protected containers for light-sensitive agents
- Distance from Pharmacy: Maximum 2-3 hours transit time from pharmacy to patient home

Route Considerations

- PICC or implanted port for multi-day chemotherapy
- Subcutaneous administration: Darzalex Faspro, Trastuzumab and Rituximab
- Pre-assessment of patient's existing access device functionality
- Vesicant administration restricted to patients with confirmed central access

Administration Delivery Methods

- Elastomeric devices for 5-FU continuous infusions
- Mini-bag systems for shorter infusion
- Gravity infusion for stable patients with caregiver support
- Smart IV pumps with safety software for high-alert medications

Delivery Methods



IV Push

Direct manual injection of medication into vascular access



Gravity Infusion

Simple, cost-effective method using gravity flow



Ambulatory Infusion Pump

Provides precise medication delivery in multiple delivery modes (continuous, intermittent, patient controlled)



Elastomeric Pump

Disposable, portable device for continuous medication delivery

Environmental Factors



Emergency Access

Distance from emergency services and response time considerations



Safety Evaluation

Assessment of fall risks, oxygen safety, and general home hazards



Facility Requirements

Running water, electricity, refrigeration, and adequate space



Cleanliness

Sanitary conditions to support infection prevention protocols



Infusion Services: Site of Care Evolution

Hospital Setting

Traditional setting with high overhead and resource concentration



Physician Office with Infusion Suite

In-office infusion suites for certain therapies



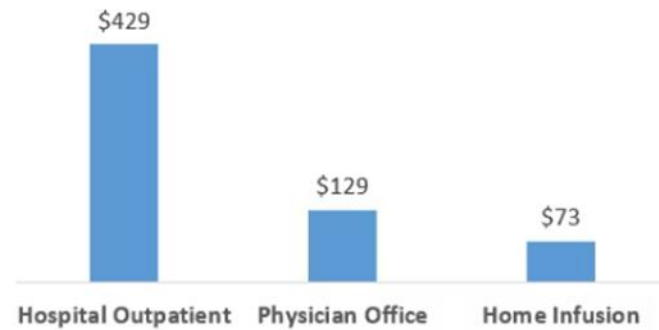
Ambulatory Infusion Centers

Specialized staff and resources

Home Setting

Patient-centered care in comfortable environments with support

Cost to Administer Provider-Administered Specialty Drugs by Site of Care¹
\$ per Claim, 2023, Commercial Insurance



- Significant variation between sites of care for the cost to administer drugs, with hospital outpatient settings reimbursed at almost 6x home infusion



Oncology Care: Safe Chemotherapy Delivery in the Home Setting



Home Infusion: Oncology Care

Home-based oncology infusion represents a growing segment of care delivery that combines clinical excellence with patient-centered approaches.



Expanding Treatment Options

Bringing specialized cancer treatments directly to patients' homes



Increased Accessibility

Reducing barriers to care for patients with mobility issues or in remote areas



Enhanced Quality of Life

Allowing patients to maintain normal routines while receiving treatment



33-52% Cost Savings

Potential reduction in healthcare costs compared to facility-based care



89% Patient Satisfaction

Reported satisfaction with home-based cancer therapies



7.5M Annual Infusions

Estimated home infusions performed annually in the US

Chemotherapy in the Home Setting

Patient Benefits

- Enhanced comfort and privacy
- Reduced travel burden
- Minimized exposure to infections
- Less disruption to daily life
- Decreased non-medical expenses

System Benefits

- Decompressed infusion centers
- Reduced facility overhead
- Optimized resource allocation
- Expanded treatment capacity
- Improved cost-effectiveness



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Home oncology programs provide benefits at both individual and system levels while maintaining high standards of care.



Home Antineoplastic Drug Infusion Programs



Initial Treatment

First dose administered in controlled clinical setting to assess tolerance



Education

Comprehensive training on administration, monitoring, and emergency protocols

3

Medication Delivery

Special courier service with temperature-controlled storage solutions



Home Administration

Supervised infusion of maintenance therapies like pembrolizumab and rituximab

Competency: Core Content

Clinical Knowledge

- Treatment classifications
- Pharmacology principles
- Molecular biomarkers
- Protective agents
- Patient assessment

Safety Protocols

- Medication preparation
- Storage requirements
- Safe handling procedures
- Spill management
- PPE utilization

Patient Management

- Education methods
- Symptom management
- Emergency preparedness
- Documentation
- Survivorship support

Nursing Certification Requirements

- ONS Chemotherapy and Biotherapy Provider Card (minimum)
- Oncology Certified Nurse (OCN) credential preferred
- Annual competency validation
- Documented clinical experience with chemotherapy administration
- Regular continuing education in oncology care



USP Chapter <800>



Key impacts on chemotherapy safety:

- 1** Establishes standards for safe handling of hazardous drugs
- 2** Requires appropriate Personal Protective Equipment (PPE)
- 3** Mandates engineering controls for preparation areas
- 4** Defines requirements for receiving, storing, and transporting hazardous drugs
- 5** Creates protocols for spill management and waste disposal
- 6** Reduces exposure risks for healthcare workers and patients

Support for Nursing

Safety Equipment

- Appropriate PPE provision
- Spill kits and cleanup supplies
- Hazardous waste disposal protocol
- Closed-system transfer devices

Coordination Support

- Patient communication systems
- Laboratory coordination
- Medication delivery timing
- Documentation templates

Clinical Resources

- Educational materials
- Pre-medication supplies
- Up-to-date anaphylaxis kits
- 24/7 clinical backup



Key Aspects of Oncology Home Infusion

Order Guidelines

Oncology-compliant protocols with verification systems

Schedule Precision

Strict adherence to treatment cycles and timing requirements

Medication Management

Tracking dose accumulation for lifetime toxicity limits

Safety Protocols

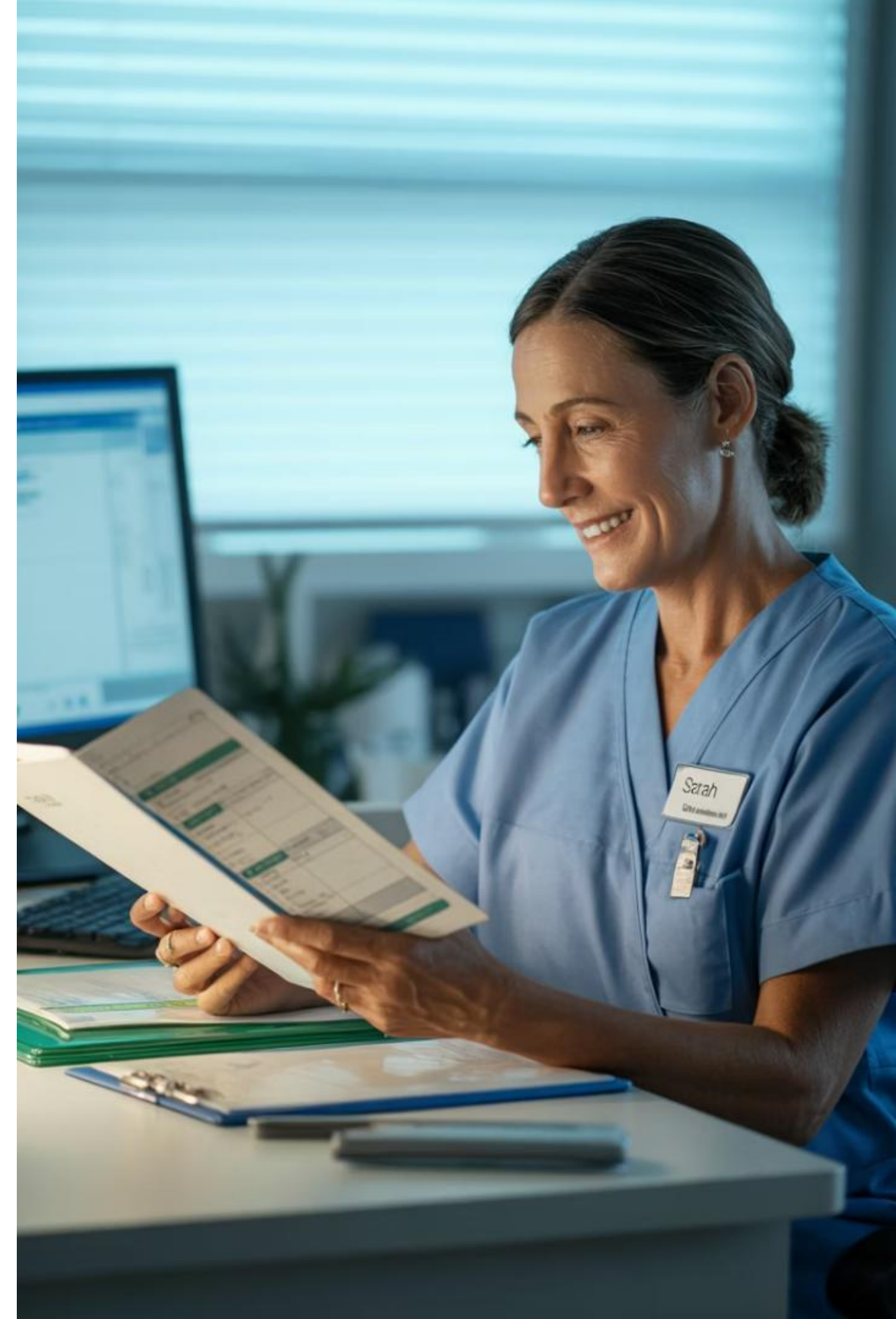
Comprehensive adverse event and extravasation management systems

Hazardous Drug Policies

Reproductive concerns protocols, Employee Surveillance Program, Safe Storage and Handling

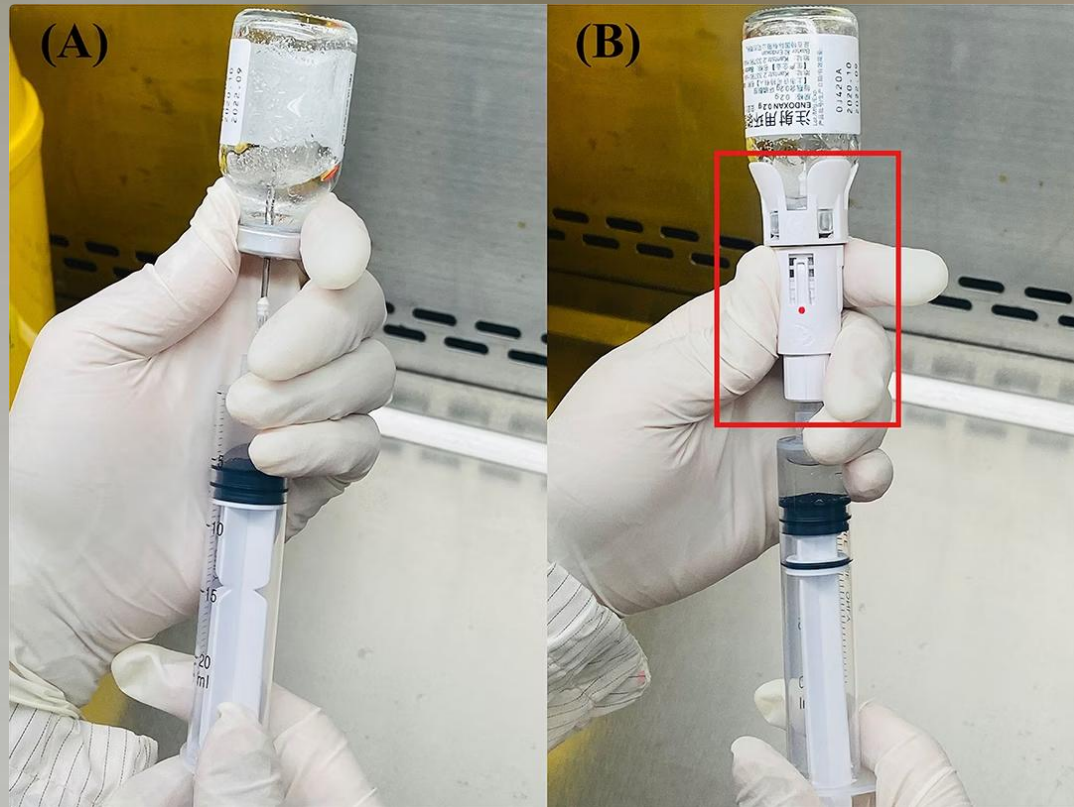
Care Coordination

Pre-Treatment screening calls, Toxicity reporting protocols, Oral Medication Management



Closed System Transfer Devices

Engineering controls that mechanically prevent hazardous drug contamination and exposure during preparation and administration



Purpose

- Prevents environmental contamination
- Reduces exposure risk to healthcare workers
- Maintains drug sterility during transfer
- Complies with USP <800> requirements

Home Setting Applications

- Simplified designs for non-pharmacy personnel
- Clear visual indicators for proper connections
- Reduces risk during home chemotherapy administration
- Integrated in elastomeric pump systems

1

2

3

Components

- Vial adapters for drug preparation
- Syringe connectors for safe transfer
- IV line connectors for administration
- Air-cleaning mechanisms to equalize pressure

When selecting CSTDs for home chemotherapy services, pharmacies should consider compatibility with existing systems, ease of use for nurses, and comprehensive training programs to ensure proper implementation and maximum safety benefit.

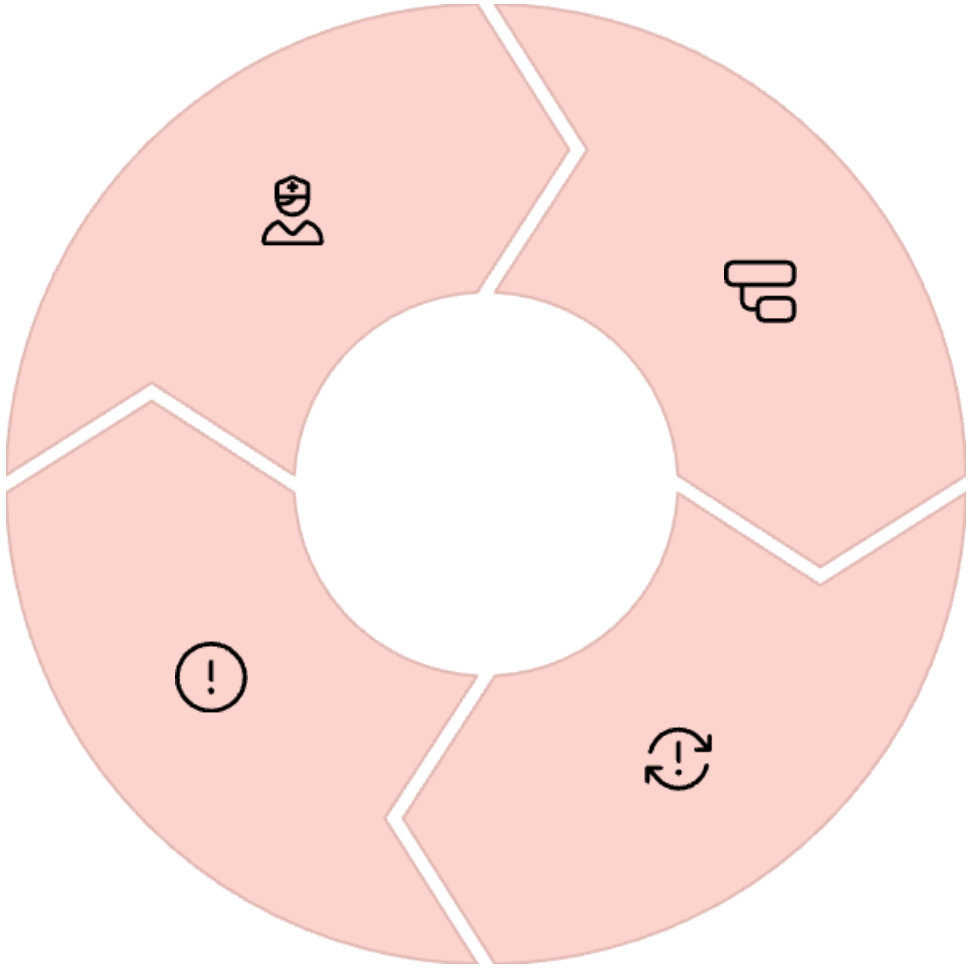
Challenges in the Home Setting

Staffing

Limited availability of nurses with oncology certification

Adverse Effects

Managing reactions with limited on-site resources



Regimen Tracking

Maintaining NCCN guideline compliance for complex protocols

Coordination

Synchronizing lab results, medication delivery, and nurse visits

Case Study: Bortezomib Administration in Home Setting

72-year-old male with relapsed multiple myeloma, successfully treated at home with specialized protocols and careful monitoring.

Patient Profile

72-year-old male with relapsed multiple myeloma, previously treated with autologous stem cell transplant. Patient has limited mobility due to peripheral neuropathy but stable vital signs and strong family support.

Implementation

- Proper storage in home refrigerator
- Coordinating lab results before doses
- Managing side effects remotely
- Family training on waste disposal

Treatment Protocol

Twice-weekly subcutaneous Bortezomib (1.3mg/m²) administered by oncology nurse:

- Medication prepared in pharmacy clean room
- Transported in sealed hazardous drug containers
- Administered using closed-system transfer devices

Outcomes

- 100% medication adherence over 6 months
- Reduction in healthcare costs
- Zero hospitalizations
- High patient satisfaction



Case Study: Pembrolizumab Administration in Home Setting

Patient Profile

58-year-old male with metastatic melanoma, previously treated with surgery and radiation. Patient has good performance status, stable vital signs, and strong family support system. No significant comorbidities affecting treatment plan.

Treatment Protocol

Pembrolizumab 400 mg IV every 6 weeks administered by specialized oncology nurse:

- Medication prepared in pharmacy clean room with 96-hour stability
- Transported in temperature-controlled containers
- Administered over 30 minutes with close monitoring

Implementation

- Pre-infusion assessment for contraindications
- Emergency medications and equipment available during infusion
- Patient/caregiver education on immune-mediated adverse reactions
- Remote monitoring between treatments via telehealth

Outcomes

- High medication adherence over 9 months
- One mild infusion reaction successfully managed at home
- Reduction in healthcare costs compared to outpatient setting
- Zero hospitalizations for treatment-related complications

Patient received comprehensive education on recognizing and reporting immune-mediated adverse reactions including rashes, pneumonitis, colitis, hepatitis, and endocrinopathies. This proactive approach allowed for early intervention for a grade 1 rash that developed after the third infusion.



Contact Information



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Contact For More Information

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For questions about implementing Home infusion Programs

