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Preventing Central Line-Associated Bloodstream Infection (CLABSI) in the Home Care Setting

A Toolkit

“Preventing CLABSI in the Home Care Setting” Advisory Group

This toolkit is very much a collaboration. Thank you, for both overall leadership and specific contributions, to:

- Audrey Adams, RN, MPH, CIC – Montefiore Health System
- Donna Armellino, RN, DNP, CIC – Northwell Health
- Andrea Brevard, MBA – Northwell Health
- Geri Caliendo RN, BSN – Northwell Health, Region Care Infusion, Inc.
- Sharon Cummings, RN, MSN – Northwell Health Home Care Network
- Roberta Duke, RN, MSN – Montefiore Home Care
- Deborah E. Halper – United Hospital Fund
- Elaina Heagerty – Formerly of United Hospital Fund, now at St. Peter’s Health Partners
- Lauren Huber, MA, BSN, RN – Montefiore Home Care
- Hillary Jalon – United Hospital Fund
- Pamela Joachim, RN, MA – Montefiore Home Care
- Irina Mitzner, RN, MSN – Northwell Health
- Carol Ann Rabolt, RN, BSN – Montefiore Home Care
- Mary Ellen Schilling, RN, MBA, CIC – Northwell Health
- Merryl Siegel, MPA – Northwell Health

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About the Toolkit

Preventing Central Line-Associated Bloodstream Infection (CLABSI) in the Home Care Setting: A Toolkit addresses an important aspect of home health care: infections related to peripherally inserted central catheter (PICC) and other central lines in patients discharged to home from acute care hospitals. Little has been written on infection prevention in home care, compared with the extensive body of research and quality improvement work focused on infection control in the hospital setting. This toolkit is designed to help home care and hospital acute care providers—nurses, infusion therapists, infection preventionists, and nurse administrators of home health services—systematically assess the risks for and reduce the incidence of CLABSIs in patients receiving home health care services, and communicate more effectively between the hospital and home care settings.

This toolkit is an outgrowth of work done by two eminent health systems—Montefiore Health System and Northwell Health (formerly North Shore-LIJ Health System)—and their home health care agencies, as part of United Hospital Fund’s PICC Line Initiative. With the assistance of a UHF grant and project management support, these participants focused on the challenges facing home care staff, patients, and family caregivers bearing responsibility for complex care outside the controlled environment of the hospital or other clinical setting—often without adequate protocols and standards or consumer-focused educational materials. The two health systems collaborated to identify and evaluate current practices of caring for central lines in the home care setting, design methods for better capturing important data to assist with monitoring those central lines, and, ultimately, create this toolkit.

The PICC Line Initiative is an example of UHF’s strategic grant making that builds on UHF program activities, including quality improvement collaboratives led by UHF in partnership with the Greater New York Hospital Association and involving more than 90 metropolitan-area hospitals in tackling specific clinical challenges. One of those projects, the multi-year Central Line-Associated Bloodstream Infections (CLABs) Collaborative, resulted in 36 participating hospitals recording a 54 percent reduction in the incidence of these infections.

Montefiore Health System is one of New York’s premier academic health systems and is a recognized leader in providing exceptional quality and personalized, accountable care to approximately three million people in communities across the Bronx, Westchester, and the Hudson Valley. It includes Montefiore Home Care, a certified, Joint Commission-accredited agency focused on helping people in all stages of life get access to a range of highly trained clinicians, services, and programs. For more information please visit www.montefiore.org. Follow us on Twitter and view us on Facebook and YouTube.

Northwell Health (formerly North Shore-LIJ Health System) is New York State’s largest health care provider and private employer. With 21 hospitals and nearly 450 outpatient practices, it serves more than 1.8 million people annually in and beyond the metropolitan New York area. Its 61,000 employees work to change health care for the better. For information on its services in more than 100 medical specialties, visit www.northwell.edu.

United Hospital Fund is an independent, nonprofit organization working to build a more effective health care system for every New Yorker. For news, commentary, publications, and additional information on our initiatives, visit www.uhfnyc.org.

Preventing Central Line-Associated Bloodstream Infection (CLABSI) in the Home Care Setting: A Guide to the Toolkit

Following is a roadmap to the tools and resources contained in the Peripherally Inserted Central Catheter (PICC) line toolkit. For additional discussion of how to effectively use these resources, please refer to the full toolkit.

Getting Started/Fact Finding

Appendix A provides a cover letter and a survey used to assess home care clinicians' current central line maintenance practices and their beliefs and knowledge about CLABSIs in the home care setting. We recommend that the survey be administered—as is or modified to better fit individual provider needs and circumstances—to anyone involved in patient care in the home care setting.

Appendix B details the responses to and notable findings of the survey included in Appendix A. A total of 48 home care staff from Northwell Health Home Care Network and Montefiore Medical Center Home Care Agency—all of them registered nurses—completed the survey.

Appendix C offers a survey used with the two home care agencies' patients and family caregivers to identify home care issues—with a focus on central line care and maintenance—to help improve the quality of care.

Appendix D summarizes the results and highlights of the survey included in Appendix C, which was completed by 94 respondents, 79 percent of them patients and 21 percent family caregivers.

Appendix E is a simplified tool for home care nurses to use for a monthly review of types of central lines in place among their home care patients, and the types of lines most prone to infection.

Appendix F provides a tool for conducting a detailed review of patients with CLABSIs on a monthly basis, including information on patient demographics, health conditions, and central line usage, to assess factors making patients more prone to CLABSIs in the home care setting.

CLABSI Data Collection

Appendix G provides a CLABSI assessment form for home care patients with suspected or confirmed CLABSIs, to be completed by the infection preventionist in the acute care setting and then returned to the appropriate home care agency to ensure coordination of care and communication about the patient between settings.

Appendix H offers a “Denominators for Home Care Central Line Device Days” summary form, which is a tool to manually track central line utilization, including total device days and patient days for central lines in the home care setting. This tool should be used by home care staff to count, on a daily basis, the total number of patients receiving home care services, and the total number of these patients with central lines.

Sustainability

Appendix I provides a comprehensive “sustainability” checklist for home care providers to use in gauging their progress, and includes tips on how to successfully hardwire infection-reduction processes and sustain results.

Introduction

With an estimated 41,000 central line-associated bloodstream infections (CLABSIs) occurring in U.S. hospitals annually,¹ the costs—in both patient morbidity and mortality and millions of added dollars for care—have made reducing or eliminating CLABSIs an increasingly important goal. Those cases represent a 46 percent decrease in the rate of CLABSIs in the acute care setting between 2008 and 2013, a significant improvement.² While efforts to achieve the goal of reducing CLABSIs have been almost singularly focused on the acute care setting, however, the substantial number of patients discharged from hospital to home with central lines in place lends a new urgency to preventing these infections in the home care setting.

Efforts to Date

Hospitals across the country have instituted efforts to reduce central line-associated bloodstream infections, focusing most notably on the Intensive Care Unit (ICU) setting but, more recently, also on non-ICU patient units. From 2005 through 2008, United Hospital Fund and the Greater New York Hospital Association (GNYHA) co-sponsored a quality improvement collaborative aimed at reducing CLABSIs in the ICU. Among the 38 participating hospitals there was a 54 percent reduction in CLABSIs during the course of the collaborative; by 2008 the rate had dropped by 70 percent.³ That same year the New York State Department of Health's Hospital-Acquired Infection (HAI) Reporting Division began publicly releasing HAI data (reporting 2007 data), including the incidence of CLABSIs in ICUs across the state. As of 2013, New York State data for adult, pediatric, and neonatal ICUs showed a CLABSI rate decrease of 52 percent since 2007.⁴

More recently, CLABSI reduction in the acute care setting has become one of the clinical domains of focus in the Centers for Medicare & Medicaid Services (CMS) effort to reduce hospital-acquired conditions by 40 percent and readmissions by 20 percent. In New York, GNYHA and the Healthcare Association of New York State (HANYs) in 2011 were jointly awarded a CMS contract to develop and lead New York State's Hospital Engagement Network, in which more than 170 acute care hospitals are participating, work continuing through 2016.

The important work that these and other initiatives have undertaken has produced a number of valuable hands-on resources, including a CLABSI prevention toolkit developed as an outgrowth of the UHF/GNYHA collaborative,⁵ the national Comprehensive Unit-based Safety Program (CUSP) to eliminate health care-associated infections,⁶ and a Centers for Disease Control and Prevention toolkit,⁷ to mention a few.

¹ Centers for Disease Control and Prevention. March 4, 2011. Vital signs: Central line-associated bloodstream infections—United States 2001, 2008, and 2009. *MMWR* 60(08): 243-248. <http://www.cdc.gov/VitalSigns/pdf/2011-03-vitalsigns.pdf> [summary].

² Centers for Disease Control and Prevention. March 2015. *Healthcare Associated Infections: Progress*. <http://www.cdc.gov/hai/pdfs/stateplans/factsheets/us.pdf>

³ Koll BS, TA Straub, HS Jalon, R Block, KS Heller, and RE Ruiz. December 2008. The CLABS collaborative: A nationwide effort to improve the quality of care in hospitals. *Joint Commission Journal on Quality and Patient Safety* 34(12): 713-723.

⁴ New York State Department of Health. September 2014. *Hospital-Acquired Infections, New York State 2013*. https://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2013/docs/hospital_acquired_infection.pdf

⁵ Greater New York Hospital Association and United Hospital Fund. 2012. *Central Line-Associated Bloodstream Infections (CLABSI) toolkit*. <http://www.gnyha.org/7980/Default.aspx>: [please contact UHF for access]

⁶ Comprehensive Unit-Based Safety Program to Eliminate Health Care-Associated Infections. Toolkits and Resources. <http://www.onthecuspstophai.org/on-the-cuspstop-bis/toolkits-and-resources/#clabsi>

⁷ Kallen A and P Patel (for Centers for Disease Control and Prevention). February 2010. *Central line-associated bloodstream infections (CLABSI) in non-intensive care unit (non-ICU) settings toolkit*. http://www.cdc.gov/HAI/pdfs/toolkits/CLABSItoolkit_whiteo20910_final.pdf

The Case for a Home Care Focus

Despite these efforts, there is growing concern about the relative lack of attention that has been paid to the challenges of patients transitioning from the acute care hospital setting to home with Peripherally Inserted Central Catheter (PICC) and other central lines that must be maintained in the home care setting. A limited body of studies has defined the number of PICC lines and evaluated the extent of CLABSIs outside the acute care hospital setting. Among the research conducted in this area:

- Two studies focused on patients given home parenteral nutrition (HPN) delivered through PICC lines. The first compared the PICC line group to those receiving HPN through other central venous access devices; those in the PICC line group had a significantly higher CLABSI rate.⁸ The second study used a retrospective chart review to quantify complications related to HPN, and found that patients who experienced catheter complications (including CLABSIs) had more PICC line days and more hospital admissions than those without complications.⁹
- Another study, quantifying catheter days in outpatient pediatric patients who received parenteral antibiotic therapy at home through PICC lines, found an overall complication rate of 33 percent, including occlusion, accidental displacement, cracks in catheters, and local irritation, but no suspected or confirmed catheter infections or sepsis were observed.¹⁰
- Rinke and colleagues evaluated central line maintenance practices in outpatient pediatric oncology patients and found that none of the home care agencies surveyed utilized comprehensive definitions for monitoring CLABSIs and that only 25 percent of agencies knew their overall CLABSI rate, indicating a need to standardize home health care practices consistent with evidence-based practices.¹¹ A second study led by Rinke surveyed patients and caregivers in the same patient population, who reported that dressing change practices were difficult to comply with at home. A total of 18 percent of respondents indicated that they wished they had learned more about line care, and another 12 percent reported that they received contradictory training, illustrating a need for interventions aimed at improving patient and family education to reduce CLABSIs.¹²

⁸ DeLegge MH, G Borak, and N Moore. November-December 2005. Central venous access in the home parenteral nutrition population—you PICC. *Journal of Parenteral and Enteral Nutrition* 29(6): 425-428.

⁹ Szeinbach SL, J Pauline, KF Villa, SR Commerford, A Collins, E Seoane-Vazquez. February 2015. Evaluating catheter complications and outcomes in patients receiving home parenteral nutrition. *Journal of Evaluation in Clinical Practice* 21(1): 153-159.

¹⁰ Van Winkle P, T Whiffen, and IL Liu. December 2008. Experience using peripherally inserted central venous catheters for outpatient parenteral antibiotic therapy in children at a community hospital. *Pediatric Infectious Disease Journal* 27(12): 1069-1072.

¹¹ Rinke ML, DG Bundy, AM Milstone, et al. August 2013. Bringing central line-associated bloodstream infection prevention home: CLABSI definitions and prevention policies in home health care agencies. *Joint Commission Journal on Quality and Patient Safety* 39(8): 361-370.

¹² Rinke ML, DG Bundy, AM Milstone, et al. April 2015. Bringing central line-associated bloodstream infection prevention home: Catheter maintenance practices and beliefs of pediatric oncology patients and families. *Joint Commission Journal on Quality and Patient Safety* 41(4): 177-185.

These studies addressed PICC lines monitored at home or in outpatient settings, but did not specifically evaluate the care of the lines once patients transitioned from the acute care hospital to home, nor did they focus on communication between hospital providers and home care personnel about central line care or assessing PICC line maintenance. One study did this: it evaluated central line care within a hospital and its home health agencies and bridged the gap between inpatient and outpatient efforts to reduce PICC line infections by developing standardized care practices. These included an order set for PICC care and a checklist for nurses and patients to complete during dressing changes. The result was a 46 percent reduction in PICC infections.¹³ Still, there is only limited quantifiable data on CLABSIs in the home care population, although acute care hospitals have begun to incur penalties from the CMS for 30-day preventable readmissions and for specified hospital-acquired conditions, CLABSIs among them.

One of the challenges facing health care providers is that home care staff, partnering with patients and/or family caregivers, become responsible for safely maintaining central lines inserted in the acute care setting, without having a clear standard for that maintenance. Preventing CLABSIs in the home care setting requires strict attention. Yet home care agencies traditionally rely on overburdened nursing professionals to focus on infection prevention strategies, along with a myriad of other nursing issues related to the home care setting—in contrast to acute care hospitals, which typically have dedicated infection preventionists to initiate reduction efforts with interdisciplinary teams. It is important, therefore, for acute care hospitals to collaborate with home care agencies to identify effective strategies for infection prevention. This kind of partnership also addresses The Joint Commission’s requirement that acute care and home care providers focus infection prevention efforts across the continuum of care.

Filling the Gap: A Home Care-Specific Toolkit

Home care providers have only limited resources to assist them in efforts to prevent and reduce CLABSIs in the home care setting. The following summarizes existing support:

- The *Home Healthcare Nurse* journal provides CLABSI reduction resources, including an article recommending best practices for home infusion therapists, describing the need for meticulous attention to appropriate hand hygiene, site assessment and care, and use of aseptic technique with infusion therapy-related procedures.¹⁴
- Another article offers CLABSI-specific details about The Joint Commission’s Home Care National Patient Safety Goal, laying out six elements of performance and an overview of existing challenges in the home care setting, along with strategies to implement the goal and measure performance.¹⁵

¹³ Baumgarten K, Y Hale, M Messonier, M McCabe, M Albright, and E Bergeron. Fall 2013. Bridging the gap: A collaborative to reduce peripherally inserted central catheter infections in the home care environment. *The Ochsner Journal* 13(3): 352-358.

¹⁴ Gorski LA. April 2010. Central venous access device associated infections: Recommendations for best practice in home infusion therapy. *Home Healthcare Nurse* 28(4): 221-229.

¹⁵ McGoldrick M. April 2009. Preventing central line-associated bloodstream infections and The Joint Commission’s home care national patient safety goals. *Home Healthcare Nurse* 27(4): 220-228.

- A more recent article offers effective strategies for patient education in the home care setting, starting with developing comprehensive methods for assessing patients' and family members' needs.¹⁶

These publications are critical in providing context about CLABSI prevention issues in the home care setting, but do not offer practical approaches and, more important, the necessary tools for home care professionals to implement effective prevention techniques. Similarly, while the toolkits noted earlier provide practical and comprehensive resources, they are focused on CLABSI reduction in the acute care hospital setting. There is a critical need for similar information dedicated to the home care setting, with collaboration between the acute care and home care settings, to address challenges as well as useful solutions across the continuum of care.

The resources included in the following pages provide pertinent tools and educational materials for not only acute care hospital clinicians and other staff involved in engineering patients' transitions from hospital to home but also for home care personnel themselves. The developers of this toolkit include clinicians from Montefiore Health System, Montefiore Home Care, Northwell Health, and Northwell Health Home Care Network. The United Hospital Fund provided grant funding and project management support to these organizations to develop the resources included in the toolkit. All of these resources and tools have been piloted with various home care professionals and patients and families to ensure that they are usable, valuable, and transferrable to other organizations. Home care personnel can use these tools in their current form, or can easily modify them to meet their own organizational needs and goals.

Getting Started: Essential Elements for Home Care Setting Providers

Key Terms Related to CLABSI Reduction

To ensure a common understanding of CLABSIs and CLABSI-related terms, the Centers for Disease Control and Prevention (CDC) Healthcare Infection Control Practices Advisory Committee (HICPAC) has issued *Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011*.¹⁷ More recently, the Society for Healthcare Epidemiology of America (SHEA) has updated its own guidelines on detecting and preventing CLABSIs, although the focus there, too, is on the acute care hospital setting.¹⁸

¹⁶ Ashton K and MH Oermann. May 2014. Patient education in home care: Strategies for success. *Home Healthcare Nurse* 32(5): 288-294.

¹⁷ O'Grady NP, M Alexander, LA Burns, et al. 2011. Guidelines for the prevention of intravascular catheter-related infections, 2011. *Clinical Infectious Diseases* 52(a): 1087-1099.

¹⁸ Marschall J, LA Mermel, M Fakih, et al. 2014. Strategies to prevent central line-associated bloodstream infections in acute care hospitals: 2014 update. *Infection Control and Hospital Epidemiology* 35(7): 753-771.

Common Definitions

The following definitions are drawn from the HICPAC guidelines:

Infusion. The introduction of a fluid through a blood vessel via a catheter lumen. Infusions may be continuous (e.g., nutritional fluids or medications) or intermittent (e.g., flushes, intravenous [IV] antimicrobials, blood transfusions, or hemodialysis).

Central Line. An intravascular catheter that terminates at or near the heart or in one of the great vessels and is used for infusion, withdrawal of blood, or hemodynamic monitoring. (See the HICPAC guidelines for specific information on what are considered great vessels for the purpose of reporting CLABSIs and counting central line days.)

- **Peripherally Inserted Central Catheter (PICC) Line.** A central line placed into a vein in the arm¹⁹ and used for prolonged IV antibiotic treatment, Total Parenteral Nutrition (TPN), chemotherapy, or IV access specific to physiological factors. PICC lines offer multiple access through one insertion site, are less invasive and can remain in place longer than other methods of access, and allow extended treatment after discharge to a sub-acute setting or home.

Permanent Central Line. Either a tunneled catheter (e.g., certain dialysis catheters) or an implanted one (e.g., a port).

Temporary Central Line. A non-tunneled, non-implanted catheter.

Primary Bloodstream Infection. A laboratory-confirmed bloodstream infection that is not secondary to an infection at another body site.

Central Line-Associated Bloodstream Infection (CLABSI). A laboratory-confirmed primary bloodstream infection occurring in a patient with a central line or umbilical catheter in place for 2 or more calendar days, with the day of device placement counted as Day 1.

- If a central line or umbilical catheter was in place for 2 or more calendar days and then removed, the laboratory-confirmed bloodstream infection criteria must be fully met on the day of removal or the next day.
- For a patient admitted to a facility with a tunneled or implanted central line already in place, and no additional central line inserted, Day 1 is the day the line is first accessed while the patient is an inpatient in that setting or transferred home.
- “Access” is defined as line placement or infusion or withdrawal through the line.

More detailed information and examples of CLABSIs can be found in the HICPAC guidelines.

¹⁹ Centers for Disease Control and Prevention. Frequently Asked Questions about Catheters. http://www.cdc.gov/HAI/bsi/catheter_faqs.html

Components of Central Line Care and Maintenance

In the home care setting, central line care and safe maintenance is critical to the prevention of CLABSIs. The key components of central line care and maintenance include:

- Effective hand hygiene;
- Proper dressing changes;
- Aseptic technique for accessing and changing needleless access devices;
- Standardized tubing changes;
- Daily review of the line's necessity, and prompt removal of no-longer-needed lines.

For more specific details about central line maintenance, refer to the HICPAC guidelines or the SHEA strategies to prevent CLABSIs.

Assessment of Home Care Staff Perceptions, Knowledge, and Practice Related to CLABSIs in the Home Care Setting

Prior to identifying challenges to effective central line management in the home care setting, and developing interventions or testing changes to reduce CLABSIs there, it is important to assess both understanding of these infections and current central line maintenance practices among all clinicians providing direct patient care.

Appendix A provides a cover letter from leadership and the survey used by project participants to assess home care clinicians' current central line maintenance practices and their beliefs and knowledge about CLABSIs in the home care setting. We recommend that the survey be administered—as is or modified to better fit individual provider needs and circumstances—to anyone directly involved in patient care in the home care setting, including directors, front-line staff nurses, case managers, and other clinicians responsible for caring for central lines in the home setting.

Appendix B details the responses to this survey by 48 home care staff from Northwell Health Home Care Network and Montefiore Medical Center Home Care Agency. All respondents were registered nurses; 65 percent were field nurses. Notable findings include:

- Most respondents received ongoing competency evaluations to ensure that their skills were up to date, and 94 percent reported that they received education about preventing CLABSIs.
- Ninety-two percent of respondents reported that they received training during orientation; 92 percent also said that they obtained IV infusion training, and competency evaluation on this training.
- All respondents reported that they comply with sterile technique when caring for central lines in the home care setting, and all likewise reported that their respective home care agencies have specific protocols and procedures in place for changing patients' dressings.

Assessment of Patient and Family Caregiver Perceptions, Knowledge, and Practice Related to CLABSIs in the Home Care Setting

Project participants quickly realized that it is also critical to obtain feedback from patients, family caregivers, and other caregivers to assess their perceptions, understanding, and capabilities related to caring for central lines at home.

Appendix C offers a survey the team developed for use with patients and family caregivers, to identify home care issues—with a focus on central line care and maintenance—to help improve the quality of care.

Appendix D summarizes the results of the survey, which was completed by 94 respondents, 79 percent of them patients and 21 percent family caregivers. Highlights include:

- The majority of patients (84.4 percent) were receiving infusion therapy for the administration of antibiotics.
- Thirty-one percent of respondents indicated that “some help is needed” and 27 percent reported that “constant help is needed” in caring for their central lines.
- Fifteen percent of respondents reported that they were either “somewhat confident” or “not confident at all” about covering their central lines when showering.

A Team Approach to Focusing on CLABSIs in the Home Care Setting

Individual hospitals and home care agencies use various approaches to reducing CLABSIs. But regardless of specific strategy, it is well known that reducing all hospital-acquired infections, including CLABSIs, requires a team effort involving staff from various disciplines in both the acute care hospital and home care settings. Presented below is an example of how one of the partner pairs in this initiative, Montefiore Health System and Montefiore Home Care, focused their CLABSI reduction efforts as an interdisciplinary team.

System Integration Aids Team Approach

Montefiore, home of the first hospital-based home care agency, is well positioned to improve outcomes while reducing costs because of its system integration, which includes the following components:

- Montefiore’s home care personnel are able to access the health system’s electronic medical record system.
- Physician/clinician interaction via e-mail is accomplished easily and seamlessly.
- A mutual goal of home care and acute care hospitals is to reduce hospital readmissions. Together, the health system and home care agency identified reduction of CLABSIs as a way to reduce preventable readmissions. They agreed, however, that there was limited information about whether CLABSIs were an issue in home care—which led to their collaboration, along with Northwell Health’s, with United Hospital Fund to evaluate that question.

Team Members and Process

- Montefiore’s Director of Infection Control spearheaded the efforts to evaluate CLABSIs in the home care setting and to improve communication between home care and the acute care hospital.
- Team members within the home care setting included the Director of Quality Management, the Patient Service Manager of Quality Management, and the Patient Service Manager of the Infusion Team.
- One unanticipated challenge at Montefiore Home Care was the 100 percent turnover of personnel working on the project. No member of the home health leadership team engaged at the outset of this effort was present in the later phases. Nevertheless, the work continued under the new home care leadership.
- Monthly teleconferences with all involved parties were invaluable in holding the team together and maintaining focus to complete the work.
- Senior leadership at the health system and the home health agency—starting at the Senior Vice President level and including the Executive Director—supported and sponsored the collaboration. CLABSI reduction across the continuum of care was a shared and strategic goal between the acute care hospital and home health agency.

Compiling Data for the Team

Two surveys were conducted by the team to obtain baseline home care data. First, infusion nurses and directors from the home health agency were surveyed to determine their competencies and to identify education needs related to central line maintenance and to patient/caregiver education (see “Assessment of Home Care Staff Perceptions...,” page 6). This was followed by a telephone survey of patients and their family or other caregivers to assess their knowledge and self-efficacy in performing the activities required to maintain a central line at home (see “Assessment of Patient and Family Caregiver Perceptions...,” page 7).

This input was critical as team members began their efforts to develop data collection tools and educational resources for the initiative.

Data Collection in the Home Care Setting

Collecting, Monitoring, and Reporting CLABSI Infection Data

Collecting and monitoring CLABSI data is more challenging in home care than in the acute care setting because there is no standardized, centralized system, like the National Healthcare Safety Network (NHSN), gathering and storing that data.²⁰ Typically, home care personnel manually collect information about the types of central lines and cases of patients developing CLABSIs.

²⁰ Centers for Disease Control and Prevention. National Healthcare Safety Network (NHSN): About NHSN. <http://www.cdc.gov/nhsn/about.html>

This section describes several tools that have been developed through this effort to help home care providers collect standardized data on the various types of central lines used in the home care setting, and to accurately collect denominator data (i.e., central line device days) for home care patients. Also described are effective and reliable methods for capturing communication between the home care and acute care settings when patients have developed suspected or confirmed CLABSIs.

Data Collection Tools

Monthly Review of Types of Central Lines

Appendix E offers a sample tool for determining, on a monthly basis, the types of central lines in use in the home care setting, and for identifying the types of lines most prone to infection.

Detailed Review of Patients with CLABSIs

Appendix F provides an example of a tool for gathering information on patient demographics, health conditions, and central line usage, to assess factors making patients more prone to CLABSIs in the home care setting. This tool is best used by reviewing all cases of infection as they occur during the month.

CLABSI Assessment Form for Home Care Patients

The sample tool in **Appendix G** helps infection specialists in the acute care setting assess potential factors that may have contributed to a suspected or confirmed CLABSI in a home care patient. When a potential or confirmed CLABSI is identified, home care staff should contact an infection preventionist in the acute care hospital setting; this form should be completed by the infection preventionist for all suspected or confirmed CLABSIs, and then returned to the appropriate home care agency to ensure coordination of care and communication about the patient between settings.

Denominators for Home Care Central Line Device Days Summary Form

Appendix H is an example of a tool to manually track total device days and patient days for central lines in the home care setting. This type of tool should be used by home care staff to count, on a daily basis, the total number of patients receiving home care services, and the total number of these patients with central lines. At the end of the month, the daily sums should be added to determine the total number of patient days and central line device days for that month. Tracking this information helps home care personnel monitor central line utilization.

Using these tools on a routine basis promotes ongoing communication and collaboration between the acute care hospital and home care settings. In cases of a suspected or confirmed CLABSI, prompt feedback and staff education should be given to address non-adherence to home care maintenance protocols. Regular staff competency assessments are also important to ensure that home care personnel have the necessary skills to care for central lines.

Methods to Promote Sustainability: Engaging Home Care and Acute Care Hospital Staff

With an ongoing goal of delivering high-quality care while also reducing costs, health care today is increasingly focusing on integrated delivery systems. Recognizing illness early in primary care settings and at the next level of care (e.g., long-term care facilities and the home care setting), beyond the acute care hospital setting, is an important tenet of this approach. While testing and implementing quality improvement interventions, and achieving some success, is often not difficult, what is more challenging is to hardwire quality improvement processes to sustain positive results.

Sustainability of CLABSI reduction efforts has been widely accomplished in the acute care hospital setting. But in an initiative involving multiple organizations and collaborations between the acute care hospital and home care settings, it can be more challenging, due to competing priorities, staff turnover, and the multitude of changes in the health care delivery system. The goal of this toolkit's last section is to assist home care agencies and hospitals in adopting shared strategies to sustain CLABSI reduction efforts.

Appendix I provides a comprehensive checklist for home care providers to use in gauging their progress, and includes tips on how to successfully hardwire their infection-reduction processes and sustain results. It is useful for the home care agency to designate a person to facilitate discussions with the home care team and identify whether implementation strategies have been accomplished.

Bibliography

- Ashton K and MH Oermann. May 2014. Patient education in home care: Strategies for success. *Home Healthcare Nurse* 32(5): 288-294.
- Baumgarten K, Y Hale, M Messionier, M McCabe, M Albright, and E Bergeron. Fall 2013. Bridging the gap: A collaborative to reduce peripherally inserted central catheter infections in the home care environment. *The Ochsner Journal* 13(3): 352-358.
- Centers for Disease Control and Prevention. March 4, 2011. Vital signs: Central line-associated bloodstream infections—United States 2001, 2008, and 2009. *MMWR* 60(08): 243-248. <http://www.cdc.gov/VitalSigns/pdf/2011-03-vitalsigns.pdf> [summary].
- Centers for Disease Control and Prevention. March 2015. *Healthcare Associated Infections: Progress*. <http://www.cdc.gov/hai/pdfs/stateplans/factsheets/us.pdf>
- Centers for Disease Control and Prevention. Frequently Asked Questions about Catheters. http://www.cdc.gov/HAI/bsi/catheter_faqs.html
- Centers for Disease Control and Prevention. National Healthcare Safety Network (NHSN): About NHSN. <http://www.cdc.gov/nhsn/about.html>
- Comprehensive Unit-Based Safety Program to Eliminate Health Care-Associated Infections. Toolkits and Resources. <http://www.onthecuspstophai.org/on-the-cuspstop-bsi/toolkits-and-resources/#clabsi>
- DeLegge MH, G Borak, and N Moore. November-December 2005. Central venous access in the home parenteral nutrition population—you PICC. *Journal of Parenteral and Enteral Nutrition* 29(6): 425-428.
- Gorski LA. April 2010. Central venous access device associated infections: Recommendations for best practice in home infusion therapy. *Home Healthcare Nurse* 28(4): 221-229.
- Greater New York Hospital Association and United Hospital Fund. 2012. *Central line-associated bloodstream infections (CLABSI) toolkit*. <http://www.gnyha.org/7980/Default.aspx> [please contact UHF for access]
- Kallen A and P Patel [for the Centers for Disease Control and Prevention]. February 2010. Central line-associated bloodstream infections (CLABSI) in non-intensive care unit (non-ICU) settings toolkit. http://www.cdc.gov/HAI/pdfs/toolkits/CLABSItoolkit_white020910_final.pdf
- Koll BS, TA Straub, HS Jalon, R Block, KS Heller, and RE Ruiz. December 2008. The CLABs collaborative: A regionwide effort to improve the quality of care in hospitals. *Joint Commission Journal on Quality and Patient Safety* 34(12): 713-723.

Marschall J, LA Mermel, M Fakih, et al. 2014. Strategies to prevent central line-associated bloodstream infections in acute care hospitals: 2014 update. *Infection Control and Hospital Epidemiology* 35(7): 753-771.

McGoldrick M. April 2009. Preventing central line-associated bloodstream infections and The Joint Commission's home care national patient safety goals. *Home Healthcare Nurse* 27(4): 220-228.

New York State Department of Health. September 2014. *Hospital-acquired infections, New York State 2013*.
https://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2013/docs/hospital_acquired_infection.pdf

O'Grady NP, M Alexander, LA Burns, et al. 2011. Guidelines for the prevention of intravascular catheter-related infections, 2011. *Clinical Infectious Diseases* 52(a): 1087-1099.

Rinke ML, DG Bundy, AM Milstone, et al. August 2013. Bringing central line-associated bloodstream infection prevention home: CLABSI definitions and prevention policies in home health care agencies. *Joint Commission Journal on Quality and Patient Safety* 39(8): 361-370.

Rinke ML, AR Chen, AM Milstone, et al. April 2015. Bringing central line-associated bloodstream infection prevention home: Catheter maintenance practices and beliefs of pediatric oncology patients and families. *Joint Commission Journal on Quality and Patient Safety* 41(4): 177-185.

Szeinbach SL, J Pauline, KF Villa, SR Commerford, A Collins, E Seoane-Vazquez. February 2015. Evaluating catheter complications and outcomes in patients receiving home parenteral nutrition. *Journal of Evaluation in Clinical Practice* 21(1): 153-159.

Van Winkle P, T Whiffen, and IL Liu. December 2008. Experience using peripherally inserted central venous catheters for outpatient parenteral antibiotic therapy in children at a community hospital. *Pediatric Infectious Disease Journal* 27(12):1069-1072.

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Home Care Staff Survey



[date]

Dear Colleagues,

On behalf of Montefiore Home Care and Northwell Health Home Care Network, we would like to invite you to participate in a survey we are conducting to assess current practices for central line maintenance in the home care setting. We are seeking responses from anyone directly involved in patient care in the home care setting, including directors, front line nurses, case managers, or anyone else responsible for caring for central lines in home care.

For many years, improvements have been put into place to reduce central line-associated bloodstream infections (CLABSIs) in the acute care hospital setting. However, CLABSIs have not been studied as frequently in the home care setting, yet providers across the continuum of care are involved in efforts to maintain central lines once patients transition from the hospital to home care. The results of this survey will be used to assess current practices with regard to approaches to maintain central lines in the home care setting. Your experiences are important to us, and your guidance will assist us in obtaining valuable information.

Please review the survey, which is included through the following link: <http://www.surveymonkey.com/s/ZXQGYVD>. It should take approximately 10 to 15 minutes to complete. Please forward this survey to relevant clinicians you work with who you feel would accurately provide responses to the questions.

Your participation in this survey is voluntary. Additionally, your responses will be anonymous, and you will not be identified personally. Please complete the survey by [date]. Thank you for your time and involvement in participating in this survey. If you have any questions or concerns about completing the survey please contact xxxxxxxxxxxxxx (xxxxxxxxxx) or xxxxxxxxxxxxxx (xxxxxxxxxx) at United Hospital Fund.

Sincerely,

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

Instructions

The goal of this survey is to assess current practices for central line maintenance in the home care setting. We are seeking responses from anyone involved directly in patient care, or anyone else responsible for caring for central lines in the home care setting.

Common acronyms:

CLABSI: Central Line-Associated Bloodstream Infection

IV: Intravenous

PICC: Peripherally Inserted Central Catheter

TPN: Total Parenteral Nutrition

Thank you for your participation.

General Information

1 | Please indicate which home care agency you are affiliated with:

- Montefiore Medical Center Home Care Agency
 - Northwell Health Home Care/Region Care Infusion
 - Contract Agency (Montefiore)—Avanti
 - Contract Agency (Montefiore)—Prompt Care
 - Contract Agency (Montefiore)—Corum Infusion
 - Contract Agency (Montefiore)—Trinity Home Care
 - Contract Agency (Montefiore)—Advanced Care
 - Other (please specify)
-

2 | What is your gender?

- Female
- Male

3 | Please select your current title from the following:

- Administrator
 - Manager/Supervisor
 - Case manager
 - Nursing educator
 - Field staff nurse
 - Quality manager
 - Other (please specify)
-

4 | Are you a registered nurse (RN)?

- Yes
- No

5 | What is your highest level of education? (select all that apply)

- Diploma
 - Associate's degree
 - Bachelor's degree
 - Master's degree
 - Other (please specify)
-

6 | What specialty certifications have you obtained? (select all that apply)

- Infection prevention
 - Critical care
 - PICC line insertion
 - Oncology
 - Infusion
 - Other (please specify)
-

7 | How many years of home care experience do you have?

- Less than 1 year
- 1 – 3 years
- 4 – 6 years
- 7 – 10 years
- More than 10 years

8 | How many years of experience do you have with home care infusion therapy?

- Less than 1 year
- 1 – 3 years
- 4 – 6 years
- 7 – 10 years
- More than 10 years
- Not applicable

Staff Orientation

9 | When you started your current position, were you given an orientation to the practice of infusion therapy?

- Yes
- No
- Don't know
- Not applicable

10 | If YES to Question 9, what topics did your orientation include? (select all that apply)

- Skills and/or knowledge self-assessment
 - Central line risk for infection
 - Central line dressing changes
 - Central line flush/change caps
 - Medication infusion
 - PICC line removal
 - Blood drawing from central line
 - Patient teaching of infusion therapy
 - Other (please specify)
-

11 | During the orientation process, was a competency evaluation performed for central line catheter care?

- Yes
- No
- Don't know
- Not applicable

12 | If YES to Question 11, how were you evaluated? (select all that apply)

- Field observation
 - Skills evaluation/simulation training
 - Paper/written evaluation
 - Other (please specify)
-

Ongoing Evaluation

13 | In your current position, is there an ongoing competency evaluation for the practice of infusion therapy?

- Yes
- No
- Not applicable

14 | If YES to Question 13, how are you evaluated? (select all that apply)

- Field observation
 - Skills evaluation/simulation training
 - Paper/written evaluation
 - Other (please specify)
-

15 | If YES to Question 13, how often is the competency evaluation performed?

- Annually
 - Quarterly
 - Every other year
 - Other (please specify)
-

16 | Have you received education about preventing CLABSIs in your current position?

- Yes
- No

17 | If YES to Question 16, how did you receive the education? (select all that apply)

- Orientation
 - Continuing education/in-services
 - Annual review
 - Skills evaluation/simulation training
 - Other (please specify)
-

Current Practices

18 | Do you use prepackaged dressing change kits?

- Yes
- No

19 | If YES to Question 18, please indicate which items are included in the prepackaged dressing change kits (select all that apply):

- Cap
 - Mask for health care provider
 - Mask for patient
 - Gown
 - Sterile gloves
 - Non-sterile gloves
 - Drape
 - Alcohol swabs/sticks
 - Betadine swabs/sticks
 - Chlorhexidine swabs/sticks
 - Steri-Strips
 - Gauze dressing
 - Extension tubing
 - Tincture of benzoine
 - Transparent dressing
 - Securement device
 - Other (please specify)
-

20 | Please indicate other items that are used, but are NOT INCLUDED in the dressing change kits (select all that apply):

- Cap
 - Mask for health care provider
 - Mask for patient
 - Gown
 - Sterile gloves
 - Non-sterile gloves
 - Drape
 - Alcohol swabs/sticks
 - Betadine swabs/sticks
 - Chlorhexidine swabs/sticks
 - Steri-Strips
 - Gauze dressing
 - Extension tubing
 - Tincture of benzoine
 - Transparent dressing
 - Securement device
 - Other (please specify)
-

21 | How often do you change dressings?

- Daily
 - Once per week
 - Three times per week
 - As needed
 - Not applicable
 - Other (please specify)
-

22 | Do you have a protocol for dressing changes for each type of line?

- Yes
- No

23 | When your patients shower, are they instructed to cover the central line site with a waterproof dressing?

- Yes
- No

24 | When do you perform hand hygiene? (select all that apply)

- Before central line maintenance
- During central line maintenance
- Never

25 | How long do you typically perform hand hygiene when using soap and water?

- Less than 15 seconds
- 15 seconds
- Longer than 15 seconds

26 | What is your practice for using an alcohol-based hand gel?

- Rub for 15 seconds
- Rub until dry

27 | Do you wear a mask during dressing changes?

- Never
- Seldom
- Often/always

28 | When do you use sterile gloves? (select all that apply)

- During old dressing removal
- When putting on the dressing
- Only use clean gloves
- Do not use gloves

29 | What do you use for local skin antisepsis during dressing changes? (select all that apply)

- Chlorhexidine gluconate
 - Betadine/alcohol
 - Other (please specify)
-

30 | Do you check the catheter insertion point for signs of a local infection?

- Never
- Seldom
- Often/always

31 | Do you check the patency of the catheter prior to infusion?

- Never
- Seldom
- Often/always

32 | When flushing the lumen(s), do you check for blood return?

- Never
- Seldom
- Often/always

33 | What do you do if there is no blood return? (select all that apply)

- Do not infuse
 - Obtain physician order for antithrombolytic agent
 - Place peripheral IV until patency is restored
 - Other (please specify)
-

34 | If you DO NOT have blood return, do you report this?

- Never
- Seldom
- Often/always

35 | Do you flush the lumen after giving fluids?

- Never
- Seldom
- Often/always

36 | How are central lines typically secured?

- Sutures
 - Steri-Strips
 - Securement device [Brand A]
 - Securement device [Brand B]
 - Don't use any securement device
 - Other securement device (please specify)
-

37 | Do you measure the external length of the central line to assess for possible line migration?

- Never
- Seldom
- At every visit

Potential Patient Outcomes

38 | To the best of your knowledge, how often do you think patients acquire CLABSIs in the home care setting?

- Never
 - Seldom
 - Often
 - Other (please specify)
-

39 | Do you think you have any impact on whether or not a patient acquires a CLABSI?

- Yes
 - No
 - Other (please specify)
-

40 | What obstacles are encountered in the home that could impact the delivery of aseptic protocols by patients and families? (select all that apply)

- Patient/family unwillingness to perform tasks
 - Physical difficulty performing tasks
 - Barriers in home setting (e.g., insects, rodents, lack of sink, lack of running water, etc.)
 - Lack of knowledge/teaching
 - None
 - Other (please specify)
-

41 | Please describe any unusual stories or unexpected circumstances you have encountered in the home care setting:

Summary of Home Care Staff Survey Results

The data presented below represent the aggregated answers of 48 total respondents, including 34 from the home care staff of Northwell Health Home Care Network and 14 from Montefiore Medical Center Home Care Agency.

General Information

	Total (n=48)
Gender	83% female 17% male
Percentage of RN respondents	100%
Percentage with >10 years of home care experience	60%
Percentage with >10 years of experience with home care infusion therapy	44%

Current title

	Total (n=48)
Field staff nurse	65%
Manager/Supervisor	12%
Administrator	4%
Case manager	2%
Other	17%

Highest level of education

	Total (n=48)
Bachelor's degree	63%
Associate's degree	25%
Master's degree	8%
Diploma	6%
Other	2%

Certification

	Total (n=48)
Infusion	44%
“Other” specialty (e.g., midline insertion, gerontology, pediatric nursing)	33%
PICC line insertion	31%
Infection prevention	23%
Critical care	19%
Oncology	19%

Staff Orientation

Upon starting their current positions, 92% of respondents (97% of Northwell Health and 77% of Montefiore respondents) were given orientation on the practice of infusion therapy.

Most common orientation topics

	Total (n=44)
Skills and/or knowledge self- assessment	96%
Central line dressing changes	93%
Medication infusion	91%
Patient teaching of infusion therapy	91%
Central line risk for infection	89%
Central line flush/change caps	89%
Blood drawing from central line	84%
PICC line removal	80%

During the orientation process, 92% of respondents (94% of Northwell Health and 85% of Montefiore respondents) were evaluated for competency in central line catheter care.

Most common evaluation methods during orientation

Method of evaluation	Total (n=44)
Field observation	91%
Skills evaluation/ simulation training	77%
Paper or written evaluation	52%

Ongoing Evaluation and Education

Ninety-eight percent of respondents (97% of Northwell Health and 100% of Montefiore respondents) reported ongoing evaluation of their competence in infusion therapy practices.

Most respondents (79% total, including 71% of Northwell Health and 100% of Montefiore respondents) reported evaluations on an annual basis.

Most common ongoing evaluation methods

	Total (n=46)
Field observation	98%
Skills evaluation/ simulation training	76%
Paper or written evaluation	46%

In their current positions, 94% of respondents received education about preventing CLABSIs, including 91% of Northwell Health and 100% of Montefiore respondents.

Most common education methods

	Total (n=44)
Continuing education/ in-services	89%
Orientation	52%
Annual review	43%
Skills evaluation/ simulation training	41%
Other	7%

Current Practices

Dressing changes

100% of respondents use pre-packaged dressing change kits.

Most common items in dressing change kits

	Total (n=47)
Sterile gloves	100%
Chlorhexidine swabs/sticks	100%
Mask for health care provider	98%
Drape	94%
Transparent dressing	94%
Gauze dressing	79%
Alcohol swabs/sticks	70%

Items used by staff but not provided in dressing change kits

	Total (n=47)
Extension tubing	83%
Securement device	77%
Non-sterile gloves	72%
Cap	53%

Most commonly used antiseptics for local skin antisepsis

	Total (n=47)
Chlorhexidine gluconate	96%
Betadine/alcohol	40%
Other	2%

- 94% (97% of Northwell Health and 83% of Montefiore respondents) have a protocol for dressing changes for each type of line
- 100% instruct patients to cover the central line site with a waterproof dressing when showering
- 100% often or always wear a mask during dressing changes
- 100% wear sterile gloves when putting on a new dressing

Hand hygiene performed

	Total (n=47)
Before central line maintenance	100%
During central line maintenance	74%
Never	0%

Duration of hand hygiene when using *soap and water*

	Total (n=47)
Longer than 15 seconds	68%
15 seconds	32%
Less than 15 seconds	0%

Duration of hand hygiene when using an *alcohol-based hand gel*

	Total (n=47)
Rub until dry	72%
15 seconds	28%

Infusion Practices

- 100% of respondents often or always check the catheter insertion point for signs of a local infection
- 98% (100% of Northwell Health and 92% of Montefiore respondents) often or always check the patency of the catheter prior to infusion
- 100% often or always flush the lumen after giving fluids
- When flushing the lumen, 98% (100% of Northwell Health and 92% of Montefiore respondents) often or always check for blood return
- 96% (100% of Northwell Health and 85% of Montefiore respondents) often or always report cases when there is no blood return

Respondents' action when there is no blood return

	Total (n=47)
Obtain physician order for antithrombotic agent	68%
Place peripheral IV until patency is restored	62%
Do not infuse	57%
Other	34%

Devices used to secure central lines

	Total (n=47)
Securement device [Brand A]	77%
Sutures	66%
Securement device [Brand B]	43%
Steri-Strips	26%
Other	9%

To assess for possible line migration:

- 94% (91% of Northwell Health and 100% of Montefiore respondents) measure the external length of the central line at every visit
- 6% (9% of Northwell Health and 0% of Montefiore respondents) seldom measure the external length of the central line

Potential Patient Outcomes

100% of respondents feel they have an impact on whether or not a patient acquires a CLABSI.

Staff perceptions of how often patients acquire CLABSIs in the home care setting

	Total (n=46)
Seldom	83%
Often	6%
Other	9%
Never	2%

Most common obstacles to patients/families maintaining aseptic protocols

	Total (n=46)
Patient/family unwilling to perform tasks	80%
Barriers in the home (e.g., insects, rodents, lack of running water)	78%
Lack of knowledge/teaching	78%
Physical difficulty performing tasks	72%
Other	11%

Unusual Stories or Circumstances in the Home Care Setting: Central Themes

Observations:

- Unclean, cluttered, or dirty home environment
- Unsanitary conditions related to pets (e.g., pets licking insertion site or jumping onto sterile field)
- Patients unnecessarily changing dressings or accidentally removing equipment
- Hoarding

Direct statements from home health care providers:

“Patient refused visit in home...requesting visit in the garage where conditions were unsuitable with regard to unclean environment and hoarding, animals and insects.”

“Patient cut the PICC line when trying to cut the tape holding catheter extension.”

“Hoarders wanted to be seen in tent due to being unable to get in home. Patient with dementia still driving as family just thought mom was forgetful but didn’t remember what she had for breakfast, and she lived alone.”

“Patient removed the blue end-cap and accidentally took the extension set off.”

“Cat jumped onto my sterile field as I was about to clean the PICC site. Threw everything in the trash and started again. Cat was put outside.”

Home Care Patient and Caregiver Survey

Date survey completed: _____

Survey completed by: Phone: _____ Paper: _____

Instructions to Patients and Caregivers: Please answer these questions to the best of your ability. Our goal is to gather information to improve the care we provide to you. Your response to this survey is important to us. Thank you.

Patient Information

1 | What agency do you receive home care services from?

- Montefiore Medical Care Home Care Agency
- Northwell Health Home Care Network

2 | Are you currently receiving home care services for infusion therapy?

Yes _____ No _____

3 | When did services for infusion therapy begin? _____

4 | What is the primary reason for infusion therapy?

- Antibiotics
- Fluid/hydration
- Total parenteral nutrition (TPN)
- Continuous infusion (usually medication infusion)
- Other (please specify) _____

5 | Who is completing this survey?

- Patient
- Family caregiver
- Privately hired caregiver/aide
- Other (please describe) _____

6 | What is the age of the patient?

- 18 – 29 years
- 30 – 39 years
- 40 – 49 years
- 50 – 59 years
- 60 – 69 years
- 70 – 79 years
- 80 years or above

7 | How many people live in the patient’s household?

- 1
- 2
- 3 or more

8 | What is the patient’s primary insurance?

- Medicare
- Medicaid
- Private commercial
- Self-pay
- Other (please specify) _____

**9 | Does the patient require help with any of the following daily tasks?
(check all appropriate responses)**

Tasks	No help needed	Some help needed	Constant help needed
Caring for a central line			
Taking medications by mouth			
Walking			
Getting out of bed			
Getting up from a sitting or lying position			
Toileting			
Bathing			
Eating			

10 | Who is the primary person responsible for the care of the patient, including the care of the central line (if the person is not the patient)? _____

11 | Does the primary person who cares for the central line live with the patient (if the person is not the patient)?

Yes _____ No _____

12 | When home care services began, did you receive any education about your central line and its care?

Yes _____ No _____

13 | If yes, who provided you with the education?

- Physician
- Hospital nurse
- Home care nurse
- Infusion company
- Other (please specify) _____

**14 | How confident are you in performing the following activities?
(check all appropriate responses)**

Tasks	Not confident at all	Somewhat confident	Very confident	Do not know	Not applicable
Preparing medications prior to infusion					
Giving intravenous (IV) medications					
Inspecting the insertion site					
Flushing the central line					
Covering the central line when taking a shower					
Washing hands appropriately					
Using alcohol to wipe the cap before entering the line					
Understanding the reasons for infusion at home					
Understanding complications that require you to contact home care staff					

15 | Other comments or suggestions for improvement (related to your infusion therapy):

Demographics of Primary Person Caring for the Central Line

(Optional: complete only if the person caring for the central line is not the patient)

16 | What is your gender?

- Male
- Female

17 | What is your age?

- 18 – 29 years
- 30 – 39 years
- 40 – 49 years
- 50 – 59 years
- 60 – 69 years
- 70 – 79 years
- 80 years or above

18 | What is your highest level of education?

- High school diploma or GED (General Educational Development/high school equivalency)
- College degree
- None of the above

19 | What is your primary language?

- English
- Spanish
- Chinese
- Russian
- Korean
- Italian
- Haitian Creole
- Bengali
- Farsi dialect
- Other (please specify) _____

20 | What is your ethnicity?

- White
- African American
- Hispanic or Latino
- American Indian
- Asian
- Native Hawaiian or Pacific Islander
- Other (please describe) _____
- Do not want to disclose

Summary of Home Care Patient and Caregiver Survey Results

The data presented below represent the aggregated answers of 94 patient or caregiver respondents, including 51 who received services from Northwell Health Home Care Network and 43 who received services from Montefiore Medical Center Home Care Agency.

Patient Information

Percentage of respondents receiving home care services for infusion therapy when surveyed

	Total (n=91)	
	Yes	No
Percentage of respondents	44% (n=40)	56% (n=51)

Primary reasons for patient's infusion therapy

	Total (n=89)
Antibiotics	85.4% (n=76)
Continuous infusion (usually medication infusion)	9% (n=8)
Fluid/hydration	3.4% (n=3)
TPN	2.2% (n=2)

Person completing the survey

	Total (n=93)
Patient	78.5% (n=73)
Family caregiver	21.5% (n=20)
Privately hired caregiver/aide	0%

Range in age of patient population

	Total (n=92)
18-29 years	7% (n=7)
30-39 years	9% (n=8)
40-49 years	18% (n=17)
50-59 years	21% (n=19)
60-69 years	27% (n=25)
70-79 years	8% (n=8)
80 years or above	2% (n=2)
Other	8% (n=7)

Number of persons reported living in the patient's household

	Total (n=94)
1	9.6% (n=9)
2	42.6% (n=40)
3 or more	47.9% (n=45)

Patient's primary insurance

	Total (n=87)
Medicare	18% (n=16)
Medicaid	22% (n=19)
Private commercial	39% (n=34)
Self-pay	1% (n=1)
Other	20% (n=17)

Patients' need for assistance with daily tasks

	No Help Needed	Some Help Needed	Needs Constant Help
Caring for a central line	42% (n=39)	31% (n=29)	27% (n=25)
Taking medications by mouth	81% (n=75)	12% (n=11)	8% (n=7)
Walking	64% (n=58)	26% (n=24)	10% (n=9)
Getting out of bed	73% (n=68)	17% (n=16)	10% (n=9)
Getting up from a sitting or lying position	75% (n=70)	15% (n=14)	10% (n=9)
Toileting	79% (n=73)	12% (n=11)	10% (n=9)
Bathing	58% (n=53)	32% (n=29)	11% (n=0)
Eating	91% (n=85)	4% (n=4)	4% (n=4)
Total number of responses (741)	521	138	82

Among the **741 total responses** to the above questions regarding patients' need for assistance with daily tasks:

- **70%** of responses indicate that **no help is needed** with daily tasks
- **19%** of responses indicate that **some help is needed** with daily tasks
- **11%** of responses indicate that **constant help is needed** with daily tasks

Percentage of primary caretakers of the central line who live with the patient

	Total (n=59)
Yes	78% (n=46)
No	22% (n=13)

Aggregate summary of the most frequently reported person responsible for the care of the patient (open-ended, free-text responses):

- Spouse **25%** (n=18)
- Patient **24%** (n=17)
- Child **14%** (n=10)
- Parent **14%** (n=10)
- Agency nurse **11%** (n=8)

Percentage of respondents who received education about the patient's central line and its care

	Total (n=92)
Yes	98% (n=90)
No	2% (n=2)

Respondents reported receiving education from the following sources*

	Total (n=93)
Home care nurse	91% (n=85)
Hospital nurse	17% (n=16)
Infusion company	12% (n=11)
Physician	4% (n=2)
Other	0%

* Percentages add up to more than 100% because education received from multiple sources

Respondents' confidence levels with performing central line maintenance activities

(n=94)	Not confident at all	Somewhat confident	Very confident	Do not know	Not applicable
Preparing medications prior to infusion	2% (n=2)	7% (n=7)	79% (n=74)	0%	12% (n=11)
Giving IV medications	2% (n=2)	7% (n=7)	81% (n=76)	0%	10% (n=9)
Inspecting the insertion site	2% (n=2)	12% (n=11)	79% (n=73)	1% (n=1)	7% (n=6)
Flushing the central line	2% (n=2)	6% (n=6)	84% (n=79)	0%	7% (n=7)
Covering the central line when taking a shower	1% (n=1)	14% (n=13)	75% (n=70)	2% (n=2)	9% (n=8)
Washing hands appropriately	1% (n=1)	4% (n=4)	91% (n=84)	0%	1% (n=1)
Using alcohol to wipe the cap before entering the line	2% (n=2)	2% (n=2)	88% (n=83)	0%	7% (n=7)
Understanding the reasons for infusion at home	1% (n=1)	1% (n=1)	91% (n=85)	2% (n=2)	4% (n=4)
Understanding complications that require you to contact home care staff	4% (n=4)	4% (n=4)	88% (n=81)	2% (n=2)	1% (n=1)

Demographics of Primary Person Caring for the Central Line

This section of the survey was optional, and was completed only if the person caring for the central line was not the patient

Gender of primary caretaker of the central line

	Total (n=64)
Male	41% (n=26)
Female	59% (n=38)

Age of primary caretaker

	Total (n=63)
18-29 years	6% (n=4)
30-39 years	13% (n=8)
40-49 years	29% (n=18)
50-59 years	22% (n=14)
60-69 years	22% (n=14)
70-79 years	6% (n=4)
80 years or above	2% (n=1)

Education level of primary caretaker

	Total (n=64)
High school diploma or GED	63% (n=40)
College degree	28% (n=18)
None of the above	9% (n=6)

Main language of primary caretaker

	Total (n=63)
English	86% (n=54)
Spanish	9% (n=6)
Chinese	0%
Russian	0%
Korean	0%
Italian	0%
Haitian Creole	2% (n=1)
Bengali	0%
Farsi dialect	0%
Other	3% (n=2)

Ethnicity of primary caretaker

	Total (n=63)
White	41.3% (n=26)
African American	16% (n=10)
Hispanic or Latino	25.4% (n=16)
American Indian	0%
Asian	6.3% (n=4)
Native Hawaiian or Pacific Islander	0%
Other	11% (n=7)
Do not want to disclose	0%

Comments or Suggestions for Improvement

“Everything was fine – they taught me all about how to take care of the line.”

“Patients should be given more than one sleeve – it should be standard procedure because the patient is only given one.”

“The nurse changes the medicine bag. I have home care’s number to call if I have a problem. Nurse is very good.”

“Appreciated teaching and patience with wife”.

“My infusion nurses were wonderful. I understand everything.”

“Making sure all nurses do therapy and dressing changes the same way, including not drawing blood from PICC line. Need to improve communication from office personnel.”

“Very satisfied with services, particularly with the caring and competence of the nurses I worked with.”

Monthly Review of Types of Central Lines

INSTRUCTIONS FOR HOME CARE STAFF

1. This form should be completed by the home care agency on a monthly basis. Please include information about the total number of central lines, by type, and central line-associated bloodstream infections for each month.
2. The total number of central line days should include each day the patient had a line in place for a given month.

Goals:

- To assess the types of central lines in the home care setting.
- To gain an assessment of the types of lines most prone to infection in the home care setting.

Month	Total # of central line days	Total # of patients	# of patients with one or more central line(s)	PICC lines		Tunneled hemodialysis caths		Mediport		Broviac/Hickman		Total # Infections	For blood cultures	
				Total # of lines	Total device days	Total # of lines	Total device days	Total # of lines	Total device days	Total # of lines	Total device days		Total # positive blood cultures	Total # probable CLABSI cases*
Jan														
Feb														
Mar														
Apr														
May														
Jun														
July														
Aug														
Sept														
Oct														
Nov														
Dec														
TOTAL														

*Probable CLABSI Case Definition: Positive fever, transferred to the hospital, central line changed, unable to verify blood culture results OR the fever subsided with line change and no other source of fever identified.

Hospital Assessment of Home Care Patients with Probable CLABSI

INSTRUCTIONS FOR HOME CARE STAFF

To use this form please initiate contact with an infection preventionist in the acute care hospital setting. The infection preventionist should complete the form for all suspected and confirmed CLABSI and then return the completed form to the appropriate home care agency to improve the coordination of care between settings.

Date initiated: _____ Initiated By: _____

FACILITY NAME: _____

PATIENT'S NAME: _____ MRN#: _____

DATE OF HOME CARE ADMISSION: ____ / ____ / ____ DATE OF TRANSFER TO HOSPITAL: ____ / ____ / ____

EXPIRATION: ____ / ____ / ____

PRIMARY DIAGNOSIS: _____ CO-MORBIDITIES: _____

DATE(S) OF POSITIVE BLOOD CULTURE: ____ / ____ / ____ ; ____ / ____ / ____

of positive bottles: 1 2 More (enter #): ____ (circle the appropriate number)

Date catheter tip sent to lab: ____ / ____ / ____ RESULT: () Positive () Negative

Which bacteria identified: _____

LOCATION LINE WAS INITIALLY PLACED: () Emergency Dept. () Interventional Radiology () ICU/Non-ICU () Bedside

DATE & TIME LINE PLACED: ____ / ____ / ____ Time: ____ : ____ am/pm

Type of line placement: () Mediport () Broviac () Hickman () PICC () Hemodialysis

Site of line placement: () Upper extremity () Lower extremity () Hemodialysis catheter site

Number of lumens: () Single () Double () Triple

Number of lumens used: _____

Type of catheter: () Antimicrobial-impregnated () Antithrombolytic () Special catheter used

	YES	NO	NOT ATTAINABLE	COMMENTS
1. Sonography used to guide line placement?	()	()	()	()
2. Antimicrobial dressing utilized?	()	()	()	()
3. Dressing dry & intact, changed weekly	()	()	()	()
4. Chlorhexidine used for site care	()	()	()	()
5. Entry site assessed: Any signs/symptoms of infection?	()	()	()	If yes, describe:

Recommendations following the confirmed CLABSI assessment

REASON FOR PICC: _____

COMMENTS: _____

Signatures of team reviewing the case

Date Completed: ____ / ____ / ____

Denominators for Home Care Central Line Device Days

Month:

Year:

Date	Number of patients admitted to home care with central line in place	Number of patients with 1 or more central lines
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
Totals	Patient days	Central line days

Checklist: Gauging Progress Toward Sustainability

Topic	Suggested Actions	Complete
Getting Started: Assessment and Planning for Sustainability	Gather baseline CLABSI data in patients receiving care in the home care setting. This includes patients who have been transferred to an acute care setting because of changes in their health status.	
	Gather evidence-based risk reduction strategies to reduce CLABSIs in home care and/or other health care settings.	
	Build the CLABSI reduction business case that is linked to a cost benefit to the organization. Outline a Return on Investment (ROI) plan for the patient and the organization.	
	Align the CLABSI initiative with other organizational goals, e.g., patient satisfaction, preventable readmission reduction.	
	Gain leadership support for the CLABSI initiative. Leadership buy-in includes clinical and non-clinical leaders.	
	Define accountability of CLABSI initiative oversight by identifying clinical champions. Initiative leadership should include the medical and nursing leadership that has influence on how care is delivered.	
	Assess the current quality improvement work being performed and reallocate resources, if necessary, to support the CLABSI initiative.	
	Develop a timeline for milestones for the CLABSI initiative. This should have defined dates for rapid-cycle change.	
	Develop relationships with those who supply products within the home care setting; attempt to standardize supplies and limit to those agreed upon by the clinical staff, i.e., standardize the type of PICC placed within the home care setting.	
	Identify items needed for a central line dressing change and include within one single dressing change kit for the home care nurse or the patient to use.	
Develop an assessment tool for the home care nurse to use during the first home visit. The results of the assessment should identify needs related to this case, e.g., noting no running water within the home prompts the need to bring alternative hand hygiene products.		
Communication Strategies	Develop and approve evidence-based central line policies and procedures with clinical staff and providers of care.	
	Develop relationships between transferring facilities' infection preventionists; inform them of the CLABSI reduction initiative.	

Topic	Suggested Actions	Complete
	Identify best ways to communicate about confirmed or probable CLABSIs between home care and acute care facilities, to improve care across the continuum.	
	Establish a process for reporting changes in a patient’s health status with care provider or receiving facility to identify CLABSI.	
Staff Education and Training	Develop an education program that can paint a picture of future success using best practices and evidence-based strategies.	
	Provide standardized education on central lines for care providers upon hire or when assigned the care task.	
	Outline a competency assessment tool and assess competency prior to delivering central line care, on an ongoing basis.	
Staff and Team Engagement	Identify a team of leadership and health care providers to discuss current processes, outline process changes based on the evidence, and adopt new ways to work to improve processes and outcomes.	
	Engage participation of CLABSI champions to align the initiative with organizational strategic goals.	
	Outline current processes, eliminate process steps that are not beneficial to the process, and add value-added process steps. Steps should be easy to duplicate over and over again.	
	Assess how care is delivered and factor out error. Redesign how care is delivered to increase adherence to evidence-based procedures.	
	Engage patient and family caregivers as part of the care team, and provide them with effective strategies so they understand how to better care for their central lines.	
Implement Safe and Reliable Patient Care Processes	Launch the CLABSI initiative and consistent communication to ensure a high level of importance. Communication to leadership should include the benefit of change to improve CLABSIs and reasons why focus on CLABSIs in the home care setting is important. Depending on the size of the organization, test the improvements in an area that is likely to achieve success (small test of change), then spread.	
	Establish a process for follow-up on patients who were transferred to an acute care setting with potential signs of infection. When possible, develop a process for the acute care setting to report CLABSI cases to the transferring home care agency.	
	Conduct ongoing Plan-Do-Study-Act (PDSA) cycles of improvement.	

Topic	Suggested Actions	Complete
	If your organization uses performance improvement methodologies such as Lean or Six Sigma, consider implementing these tools to identify value-added, and factor out non-value-added, steps to redesign processes.	
	When possible integrate desired changes into the workflow.	
Data Collection Processes	Define a matrix (numerator/denominator) to measure improvements and frequency for CLABSI reporting.	
	Standardize assessment of patients' health status and changes in their status to identify infections related to a central line.	
Assessment and Feedback	Monitor CLABSIs and validate accuracy of the data.	
	Provide ongoing feedback of CLABSI results in internal quality forums and to staff to increase and maintain perceived value about positive outcome of the initiative.	
	Engage ongoing leadership response to results and work with leadership to communicate results to health care providers, e.g., through newsletters, recognition ceremonies, awards, etc.	
Hardwire the Interventions to Sustain Success	Continually analyze data and implement improvements to effect change and feed these data back to staff.	
	Create goals to work toward "a vision of success." Identify annual goal and stretch goal.	
	Align with financial incentive structures for leadership.	
	Develop a core group of care providers to care for central line and assign to patients when accepted into the home care setting.	
	Assess each infection related to a central line with the care provider to identify opportunities for improvement and implement change when identified.	
	Include and actively engage patients and family caregivers as part of the solution to reduce the CLABSI risk.	