Implementation of a Visual assessment Tool to Ensure that central Venous Access Devices Care is Delivered and Documented

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Implementation of a Visual Assessment Tool to Ensure that Central Venous Access Devices Care is Delivered and Documented

Diana Paul

A Dissertation submitted in part fulfilment of the degree of MSc Healthcare Management, Institute of Leadership, Royal College of Surgeons in Ireland

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**Abbreviations**

CRBSI - Catheter related blood stream infection

CVAD - Central Venous Access Device

CVC - Central Venous Cannula

DOH - Department of Health

HCAI - Healthcare-associated infection

HSE - Health Service Executive

NMBI - Nursing and Midwifery Board of Ireland

OD - Organisational development

PVC - Peripheral venous cannulas

PICC - Peripherally inserted central catheters

SARI - Strategy for the Control of Antimicrobial Resistance

TPN - Total parenteral nutrition

HCAI - Healthcare-associated infection
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Abstract

Aim: The core aim of this project is to implement a visual assessment tool to ensure that all the CVADs on the patients are checked on every shift, adequate care is provided and proper documentation is done post care delivery. Rationale: All CVADs are a potential source of infections. The microbes that colonize catheter hubs and the skin surrounding the insertion site are the source of most catheter-related bloodstream infections which could result in further complications. In order to prevent catheter-related bloodstream infection, Strategy for the Control of Antimicrobial Resistance in Ireland was published by Health Protection Surveillance Centre which includes implementation of tools like care bundles and visual assessment tools. Furthermore, the absence of a valid visual assessment tool leads to less consistency of documentation on CVAD care provided. Change Process: The HSE Change Model was used to assist in planning and implementing the change processes. Evaluation: The informal education sessions were evaluated using Kirkpatrick’s (1959) Evaluation Model. The overall initiative was evaluated by auditing clinical records pre and post implementation of the tool. Results & Conclusion: The results showed a 54% improvement in adherence to documentation standards, which shows that the care was carried out more appropriately than before.
Chapter 1

1.1: Introduction

Central venous access devices (CVAD’s) are an essential part of modern health care. Long-term central venous access devices are necessary for the management of chronically ill patients as they minimise routine venepuncture and cannulation (Scales 2008). Central line associated infection is a topic of national importance and is the most common health care-associated infection worldwide.

As a part of this project the change agent is proposing to introduce a visual assessment tool to check all the central venous access on the patients in the ward. This tool will ensure that all nurse who cares for, manage and maintain CVADs optimises efficient and safe care. This will make sure that the lines are checked every shift, identify any infection early and can be treated accordingly. It will also help the nurses to encourage best practice. The tool will support the standardisation of care by healthcare professionals who are caring for and managing CVADs. Use of the tool will help in the maintenance and management of CVADs, minimise the risk of infection associated with the care, management of the long-term use of CVADs and support standardised documentation practices. The visual assessment tool will be accessible on the hospital intranet along with the CVAD care plans and will have to be printed out by the nurses on patient’s admission to the ward. The tool will be attached to the rest of the care plans and nurses’ records. Nurses will check the CVAD of each patient and will have to fill the assessment tool on a daily basis. This will ensure that the CVADs are checked, and the care is maintained according to the hospital policy. It will also maintain good communication between the medical staffs involved in the care (NMBI 2014).
The title of this paper is “Implementation of a Visual Assessment Tool to ensure that Central Venous Access Devices Care is delivered and documented”. The change project was commenced in October 2015 with the completion date of 30th March 2016. Within Chapter one, the organisational context, rationale for the proposed change, the role of the student in the project and the need for ethical approval are described. The overall aim and objectives are articulated.

1.2: Organisational Context

The organization is an academic teaching hospital with a bed capacity of 950 beds. The change is to be implemented in a 29 bedded oncology ward. The complexity, fragmentation and interdependence of the organization should be clearly understood before planning a change. According to Lles and Sutherland (2001), there are seven aspects of an organization that needs to harmonize each other to call the organization as 'organized.' Strengths and weaknesses of the organization can be identified by considering the connections between these seven ‘S’ using 7-S Model. The model highlights that the change made in one ‘S’ will have an impact on others. Please see Appendix 1 for the organizational analysis using 7 ‘S’ model.

The majority of the patients admitted to the unit are on long-term chemotherapy or on artificial parental feeding where CVADs are imperative. There are six to seven nurses on each shift and are responsible for the CVAD care and management along with the other nursing duties. Implementation of the checklist will aid the nurses to observe the CVAD on a regular basis. At present this is only being documented in the nurses’ notes by which there are increased chances of missing the dressing dates, change needle-free devices; check the line patency and the condition of the CVAD site.
1.3: Rationale for selecting the project

Although CVADs enable the administration of life-supporting medications and therapies, the presence of these catheters places patients at risk of catheter-related bloodstream infections or central line associated bacteraemia. All CVADs’ are a potential source of infections. The oncology patients are on long-term treatment; therefore, they will have a central line inserted for an extended period. The microbes that colonize catheter hubs and the skin surrounding the insertion site are the source of most catheter-related bloodstream infections which could result in further complications. Therefore, successful preventive strategies must reduce colonization of the insertion site and hubs or minimize microbial spread outside the lumen from the skin or intraluminal from the hubs toward the catheter tip (Mermel 2000). Cytotoxic chemotherapy and resulting neutropenia create a high risk of infectious morbidity and mortality in cancer patients. In order to prevent catheter-related bloodstream infection, the Strategy for the Control of Antimicrobial Resistance in Ireland (SARI) was published by Health Protection Surveillance Centre in 2009 which includes implementation of tools like care bundles and checklist. Effective and consistent documentation is an integral part of nursing duties and it reflects the standard of professional practice (NMBI 2014). The visual assessment tool will enable the nurses to check the CVAD site on a regular basis thereby prevent any complications like infection. It will only help the nurses to document the CVAD care provided in a consistent manner.

1.4: Ethical Considerations

Even though service users or staffs will not be identified during data collection and no identifiable patient data were gathered the data from nursing records were collected and included in the study. As per the NMBI (2014) guidelines regarding the
use of records in research, they should have the same ethical considerations as any other type of research. Therefore, a detailed proposal for the project was submitted to the Ethical Committee and ethical approval was granted. The Research Access Committee of the institution was approached and permission to carry out the project was obtained. An application was sent to Risk and Legal office in the institution and permission was granted to access the clinical records.

1.5 Aims and Objectives

1.5.1 Aim
The core aim of this project is to implement a visual assessment tool to ensure that all the CVADs on the patients are checked on every shift, adequate care is provided and proper documentation is done post care delivery.

1.5.2 Objectives
• Conduct an audit at the beginning of December 2015 and finish by the 15th January 2016 on a randomly selected sample of clinical records.

• To conduct informal educational sessions for 27 nurses working in a particular oncology unit how to use the visual assessment tool that is to be implemented and the importance of using it by 20th of January 2016.

• By 28th of February observe that the nurses will carry out the dressings, care and flushing of a CVAD when not in use and changing of a needle-free device according to hospital policy.

• By 10th March to observe that the nurses are using the visual assessment tool after providing CVAD care on a daily basis.

• Evaluate the effectiveness of the proposed change using audit post introduction of the tool by 30th of March.
1.6 Role of the Student in the Organization and the Project

The change agent is one of the senior nurses working in an oncology ward. Within this job title the change agent works as tissue viability link nurse and take part in audits as well. There are 3 Clinical Nurse Managers and 24 nurses working in the unit. The role of the change agent is to introduce the visual assessment tool within the area of practice and to evaluate the effectiveness of the implemented change before and after the introduction of the tool. The change agent is in agreement with the Central Venous Access Devices subgroup in the institution that education of the Nurses working in the unit will be carried out before implementing the visual assessment tool as the tool will be included along with a set of care plans which the subgroup will be introducing. The change process should be designed and planned that it will minimize the expected negative impacts on people who are involved in change (HSE 2008). A clinical audit will be performed before and after the implementation of the visual assessment tool to evaluate the change. It will help to assess the clinical practice against set standards. According to Dixon (2007), the clinical audit is a qualitative improvement process that helps in the improvement of patient care and outcome through a systematic review of care against set standards and implementation of changes in practice as needed. Clinical audit shows that the care provided are consistent with the evidence of best practice. The change agent will have to conduct few informal educational sessions to make the nurses aware of the proposed change and will need to observe the outcome of the change. Kirkpatrick’s evaluation model will be used to evaluate the educational sessions and to understand how participants react to the education session. The change agent is responsible for the planning, implementation and evaluation of the proposed change.
1.7 Conclusion

Although CVADs enable the administration of life-supporting medications and therapies, the presence of these catheters put the patients at risk of catheter-related bloodstream infections which can be fatal. As oncology patients are mostly prone to get infections, it is better to prevent it earlier. The proposed change will enable the nurses to check the CVAD regularly thereby improve the nursing practice and carry out the care on a regular basis. In chapter 2 relevant kinds of literature will be exploited to support the rationale behind the change project. The methodology will be discussed in chapter 3 in which the HSE change model will be utilized and explained. The quantitative method of evaluation will be discussed in detail in chapter 4. Kirkpatrick's four-level evaluation model will be used to evaluate the training programme. The results and the impact of the project will be discussed in chapter 5. The strengths and limitations of the study will also be highlighted.

Chapter 2

2.1 Literature review

According to Parahoo (2006) conducting a literature review contributes to the in-depth evaluation of the studies that are already undertaken and helps in the development of complete knowledge about a particular topic. Whereas Hart (1998) as cited by Levy and Ellis (2006) explained literature review as the use of ideas in writing to explain the approach to the topic of study, the method selected and to indicate that the survey will add to something new. A literature review helps to discover the sources relevant to a topic that is being studied and, thus, makes a valuable contribution to the importance and rigor of the study (Brocke et al. 2009). It allows the researcher to keep in line with the latest research findings. The purpose of
conducting this literature review is that the writer will go through the studies that were carried out on the topic chosen, identify the limitations, get a better understanding of the subject and obtain evidence-based approach on the rationale for selecting this project.

The searching strategies were mainly conducted through electronic databases such as CINAHL, PubMed, Ovid, and Google Scholar. The search terms used were CVAD, CRBSI, Infection, Oncology, Haematology, Nurses’ role in the prevention of infection and Nursing documentation. The search was limited mainly to the last ten years. Articles included were largely international context mainly identified in North America, Canada and the UK. The grey literature search is a significant archive of international reports related to the topic and was included in the strategy. Even though the title and abstract of several articles were reviewed, 25 articles were included for the literature review. Publications by the government agencies are also used. The main four themes that emerged after reviewing the articles for this literature review are:

(1) Importance of having CVAD in oncology patients

(2) Risk of infection associated with CVADs

(3) Nurses role in the prevention of catheter related infection

(4) Importance of documentation in Nursing

Central Venous Access Devices (CVADs) are referred to as a central line that is placed into a central vein (Weinstein & Hagle 2014). CVAD is a broad term that includes many types of catheters that are inserted and positioned within a central vein near the heart to deliver therapies to the bloodstream. The most commonly
used CVADs include peripherally inserted central catheters (PICCs), non-tunnelled multi-lumen catheters, large dual-lumen catheters mainly used for hemodialysis, Swan-Ganz catheters, central catheters which are cuffed and tunnelled, ports which are implanted beneath the skin and arterial catheters used for hemodynamic monitoring. The sites usually selected to place a CVAD are the subclavian, antecubital, femoral and internal jugular vein. Use of CVAD increases the chances of blood stream infections which in turn will result in increased hospital stay and higher costs. Health care providers adhering to evidence-based practices enhance identification and prevention of catheter-related bloodstream infections at the earlier stage.

2.1.1 Importance of having CVAD in oncology patients

Central venous access devices (CVADs) are used in most of the branches of medicine where a short term or long term venous access devices are used (Bishop et al. 2007). According to Schiffer et al. (2013) oncology patients demand stable venous access that is used for the different range of indication include administration of chemotherapy, blood products, antibiotics, hydration and access to the blood stream for clinical monitoring and microbial culturing. According to Gallieni et al. (2008), CVADs has a significant role throughout the management of the oncology patient, as they are needed in all the phases of chemotherapy, in the progressive stages of chronic treatment and the end stages of palliative care. For the past few years, use of CVAD has increased although different types of long-term devices are used. Schiffer et al. (2013) has listed few main reasons why an oncology patients need central lines which are (a) certain chemotherapy drugs are not suitable to be administered into small veins in the hand or arm through peripherally inserted cannulas and must be administered in a larger vein to prevent complication like
extravasation (b) Few chemotherapy drugs are administered by continuous infusion, that could be at home and does not require hospital stay (c) when frequent blood tests are anticipated as a part of chemotherapy (d) for patients with poor venous access and (e) for patients who have needle phobia. By reviewing this literature, it is clearly understood that for oncology and haematology patients having a stable venous access is paramount.

Patients with malignant diseases often require reliable venous access for effective treatment. According to US data, each year nearly 150 million central venous catheters are purchased. It is hard to estimate from these how many CVADs are actually used for oncology patients. However, it can be assumed that the proportion is more, as most surgery, chemotherapy, and radiotherapy protocols for the management of oncology patients require intravenous infusions and those patients who are listed for palliative care a long-term CVAD usually is the best route of administration.

Peripheral venous cannulas (PVC) are used for vascular access, but it could expose patients to local and systemic infections. A peripheral cannula is the commonly used vascular access device; it is a flexible tube containing an inner stylet, which is inserted into a peripheral vein. Once the cannula has been inserted into the vein, the stylet is removed (Dougherty 2008). PVCs are used for short-term, non-vesicant therapies, short-term infusions and bolus injections. Pikwer et al. (2012) undertook a review of twelve studies to compare complications of peripheral venous cannulas and central venous devices. Most common complications associated with PVCs that were identified were catheter tip malposition, thrombophlebitis and catheter dysfunction. Even though infection rates for both PVCs and CVCs are same, the complications mentioned above are associated with PVCs favoured the use of
centrally placed catheter instead of peripherally inserted cannulas. Peripheral cannulas increase the expense on patients requiring I/V (Intra Venous) access for more than few days and treatment as outpatients are not possible with PVCs. Another complication associated with peripheral venous cannulas is extravasation. Extravasation is an accidental leakage of fluid in the perivascular or subcutaneous space which may or may not result in tissue injury. According to Schummer (2005), extravasation injury is frequently seen in patients undergoing cancer treatment. According to Goolsby & Lombardo (2006) extravasation of most of the chemotherapeutic agents can cause different degree, local tissue injuries and proper maintenance of intravenous line are the prevention of extravasation. According to Rinab et al. (2009) extravasations of chemotherapeutic agents is rare but potentially cause severe complication. Severe tissue damage and necrosis may occur depending on the cytotoxic agent that is used which in turn will delay the administration of chemotherapy, prolonged stay in the hospital, impaired function, and may need tissue excision. Therefore, correct placement of the appropriate intravenous catheter is necessary to reduce the risk of extravasation.

In cancer patients, under-nutrition and weight loss occur frequently and are responsible for excess morbidity and mortality. Parenteral nutrition in oncologic patients with intestinal occlusion and peritoneal carcinoma might have increased survival rate when they respond to chemotherapy. In fact, those patients achieving a response from treatment, after hospital discharge showed a significant survival rate with continued chemotherapy as outpatients and home parenteral nutrition (Guerra 2015). According to Argiles (2005), malnutrition affects 85% of Haematology and Oncology patients. It will lead to poor treatment response and reduced quality of life. Early intervention with adequate nutritional supplements will reduce malnutrition and
can improve the outcome of therapy. It is important that proper venous access should be chosen when planning for parenteral nutrition. Ziegler (2009) has written that appropriate choice and maintenance of intravenous catheter is necessary for efficient and successful parenteral nutrition. The writer has also written that phlebitis is a major risk of parenteral nutrition administering through a peripheral vein. Therefore, the central venous catheter is appropriate for such patients. Pittiruti et al. 2009 have supported this by writing that enteral venous route are necessary for the administration of Total parenteral nutrition (TPN) because of the rapid development of thrombophlebitis when TPN solutions are administered into peripheral veins. Non-tunnelled central venous catheters or peripherally inserted central catheters are appropriate for the administration of PN. Writer after these reviews conclude that central venous access is necessary for a patient who is chosen as a candidate for parenteral nutrition.

According to Abedin & Kapoor (2008) cancer mainly hematological cancer need repeated blood tests and intravenous access which are particularly painful. Coutax et al. (2008) have also written that venepuncture is the most frequently reported painful procedure especially repeated venepuncture. Central lines leave convenient and consistent venous access which reduces the discomfort and pain associated with repeated venepuncture. Writer after reviewing the above studies come into conclusion that CVAD is important in Haematology and Oncology patients for the treatment, diagnostic purposes and nutritional supplementation.

2.1.2 Risk of Infections associated with CVADs
In modern health care, CVAD is essential parts which deliver a range of acute and chronic treatments in hospital and community settings. Healthcare-associated infection (HCAI) is one of the leading causes of morbidity and mortality. According to
HCAI Research Network (2010), around one in ten patients are victims of infection during their stay in the hospital. According to Pratt et al. (2007) bloodstream infections associated with the CVADs are one of the most dangerous complications of health care. According to Galleini (2008) in oncology patients infections and thrombosis associated with CVAD leads to morbidity, lengthy hospital stay leading to additional medical costs. Hamilton (2006) has written that in the United States bloodstream infection associated with CVADs is the eighth leading cause of death, but Hadaway (2006) has written that CRBSI claims around 3200 to 50000 lives which are around 4% - 20%. No definitive data is available from literature to choose the appropriate device and insertion site in order to reduce the infection rates and long-term complication. According to Fletcher (2005), infection rates vary from 0.08 to 19/1000 catheter days in the critically ill oncology patients. According to the Centres for Disease Control and Prevention (CDC), the average BSI rate in the United States is 5.3 per 1000 catheter days and the mortality rate varies between 12 to 25 %. Mollee (2011) has also written that catheter-associated blood stream infection is a primary cause of increased hospital and increased medical costs. The infection rate is more in haematology and oncology patients because their immune status is poor. To optimize the care, early Identification of CABSI, risk factors are important in hematology and oncology patients with central lines. The study showed that the overall rate of CABSI was 2.5 per 1000 line-days and the main factors that predispose the infection to include the type of CVAD used, patient diagnosis, side of line insertion and a number of line insertions in the past. According to the writer’s analysis, line type was a risk factor for CVAD infection and implantable ports have lower risk rate. Followed by Peripherally inserted cannula (PICC) and the highest rate of infections are found in tunnelled and non-tunnelled central venous catheters.
The reason for lower risk of infection for PICC relates to the lower density of bacterial colonization on the forearm than another site like chest, neck or groin which is selected sites for other central lines. The veins usually selected for PICC line insertion are cephalic or basilic vein which has lesser organism load. The author has also written that use of ultrasound guidance and trained operators contribute to lower catheter-associated blood stream infection.

Raad et al. (2007) have classified catheter-related infection into (a) Local catheter infections which are exit site infection, tunnel infection, or pocket infection and (b) systemic infection which results in catheter-related blood stream infection. According to Bishop et al. (2007), there are three catheters related infection which are (a) catheter-related bloodstream infection (CRBSI) (b) exit site infection and (c) tunnel infection. Whereas, Gallieni (2008) has written that catheter-related infections arise either from infection at the exit-site followed by migration of the pathogen along the external catheter surface or by contamination of the catheter hub leading to the colonization in the lumens. Exit site infection is characterized by pain, tenderness, erythema and induration within 2cm of the skin at the exit site of the catheter. A tunnel infection is characterized by pain and induration along the catheter track.

Pratt et al. (2007) have classified main routes by which a vascular catheter is infected into four which are intraluminal and extraluminal migration, contaminated infusate and hematogenous seeding. Intraluminal migration is the contamination of the internal lumen of the CVAD. It starts when the hub of the lumen is contaminated by the contact from patient’s skin or the contaminated hands of the health workers. By using the device after decontaminating it properly prevents the access of micro-organism to the internal lumen and can block the access to the circulation. Extraluminal migration is the contamination of the external part of the vascular
access device. By decontaminating the skin properly outside the catheter prevents the microorganism to be pushed into circulation through the skin. Contaminated infuscate occurs when infusion fluids or drugs that are contaminated with microorganisms are administered. By using premixed infusions and by improving the techniques when preparing injection in the units, this type of infections can be prevented to an extent. Hematogenous seeding is when patients have pre-existing infections like urinary tract infections or pneumonia. The organism causing the infection enters the circulation and colonizes in the catheter.

According to Pratt et al. (2007), CVADs placed in the internal jugular or femoral veins are associated with a higher risk of infection as compared to CVADs in subclavian vein. But Scales (2008) has critiqued this statement by writing that subclavian is associated with an increased risk of pneumothorax and also hemorrhage from artery puncture even though the infection risk is less. Hadaway (2006) has written that dense skin flora at the internal jugular, femoral and subclavian site leads to the major risk of CR-BSI. But the author after reviewing several studies the writer concludes that subclavian site is of less infection risk than the others. PICC line is of lower infection risk but may not be suitable for all types of infusion.

CVADs are itself a source of catheter-related bloodstream infection. Compared to single lumen catheters, multi-lumen catheters are associated with an increased risk of catheter-related bloodstream infection. The CDC (2002) as cited by Pratt et al. (2007) identified that patients with multi-lumen catheters were sicker than those with single-lumen catheters and the single-lumen device should be selected unless there is a need for the multi-lumen catheter. (Hadaway 2006) also has identified that multi-lumen catheters pose more infection than single lumen catheters.
2.1.3. Nurses role in prevention of CVAD infection

The writer did not find any direct research or studies that discuss the importance of using a visual assessment tool on CVAD, but there are studies about the Nurses role in the prevention of CVAD infections. As the use of CVADs has predominantly increased in modern health care, it is paramount that the infection prevention measures are used appropriately to prevent patients from getting health care-associated infections. Doctors or Nurse Specialists are responsible for the insertion of CVADs, but the responsibility of the rest of the care of CVAD lies on the Nurses. Therefore, the nurses have an important role in the prevention of infections. The diagnosis of infection associated with intravascular catheters depends on clinical observation and relevant laboratory findings.

According to Grady et al. (2011) by monitoring the catheter sites visually when changing the dressing or by palpation through an intact dressing on a regular basis can identify infection at an early stage to an extent. If patients have tenderness at the insertion site, fever without any other cause or symptoms suggesting local infection, the dressing should be removed to allow the thorough examination of the site. Bishop et al. (2007) have recommended that to reduce or prevent infection dressings on CVADs should be changed 24 hours after catheter insertion and then weekly until the catheter is removed. Needle-free connectors should be used and be changed twice a week, patients with a CVAD require 4 hourly observations including temperature, pulse, BP and respiratory rate, CVAD review form or an assessment tool should be completed every shift, the appearance of the insertion site should be observed and documented each shift, If signs of infection are present it should be immediately notified to the primary team. If the patient has a PICC, any swelling of the arm should be monitored. The site should be inspected daily for signs of infection.
and is recorded in the patient's record (DOH 2011). All the lumens should be covered with a needle-free device to ensure that the system remains closed to stop bleeding or air entry.

Green (2008) has published the guidelines for the management of CVAD, which points out the importance of inspecting the entry site at least twice a day is written. The need for the CVAD should be reviewed on a daily basis; those that are no longer in use should be removed. The insertion site should be examined daily for drainage, tenderness, pain, redness, swelling, suture integrity and CVC position and all findings should be documented. According to Pratt et al. (2007), hospital departments should conduct audits against their organizational policies and procedures and take steps to correct any deficits.

Prevention and control of infection are an important aspect of the clinical care of patients carrying a vascular access. Cancer patients are especially susceptible to infections because of immunodepression, and they should, therefore, be carefully monitored for any signs of infection. Nurses should ensure that they are carrying out evidence-based practice.

### 2.1.4 Importance of Documentation in Nursing Practice

Accurate maintenance of documentation is essential to make the health workers aware of on-going care and treatment (Owen 2005). According to ‘The Data Protection Amendment Act’ (2003) health records, either paper or electronic record is the information about a person to manage the care provided. In nursing maintaining, the health record is an integral part and is a good practice as it will act as guidance for the continuity of care. Accurate writing and maintenance of documents ensure the quality of care provided. It is the only way the Nurses can
communicate legally that the care has been delivered. According to Saranta & Kinnunen (2009) apart from providing nursing care another priority task for nurses is to exchange patients’ information and for this the main source is maintaining adequate nursing records. Nursing documentation is designed in such a way that it aids and assures in the continuity of the care. A study published by Jefferies et al. (2009) has pointed out that accurate and good quality nursing documentation is paramount to improve the patients’ outcome through the recording of patients’ response to the nursing intervention. It also aids to inform all members in the health team who are involved in the care to be made aware of patients’ status and progress. Wilkinson (2007) has pointed out that valid documentation supports nurses to link the diagnosis, intervention and evaluation will be helpful. Saranta & Kinnunen (2009) supported this by writing that nurses’ ability to report patients’ problems and clinical symptoms are important for the patient’s safety and well-being. Cheevakasemsook (2006) has emphasized that documentation in nursing is an important mechanism used to evaluate care performance provided. NMBI (2014) standards of recording clinical practice explicitly mention that the quality of nursing records is a reflection of the quality of the care given by the nurses to patients and it is a professional responsibility. It is also written that documentary evidence is also required for legal enquiries.

2.2 Conclusion

Use of CVADs is an integral aspect for neonates, children, and adults and has moved beyond the acute care setting to chronic, long-term care. Proper use of various CVAD can optimize patient care in a cost-effective manner. In the hospitalized population, bloodstream infections are the third most frequent type of nosocomial infection. In Oncology and Haematology patients cytotoxic
chemotherapy and resulting neutropenia create a high risk for morbidity and mortality.

Catheter-related bloodstream infections can be nearly eliminated by enhancing healthcare providers’ adherence to evidence-based practice guidelines. Numbers of patients having vascular access devices inserted are increasing, and health professionals primarily Nurses must ensure that they have the appropriate skills and knowledge to deliver safe and efficient care for the patients. With proper awareness of the important factors involved in appropriate care and management of a patient’s CVAD, will contribute to a decrease in CVAD-related complications and will also enhance the quality of patient care.

**Chapter 3 Methodology**

**3.1 Introduction**

In health care delivery of change is an important and constant feature. It is a continuous process which is adaptive and all the elements in change are interrelated (HSE 2008).

Within chapter 3 the writer will discuss the methods and methodology used to carry out the project. The HSE model has been selected to structure and guide the project. The rationale for selecting the model will be discussed along with the critical review of OD model. The four stages of OD model will be discussed in depth.

**3.2 Organizational Development**

Organisational development (OD) is a transfer of science knowledge to the development which is planned, improvement and reinforcement of the structure, process and strategies which lead to the organization effectiveness, employee
satisfaction and improved financial performances (Cummings & Worley 2014). The main focus of OD is to assess the current performance and to make changes in order to achieve the goal. OD is an approach to planned organisational change (HSE 2008). According to Hayes (2014), the main aim of OD project is to create the capabilities to maintain high performances. Need for change in health care is unpredictable. Change is an important feature of organizational life; it is an on-going process and in the modern environment, it is not possible for the organization to stay still without a change. An organization’s readiness to change is essential for its survival.

OD and change management addresses the effective implementation of planned change (Cummings & Worley 2008). The success rates of change programmes are poor according to Appelbaum et al. (2012). Therefore, high managerial competencies are necessary for change management.

3.3 Organizational Development Model

According to Burns as cited in HSE (2006) a clear and practical change theory is preferred by all change agents instead of available theories that are confusing and inconsistent. The author has also claimed that at present there is no model that is holistic, universally applicable and that can be applied practically. Mc Auliffe (2000) as cited in HSE (2006) has argued that all Managers should be prepared to choose and adapt a model according to the situation and should be able to understand the strength and weakness of each model and should choose the best one. The model selected to assist in planning and implementing the change processes is imposed by beliefs and assumptions of the change agent about the nature of change. Cummings & Worley (2008) has reviewed few change models and has critically analyzed them. According to the writers Lewin’s model provides a general description of the whole
process and is involved in change whereas action research model views the process as a cyclic process involving the change agent and members in the organization. The positive model is more oriented to the positive things that can lead to extraordinary performances. According to Todnem (2005), planned change models are more suitable to small incremental change than transformational and rapid changes. There will be no widespread time for consultation.

Lewin’s model of change has three phases which are unfreezing, moving and refreezing. ‘Unfreezing’ is the step where a change of behavior and to understand the need for change. ‘Moving’ phase is the introduction and establishment of the new strategies and systems. Refreezing is the phase where the new system is being secured to stabilize the change in the organization (Senior & Swailes 2010). Cummings & Worley (2008) has criticized that refreezing stage is not true as there is no end for a change and will never be over in an institution. Kotter’s eight step model is also similar to Lewin’s model as it is also a step by step process in implementing a new change in an organization HSE (2006).

The writer has reviewed the main OD models and has decided to use HSE change model. The aim of the model is to improve the service users experience to assist staff to understand their role in working to improve the service provided and to promote a consistent approach towards change. HSE model pays attention to the cultural aspect of people. The people-centred approach helps to manage uncertainty and understand resistance (HSE 2008). The model involving diagnosis, planning, implementation and evaluation are more acceptable for a planned change according to Cummings & Worley (2008). This is another reason for choosing HSE change model to guide the methodology of this OD project.
3.4 HSE Change Model

The HSE Transformation Programme (2007-2010) launched a programme of change in order to fulfil the HSE mission and vision of ‘enabling people to live healthier and more fulfilled lives’ and ‘Everybody will have easy access to high-quality care and services that they have confidence in and staff are proud to provide’. HSE change model was introduced in 2008 in the publication ‘Improving Our Services - A Users’ Guide to Managing Change in the Health Service Executive’. Please see figure (1) for the model. The purpose of the publication is to aid leaders and managers to approach the change in a consistent and efficient way at all levels.

![HSE Change Model Diagram](image)

**Figure (1) HSE (2008) Improving our services**

There are four stages in the HSE change model which guide the change agent from the preparation for the change until the implementation of the change.

- Initiation
- Planning
- Implementation
• Mainstreaming

3.4.1 Initiation

In this phase, the preparation for change is laid to create readiness to change and to establish a sense of responsibility. Stakeholders who are involved were identified. The purpose of the change and the drivers for the change were determined. Organizational readiness is critical for the successful implementation of a change plan. When the readiness for change is high, there is more initiation from the members, will exhibit more endurance and will exert more effort (Weiner 2009). It is important to set the strategies at this stage which include explaining the difference between the current and future performances, creating a vision and promoting confidence that the desired outcome can be achieved. The author has also written that to get the readiness for change organizational members should value the change and they should understand it will be beneficial for them in future.

3.4.1.1 Preparing to lead the change

To identify the Strengths, Weakness, Opportunities and Threats involved in a project and to identify the internal factors that are affecting the change, the writer used a SWOT analysis. SWOT analysis is a tool for the methodology planning of a study and it helps in strategic positioning (Helms & Nixon 2010). According to Barney (1995) as cited by Chermack & Kasshanna (2007) SWOT is a simple tool to identify the internal and external factors for understanding main issues the organization is facing and need to revise the strategy. Please see Appendix (2).

The writer used PEST analysis tool to assess the external factors that affect the change. Recklies (2006) has written that PEST analysis is a flexible and easy to understand tool that can be used as a starting point for analysing the external environment and the forces. Please see the Appendix (3) for the PEST analysis.
Selecting relevant stakeholders in a change process is challenging. Stakeholder analysis helps in collecting information to determine whose interests should be taken into account when implementing a change. Identifying the stakeholders is the first step in the stakeholder analysis. The writer has chosen the Nurses working in the oncology ward as the key stakeholders. The other stakeholders who are involved in the project directly or indirectly are patients, management and doctors. The key influencers in the project were the CVAD subgroup working in the hospital. The writer contacted the CVAD subgroup in the initial phase of the project and accessed the permission to carry on with the project. The visual assessment tool that is being introduced was validated by CVAD group. The tool was introduced along with a new set of the care plan. The writer made an agreement with the CVAD group to provide education on both care plans and visual assessment tool to the nursing staff in the oncology unit.

Next step is to assess the interest and power who are involved in the change. It is important to develop an understanding of the stakeholders to gain the support throughout the project. Once the stakeholders are identified the readiness and capacity of these individuals need to be identified (please see the Appendix 4). In the change process, it is important to identify the individual or group who are critical in the whole change process and to rank them according to the readiness and capacity in the project. A stakeholder analysis should be conducted to ensure that all appropriate stakeholders have been identified and to have proper mechanisms in place to communicate with the stakeholders about the plan and impact of the change project (HSE 2006). For effective change project, the change agent needs to have a perceptive and analytical skill to identify the stakeholders and communicate with
them to understand their influence on the project and the expectation on the impact of the change (Bourne & Walker 2005).

Force Field Analysis is an important and useful tool that aids in making a decision of whether to go ahead with the project by increasing the chances that support the change and by weakening the forces that are against the project. To determine the forces that are supporting the change and those that are undermining the change, a force field analysis technique has been used. Please see the Appendix 5.

By the end of the initiation phase, the stakeholders were identified the intended outcome of the project was outlined. The resources needed for the change were secured. The project initiation document was reviewed by the line manager, and the permission form was signed.

3.4.2 Planning

In the planning phase, the main steps are building commitment, determining the detail of change and to develop a plan of how to implement the change (HSE 2008). The main purpose of planning the project is to obtain support for the project to determine the details of the change that is being implemented.

3.4.2.1 Building commitment and shared vision

In order to create support from the stakeholders, the writer has reviewed the stakeholders’ analysis, 7S tool and Force Field analysis. By creating a vision that offers relief from the stress or current discomfort, it is easier to convince the individual that are involved in the change (Fernandez & Rainey 2006). Bass (1985) as cited by Kavanagh (2006) has suggested that leaders can get individual involved in the change and can promote change by creating a vision. It is also written that transformational leadership theory has explained that change is accomplished by
leader’s ability to implement a vision of the organization through powerful, impressive personal characteristics and actions that enable to change internal organizational cultural. According to Bourne & Walker (2005) without meeting the needs and expectation of the stakeholders the project will be considered unsuccessful even if the change agent was able to achieve the aim. HSE vision of change is easy to access, staff pride and public confidence (HSE 2008). Sharing the vision with the stakeholders is important.

3.4.2.2 Communicating the vision
According to Kantabutra & Avery (2010), a compelling vision is critical to any organizational change and strategy implementation. The factors that affect realizing a vision are communication, motivation, empowerment to achieve vision and change process to suit vision. The organization, where the change is being implemented, has a vision of patient safety. By introducing the change, the writer is trying to achieve the goal of patient safety.

Making vision clear will point to the primary goal (Battilana 2010). To paint a picture of the desired state the change, the agent must communicate (a) the need for change (b) share the vision of the need for change with the organization members (c) ideas behind the change (d) and develop a vision for the outcome post change. Having a vision plays a significant role in producing beneficial change by helping to direct, align, and inspire actions on the part of a vast number of people. Without an appropriate vision, a transformation effort can easily dissolve into a list of confusing, incompatible or an unsuccessful change. Heathfield (2006) stresses the link between communication and response to a change in that, ‘People who are afforded clarity, honesty, dignity, understanding, and compassion have a greater openness to change,’ and, ‘Expressing the reasons for change honestly and directly will help
people be open to change’. Bass (1985) as cited by Kavanagh (2006) suggests that leaders must promote change by creating a vision. Reviewing the above literature writer comes to a conclusion that a proper view is to be created to the stakeholders about the change to get enough support and to have a readiness.


3.4.2.3 Increase readiness and capacity for change
According to Susanto (2008), readiness for change is based on organization members’ attitudes and beliefs of organization members. It is normal behavior to either be supportive or resistant to the change. Whereas, Smith (2005) has written that the vehicle for change is the people who are involved in it, and it is vital to assess and understand their readiness before the attempt to change. Kotter (2008)
has cited that employee participation will help in reducing the resistance and also in building commitment. Susanto (2008) has listed seven factors that need to be addressed before implementing the change which is acceptance to change, change initiatives, support from management, perception towards change, mutual trust and respect and understand the vision.

For the management support writer contacted the Central venous access devices subgroup and the line manager for the permission to start the project. For acceptance of change from employees, writer discussed the need for the change and came to the understanding that the members are ready for the change. There was trust and respect between the staffs in the unit which made implementation easier. Laschinger & Finegan (2005) has written that lack of trust and respect in the work environment has an adverse effect on employees and organization.

3.4.2.4 Determining the detail of the change
To determine the details of the change writer decided to assess the current situation by conducting an audit before implementing the change. The audit was done in the month of December and January 2016. The sample size chosen was fifteen because of the time constraint. Please see Appendix: 6 for the audit tool. Clinical Audit is the comparison of actual practice against evidence-based standards with the intention of improving the quality of patient care (Ferris 2002). Clinical Audit involves comparing current practice to the set standards, identifying areas for quality improvement and implementing changes to meet the standards. Clinical audit helps in the education of participants, leads to an opportunity to increase job satisfaction and improve the quality of health care. When preparing for the audit writer followed the steps of health care audit cycle by NICE (2002).
Once the audit was done writer compared the audit report with the set standards in CVAD care. To make the stakeholders aware of the audit report and the need for the improvement in the care, writer communicated with the nurses and made them aware of the change that is to be implemented. Communication style has an impact of how we support people in a change process (HSE 2008). A respectful communication style suggested by HSE (2008) is to listen with an open mind. The writer discussed the details of the change and listened to the suggestions made by the stakeholders. The writer was conscious of the tone and language used while communicated with the members. The writer used an open communication style and was honest about the positive and negative aspect of change, for example, the writer explained the Nurses about the time they need to spend on checking the CVADs and documenting it on the visual assessment tool on a daily basis. The writer took the time to listen to what the members have to communicate back to the writer regarding
the change. Change communication is not easy and needs lots of time and effort to gain trust and support from the employees and it need, to be honest, clear, with vision and passion for ‘buy in’ (Kotter & Cohen 2012). Covey (2006) has written that to develop trust we need to have three dimensions which are ‘see’, ‘speak’ and ‘behave’. Covey has explained that by looking at the possibilities will enable to develop trust and will give you a language to explain about trust and will develop behavior to grow trust. Heathfield (2006) has also agreed that establishing trust is the first step towards successful change.

![Covey's three dimensions to develop trust](image)

**Figure: 4 Covey's three dimensions to develop trust**

According to Ford et al. (2008) communication breakdown can lead to resistance to the change. The authors have also identified in their literature that resistance or criticism will give the change agent an opportunity to clarify the change and will give the members a chance to create translation and further understand and accept the change. Therefore the authors have advised considering resistance as a resource. The ability of the leader to communicate the message of the change enables the team to know and support the direction of change and also to reduce the barrier that
might arise (Mc Roy & Gibbs 2009). Kotter & Schlesinger (2008) have suggested that the most common way to overcome resistance is to give a proper education about the change and help people understand the need and logic for change. It is also written that lack of trust can also lead to resistance. The writer had to face only a few resistances in this project which was managed with the communication. At this phase, writer made the stakeholders aware of the gap between current situation and desired future situation post change. Once the stakeholders are aware of the current situation and there is a vision of the planned change, a feedback was given to the stakeholders who helped in gaining more support.

3.4.2.5 Developing the implementation plan

At this phase, the writer has outlined a plan of how to implement the change. It is beneficial to gain support from external key stakeholders (Fernandez & Rainey 2006). The CVAD subgroup in the hospital is an external stakeholder in this change project. In agreement with CVAD subgroup, the visual assessment tool was added to the set of CVAD care plans and was in a separate folder which was readily available. It was available on the hospital intranet from the end of January. It replaced all the existing CVAD care plans. There was a separate assessment tool for porta cath. The writer was able to analyze the impact of the change on the service users at this change. A pilot study was not done in this project even though the aim of the pilot study is to identify the problems that might affect the quality of results. Once the detailed plan was made, it was communicated to the stakeholders. The time frame for the project was determined. Sirkin et al. (2000) have written that deciding the time frame is necessary for the success of the project. The longer the project is, it is easy for the stakeholders to lose the enthusiasm. Contrary to this statement the authors has also written that the longer projects that are frequently reviewed are more likely
to succeed that short-term projects. The writer has considered these statements but has decided that the implementation should be completed by the end of January.

### 3.4.3 Implementation

The primary purpose of this stage was to implement the agreed changes and to encourage factors that will help in the sustainability of the modification. The implementation phase gives a chance to understand the impact of the change in care delivery on service users, key service providers and staff (HSE 2008). As mentioned earlier, writer implemented the change in conjunction with the CVAD subgroup functioning in the hospital. The visual assessment tool was implemented along with a set of CVAD care plans. The tool was available in the hospital intranet by the end of January. Therefore, the change was implemented by 26th January 2016. Facilitation of change is a team effort. The change in the organization is possible only when individuals in the organization are willing to change. Therefore, a proper clarification of the change was necessary. The role of the writer in this stage was mainly providing the education session on how to use the tool and the changes made in the new care plans. According to Kotter & Schlesinger (2008) education can be considered as the best method to manage resistance, to communicate the desired changes and the reason for the change. Authors have also written that once educated people will help to implement the change. The only drawback that the authors have identified is that educating people is time-consuming when lots of people are involved. Education sessions conducted were informal and lasted for not more than 10 to 15 minutes. The writer maintained a list of the Nurses, who were finished with the training. The writer got help from the Clinical Nurse Specialist to cover the Nurses with education sessions. Once the change was implemented and education was done writer helped the Nurses to carry on with the change.
3.4.3.1 Sustain momentum

Changes take the time to be implemented (HSE 2008). Change agent should plan to sustain the energy for change and should change actions as there is a need. Change agent should always look at how to keep supporting people throughout the change process which will yield benefits. One of the key measures for successful change is to reorient the goals, vision and principles towards achieving sustainability (Doppelt 2009). To support the stakeholders the writer reminded the nurses to use the new assessment tool and observed that they were being used in a correct way. The writer identified that it will be easier to use the assessment tool if it was included with the bedside notes. The writer asked the stakeholders opinion on the same. The decision was made that the tool can be included with the bedside notes. The writer then noticed that because of the busy environment the nurses are finding it difficult to do the assessment tool. The writer had to emphasize the importance of documentation in nursing. Writer communicated with all the nurses in the unit and updated the need for the documentation. The writer also requested the help from Nurse Managers in the unit to promote the staff to use the tool.

3.4.4 Mainstreaming

The main purpose of this phase is to understand the success of the change and also focus on the method for evaluation. The writer continued supporting the team and made them realize that the current phase of the change is now complete. By rewarding the team and by celebrating short term win encourages the team and help them to create self-confidence (Kotter 2008). By appreciating the stakeholders will aid in having continuous support. By providing enough support in the integration of change, helped the change agent to reduce the sense of resistance. The writer went back to each stakeholder to appreciate and thank them for the support and
commitment they showed in the process. The change agent needs to focus on maintaining and strengthening the relationship in the wider system to have the change to be sustained for a longer period and to build commitment (HSE 2008). In order to obtain enough support writer did communicate the CVAD subgroup with the progress of the change implementation and seek advice as needed. The change agent also gave the feedback to the stakeholders on a regular basis.

3.4.4.1 Evaluation and Learning

In this step, importance should be given to the way to evaluate the change and also to learn from the change process. The organization’s readiness to change in future and to stop the activities that may inhibit the organizational growth should be focussed (HSE 2008). Along with obtaining continuous feedback writer encouraged the stakeholders to have an open mind to accept the organizational changes in future. The writer has planned and fixed the method of evaluation since the beginning of the project. As evaluation is one of the main learning tools (HSE 2008). It will take time and will need more resources; therefore, the writer was focussing on evaluation from the initial stage of change. It helped the change agent in focussing on the outcomes of the change. According to Feinstein (2012), well-conducted evaluation allows us to learn from experience distilling lessons about what has worked well and what has failed. The detailed description of evaluation is given in next chapter.

3.5 Conclusion

Change is not an option but is a necessity in the evolving environment (HSE 2006). In chapter 3, the writer has described the methodology used in the change project. The writer has chosen HSE change model to guide the change. The four stages in
HSE change model have been explained. The change was proposed and implemented to improve the quality of CVAD care. To assess the external and internal factors contributing to the change the writer has done SWOT and PEST analysis. Conducting a Stakeholders analysis helped the writer in determining the interest of the stakeholders. Force field analysis helped the writer to obtain an idea of needs, ideas, and goals of stakeholders which helped in gaining support.

Chapter 4 Evaluation

4.1 Introduction

According to Lazenbatt (2002, p.69) evaluation can be defined as “the method of measuring the extent to which an intervention achieves its stated objectives.” Evaluation is the concluding step in guiding a successful change (Mc Ardle 2006). The change that is introduced should be more than worthy effort and should bring in a real benefit to the service user. Therefore, it is important to measure the extent the change has achieved the objective of patient benefit and satisfaction. Evaluation has been defined as the systematic and structured process of reviewing an experience, determining its value and deciding what all changes are needed (HSE 2008). Evaluation needs to be well planned and properly resourced as it is time-consuming. The process of evaluation should be in place at all phases of change.

Within Chapter 4, the writer will explain in detail the methods chosen to evaluate the organizational development project. The writer has chosen The Kilpatrick's four level evaluation model (1959). The rationale for choosing the model will be explicitly mentioned. The data collection methods will be explained. A quantitative methodology is used to attain the objectives that were outlined in Chapter 1.
4.2 Significance of Healthcare Evaluation

Health care evaluation is the generic term to evaluate all the medical interventions used to improve health including medical devices, drugs, education programmes, etc. Green & South (2006) has defined health care evaluation as the method to determine the value of health care initiative against a set standard of acceptability. It is the process of evaluating the health care intervention regarding efficiency, effectiveness, equity and humanity. The authors have written that health care evaluation is necessary for determining if the interventions have worked, to impact policy decision and to increase support for expanding an intervention. Therefore, health care evaluation is an essential process of planning and managing health care. Evaluations of performance play a major role in health care reforms. To achieve better outcomes, stakeholders need this information to guide their decisions. According to Craig (2008) when planning new initiatives evaluation measures should be considered from the beginning especially when there is uncertainty about the effectiveness. Evaluation helps in developing an understanding of the intended outcomes and also to analyze the efficiency and cost-effectiveness of the programme. It also helps to compare the programmes that are similar even though the implementation style is different.

The service industry with the strongest interest in quality and that has continuing pressure to improve quality is health service (Evans 2013). The author has also written that service users are the judge of quality. Several authors and organizations have defined quality with a set of dimensions including efficiency, effectiveness, safety, timeliness, patient-centeredness etc. Effectiveness is the extent to which the intervention or change makes an intended effect (Quigley 2008). Quality improvement efforts need to be measured to demonstrate if the change is leading to
the desired direction if any unintended results are achieved and to bring the change process back to the range you want. The beliefs that good performances will results in good quality practices and comparing the performances will encourage to better performances are the main rationales for measuring the effectiveness of quality improvement initiatives. The complexity and the unpredictable nature of health care demand the element of evaluation (Hughes & Hughes 2008).

4.3 Rationale for Choice of Evaluation Model

Evaluation helps in making a judgment about information that one has available. According to Cook (2010) evaluation of educational programme helps in making a decision regarding the value of the programme which is the collection and analysis of all the information related to the implementation and outcomes of the programme. Choosing an appropriate evaluation model will give more confidence to the change agent. Factors that should consider while choosing the model are the theoretical basis against programme complexity and the evaluation needs. Before choosing an appropriate model the writer will explore the main evaluation models like Kirkpatrick’s four-level model, the Logic Model, and the CIPP (Context/Input/ Process/Product) model, the theories that influenced the development of these models and their limitation. The choice of evaluation design depends on the information required to meet the objectives set by the change agent. The goal to consider when selecting the method is how to gather the information to stakeholders in the cost-effective and realistic way (Brewer 2009). Fitzpatrick et al. (2004) have written that the evaluation model that addresses all the objectives of the stakeholders will produce an efficient and cost-effective evaluation. There are different types of evaluation model depending on the purpose of evaluation. The differences in the models are based on the method in which information will be obtained and used throughout the
programme. The evaluator will determine the best model of evaluation based on knowledge from personal experience, beliefs or a proper understanding of all what all information will be needed.

CIPP model was developed in 1971 by Daniel Stufflebeam in view to evaluate those oriented to objectives and testing. It has an approach in which the main purpose of evaluation is not to prove but to improve the programme. CIPP model is a powerful approach if the evaluator considers the educational programme in terms of its complex elements and nonlinear relationship. CIPP model addresses all steps of education programmes which are planning, implementation and final assessment if desired. The first three elements of the CIPP model are useful for improvement focused evaluation studies; the fourth element is for final assessment (Frye & Hemmer 2012). The authors have made it clear that CIPP model will require multiple data collection and will require more time. Therefore, the writer decided not to use CIPP model.

The Logic Model has a linear approach to educational planning and evaluation (Brewer 2009). The Logic Model’s steps are similar to the CIPP evaluation model but focus on the change process and the system within which the educational innovation is embedded. The structure is simple and the approach is grounded in the view that the relationships between the educational methods and the outcomes are clearly understood. Frye & Hemmer (2012) supporting this statement has written that the less complicated form will oversimplify the evaluation process and may not meet educators need. According to Brewer (2009), Logic Models is useful when more than one person is involved in planning, implementation and evaluation of the programme.
Kirkpatrick’s four-level approach is one of the popular models for evaluating learner outcomes post training programs (Kirkpatrick 1996). Kilpatrick model has a systematic approach and its main focus is on programme outcome beyond the learners’ satisfaction (Brewer 2009). There are four levels in the model and each level measures different complementary aspects of training and development. The four levels in the model are Reaction, Learning, Behaviour and Results. Kirkpatrick’s model has been criticized for not producing meaningful long-term results and that it does not take into account the effectiveness of the use of resources and intermediate changes that affect learning like motivation and variables in knowledge levels (Frye & Hemmer 2012).

It is agreeable that there is no best model of evaluation and it is important to select a model that meet the requirements and appraise programme’s probity, safety, equity, and significance. Kilpatrick’s model is used evaluate training programmes and training programmes are fundamental about change, the writer is using Kilpatrick’s four-level model to evaluate the change.

4.4 Aim of the evaluation process

The aim of the evaluation process is to determine if the implementation of the visual assessment tool has enabled the Nurses taking care of the CVADs to improve the care provided, helped in carrying out the dressings and change needle-free devices according to the hospital policy. The process helps to evaluate if the set objectives have achieved the purpose. Process evaluations explore the implementation of an intervention and also help in the interpretation of the outcome results. It also examines the views of stakeholders on the intervention (Oakley et al. 2008)
4.5 Methods and Measures

Objective 1: Conduct an audit in the beginning of December and end by January 15th on a randomly selected sample of clinical records.

Clinical audit facilitates the awareness of the present practice among the team and helps to work together for the improvement (Dixon 2007). In order to obtain an awareness of what all improvements are needed in the delivery of care associated with CVADS a clinical audit was conducted on 15 randomly selected samples. The audit was carried out between the month of December 2015 and January 2016. The audit tool was designed by the change agent, therefore, no further training was required to carry out the audit. Please see the audit tool used in appendix 8. In healthcare documentation is important to maintain the continuity of care and also in the collecting data for the quality metrics. By auditing the clinical records the writer came to an understanding that the documentation on the CVAD care provided is incomplete and poor. The current documentation standards are benchmarked with NMBI (2014) standards. There are 11 categories set for the CVAD care which are:

1. Documentation about the CVAD types on the patient
2. Reason for the use
3. Condition of entry site checked and documented
4. Documented if Bio-patch is in place or not
5. Date of dressing renewal documented
6. Date for next dressing renewal documented
7. Needle-free connectors changed (Monday & Thursday)
8. Check if dressing is intact and clean
9. Documented re: patency of lumens
10. Patients temperature is checked and documented
11. Documented if there are any signs of infection.

NMBI (2014) guidelines have written that patient’s record is the evidence in relation to the provision of nursing/midwifery care and facilitates good communication between healthcare staff. A bar chart was created to compare the documentation standards pre and post the introduction of the visual assessment tool and the overall compliance rate was 39%.

Figure: 5 Pre implementation clinical audit results from December 1st 2015 to January 15th 2016.

The pre-implementation audit results reveal that the documentation on the type of the CVAD and the documentation regarding the reason for the use of CVAD are not accurate. Reviewing the literature review carried out in Chapter 2, it is important to review the need for CVAD in place on a patient has to be reviewed on a regular basis. According to the institutional policy, all CVADs should have Bio-Patch protective disk in place. It is evidence based dressing to reduce localized infections associated with all CVADs. The adherence to the policy is poor. The dressings and needle-free devices have to be changed according to the policy set by the institution.
and from the audit report, the compliance was poor. By doing the audit the writer got the opportunity to talk to the Nurses regarding the importance of documentation while giving education about the tool that was going to be introduced.

**Objective 2: To conduct informal educational sessions for 27 nurses working in a specific oncology unit on how to use the visual assessment tool by the 20th of January.**

![Kirkpatrick's Evaluation Model](image)

**Figure: 6 Kirkpatrick’s Evaluation Model**

The writer has set an objective to conduct few informal education sessions to educate the nurses the importance of using the visual assessment tool in chapter 1. To evaluate the educational session writer used Kilpatrick four-level education model. The writer will discuss each step involved in the model in detail. In order to cover all the nurses in the unit, few education sessions were carried out.

**Level 1- Reaction**

In order to measure the effectiveness of the whole training programme, the four levels in Kilpatrick’s model will be used. Level 1 will evaluate the learners’ reaction to
the training programme. The main purpose is to measure how the attendees feel about the programme, to make the learners understand that the trainer values their reactions and to make any improvements in the programme if needed (Kilpatrick & Kilpatrick 2005). Galloway (2005) has also suggested that reactive evaluation in level 1 will help the instructor to evaluate the various aspects of training including the topic, the way topic was presented, the total length of the session etc. According to Kilpatrick & Kilpatrick (2005), the main tools that can be used are program evaluation sheets, face-to-face interview or participant comments throughout the training. The writer asked four questions to the participants. By asking the questions writer was evaluating the readiness of the Nurses to change as well. The questions mainly asked were (1) Are you interested in participating in the change project? (2) Do you think the tool will benefit you and the patient? (3) Are you finding any difficulties in completing the tool? Do you want any other topics to be covered?

Galloway (2005) has written that evaluation from level cannot be relied on as it does not demonstrate that the participants have learned all the goals of the session and also it will only highlight the subjective nature of the evaluation. Moreover, the author considered a single data as irrelevant. It has been also suggested that the next three levels in Kirkpatrick model will generate more holistic and accurate evaluations.

**Level 2 - Learning**

**Objective 3:** By 28th of February observe that the nurses will carry out the dressings, care and flushing of a CVAD when not in use and changing of a needle-free device according to hospital policy. The nursing care provided is documented in the visual assessment tool on a daily basis.
This level is used to assess if the trainer has gained knowledge or skills post training (Galloway 2005). Brewer (2009) agrees on this by writing that 37% of training occurs at this level and it measures the attitudes, skills or motivations that attained during the session. What we are measuring in this level are the cognitive domain (knowledge), affective domain (attitudes) and psychomotor domain (skills) that are changed after the training. The common tools suggested by the author are pre- and post-training tests, assessment of work based projects and observation and feedback by managers and instructor. Reviewing the third objective the writer observed if the nurses were using the visual assessment tool. To make sure that the tool is being used regularly, a feedback from the nurses was taken. The writer made a list of the patients on CVAD and checked if the tool were being used. The writer approached the nurses and enquired if they were finding any difficulties in using the tool. Level two relies mainly on the data gathered from the participants, even though writer gathered data through observation and feedback. Galloway (2005) has identified that the first levels have no much response to the barriers to transfer; they are potential indicators that cannot be relied on to assess the effectiveness of the training session.

**Level 3 - Behaviour**

**Objective 4: By 10th March to observe that the nurses are using the visual assessment tool after providing CVAD care on a daily basis.**

In this level, the evaluation is made to assess if the training transfer has taken place if the information gathered in the education session is transferred to the clinical environment. Mc Namara et al. (2010) suggested that the evaluation has to be done at least 3 months post training so that the participants will have an opportunity to put into practice what they have learned. The author has also mentioned that it is difficult
to predict when exactly the change in behaviour will occur. This level is the truest assessment about the success of the programme. Kilpatrick and Kilpatrick (2005) measuring the change of behaviour is the most important and difficult level to measure. The programme is treated unsuccessful if the participants are not applying what they have learned.

The writer used the qualitative approach of participant observation to collect data to evaluate if the transfer of knowledge into practice has taken place. The aim of participant observation is on discovering the meanings that people attach to their actions (Saunders et al. 2009). Participant observation helps in establishing rapport within a group so that its members will act normally, then removing oneself from the group to understand what is going on, interpret it and to write about it. On observation, writer noticed that the documentation on the tool was incomplete. With the help of the Ward Manager writer updated the communication folder that was used in the unit to remind the Nurses about the tool. The writer also reminded the nurses the NMBI guidelines on documentation: to carry out the documentation as soon as the nursing care is provided (NMBI 2014).

Level 4 - Results

This level measures the success of the training program in terms that there is an improvement in quality (Galloway 2005). Kilpatrick & Kilpatrick (2005) supported this by writing that this level measures what extent the results have changed post training by determining factors like improvement in quality, reduction in wastage of time, staff satisfaction etc. This level will provide with information about the impact of the change on the organization and if the set objectives have been achieved.
Objective- 4: Evaluate the effectiveness of the proposed change using audit post introduction of the checklist by 30th of March.

To evaluate the fourth objective, the writer did the post-implementation audit to measure if the nurses transferred and demonstrated the education and knowledge gained from the education session in documenting the care provided on CVADs. The clinical audit was conducted in the month of March. 15 clinical records were audited. The audit focussed on the documentation by the nurses on the visual assessment tool after providing CVAD care. The 11 categories used in the pre-implementation audit are used to conduct the post implementation clinical audit. Please see the post-implementation results in Figure 7.

**Figure:7 Post implementation clinical audit results from March 1st to 30th**

As discussed earlier the overall compliance was only 39% and the post-implementation audit showed 93% compliance. There is an increase of 54% compliance with documentation standards. The objective is 100% compliance according to the NMBI standards. Conducting the post audit enables the writer to
compare the finding against the standard and assess the improvement. The pre and post audit results are compared and shown in figure 8. Please see Appendix : 8 for the table.

Figure:8 Pre and post implementation clinical audit results

4.6 Dissemination plan

Dissemination is conveying the research findings audience who will use the knowledge. The dissemination activities should be planned carefully to meet the needs of the audience. Dissemination is always complex as implementation is. Therefore, it should be carefully planned (Carpenter et al. 2005) It is important that the findings are communicated to the stakeholders. This project will serve as a pilot project for the rest of the hospital. To facilitate the communication the writer will present a poster to explain the whole change project. Additional dissemination will occur through conferences and in-service educational sessions that are being conducted in the hospital on a regular basis.
4.7 Summary and Conclusion

In chapter 4 the writer has described how the evaluation was employed in this project. The importance of doing health care evaluation was briefly described. An appropriate evaluation tool was chosen and used to evaluate the change project. The rationale for choosing the model was explained. The change agent who designs and implement the project are well aware of the complexity of the project and such complexity poses a considerable challenge for successful programme evaluation. By using the Kilpatrick four-level model all the set objectives were met. The writer used a quantitative method of evaluation mainly but a qualitative data collection method of participant observation was also used to assess if the knowledge gained from the training has been transferred to clinical practice. There was 54% increase in the documentation practice. There is a need for continuous monitoring of the progress. The need for regular auditing is essential to maintain the quality improvement and assurance (NMBI 2014). The successful planning, implantation, and evaluation of the project has helped in the improvement of the quality of CVAD care and also the more adherences to the documentation guidelines.

Chapter 5

Discussion and Conclusion

5.1 Introduction

This chapter focuses on a detailed discussion of the impact of the change project. The objectives set in chapter 1 were achieved and the project was successfully implemented as discussed in chapter 4. The core aim of this project was to implement a visual assessment tool to ensure that all the CVADs on the patients are checked on every shift. This tool was designed to help nurses to document the care
provided, which in turn will help in communication between the care providers. There was a marked increase in the adherence to the documentation post implementation of the visual assessment tool. Critical discussion of the impact of the project on stakeholders will be done in this chapter. Writers experience in leading the change will be discussed. The strengths and limitations of the project will be outlined.

5.2 Project Impact

Guiding and leading a change is challenging for everyone in health service. The members in health service are committed to taking this challenge and improve the way things are done. In health system, the introduction of a change will result in the establishment of a new service or reconfigure the existing service in order to deliver better outcome (HSE 2008). Prevention of hospital-acquired infection is a priority of HSE (HSE 2006). Consistent documentation is an important and integral part of nursing practice and it reflects the standard of the nursing profession (NMBI 2014). The impact of the project is connected to the set objectives and the methodology used to achieve the goals. The implementation of the tool helped in the improvement of the documentation standard. The consistent documentation helped in the communication between Nurses. This, in turn, will aid in the prevention of infections associated with CVADs. Central venous access devices have the potential for serious complication which leads to increased length of hospital and increased costs. This will result in poor job satisfaction among nurses who are involved in the care. The achievement of objectives and aim of the project will have an impact on Nurses as service providers, patients as service users and the organization.

5.2.1 Stakeholders

The change will involve a journey to the people who are involved in it. Understanding the peoples’ reaction and experiences and providing the support will ensure the
success of the change project. As Gossy (2008) has defined stakeholders as the group who are affected by the organization achievements. It is crucial to discuss the project impact on stakeholders who are involved in the project. HSE (2008) has clearly mentioned in the publication that individuals can experience a sense of uncertainty as the change progresses. This may end up in having resistance to the change. The change agent has to be skilled in managing the negative impacts on stakeholders.

The overall aim of the project was to implement the visual assessment tool that will help the nurses to carry out the documentation associated with the care of CVAD. It is widely accepted that the relationship between the change agent and the stakeholders and the between that stakeholders has an important part in the success of the project. According to Kilbourne et al. (2010), the organization adopting measures to improve quality will demand the stakeholders to work together so that they can help in the implementation of successful changes. The stakeholders who are primarily involved in the change are nurses. The involvement of the stakeholders from the beginning stages of the change helped the change agent to set the objectives and to meet the needs of the stakeholders. The change will have an ultimate effect on patients. The outcome of the project was an improvement in documentation standards for nurses. In writer’s point of view, the success of the project was an improvement in the quality of CVAD care provided. Even though the tool will demand more time from nurses, there is literature that shows, for the improvement in the quality of patient care hospitals rely on systems that will improve accuracy in documentation. The implemented project helps in the evaluation of the quality of care. Cheevakasemsook et al. (2006) have agreed that documentation has
multiple purposes and that the complexities of the documentation are associated with incompleteness and inappropriate charting.

Fernandez and Rainey (2006) have clearly indicated that the planned changes will require the change agents to persuade the stakeholders the necessity of the change. By convincing the individuals the need for change will help in crafting a vision for it. This vision will present a clear picture of future. Understanding the influence and power of stakeholders will enable the change agent to estimate the support he or she can expect in the project.

The implementation of the change enabled the writer to understand the leadership skills and the influence the writer has in the organization. Writers recognised the power, interest and influence of the formal and informal leaders involved in the project.

5.2.2 Practice

As outlined in chapter 1 the primary aim of the project was to implement a visual assessment tool to aid nurses to improve the documentation of the nursing care provided on CVAD. As discussed in chapter 3 the stakeholders expressed a willingness to change the practice. The impact of the project on practice is that the nurses changed the practice of documenting all the care given. Also, a proper documentation of the condition of the site was done using the tool. The daily checking of the site before documentation will enable the identification of infections at an early stage. The writer is anticipating an improved health outcome as a result of the change in the practice. To meet project objectives, informal education sessions were carried out which helped the writer to get more participation and get suggestion about the change.
By providing a continuous feedback and with consistent communication writer was able to gain commitment from stakeholders with fewer resistances. The comparison and dissemination of pre and post implementation audit results reflected a positive outcome. Along with this, a change in the practice of documentation was evident.

5.2.3 Theory

The writer has outlined the rationale for the change in chapter 1. Working as a staff nurse the need for change was identified from writer's experience. Using the tools like 7S writer was able to conduct an organizational analysis which made the introduction of the change easier to some extent. The readiness for the change was assessed. Holt et al. (2007) have identified that the readiness is a multidimensional construct influenced by beliefs among employees which show if they are capable of implementing the suggested change if it is appropriate for the organization they work if there will be enough support from the management if it is beneficial for the members.

Literature review in Chapter 2 helped as a theoretical framework and a rationale for introducing the change. Introducing a change is a complex process. The writer working as a staff nurse had no experience in organizing and leading a change, the use of HSE change model guided the writer in the implementation stage. As identified and cited by Erdoga & Enders (2007) leadership which is defined as the ability to influence others and a key factor in the goal achievement of the organization, is essential to change management. In modern health system, there is a marked increase in change programmes, identifying emergent leaders is a valuable resource for organizational development.
5.3 Strengths of the project
One of the greatest strengths of the project is the support writer received from the CVAD subgroup working in the organization. This helped in the implementation easier as the CVAD group introduced the tool in the hospital intranet which made it easy to access by the users. The positive approach of the staffs and managers was a real resource for the change. As discussed earlier clinical documentation is important in patient care and safety and it should be clear, timely and accurate. The evaluation of the project has the potential to prove that the use of the tool will aid the nurses to prevent the recurrence of adverse events due to the lack of documentation. Another strength identified by the writer is that through proper communication writer was able to tackle the resistance and obstacles that arouse during the implementation.

5.4 Limitation of the project
Change is a complex process; therefore, there will be limitations along with the strengths. Organizational developmental programmes are long term and time consuming. Due to academic requirements, there were limitations in the time period. In writer’s perspective, by conducting another audit after three months will show if the change is sustaining.

Another limitation identified by the writer was the small audit size. Due to the time constraints, the audit size was chosen was small even though the writer is aware of the fact that large audit size provides higher quality than small audit as suggested by Choi et al. (2010).
5.5 Recommendations

Uses of CVADs are common in modern health care; therefore providing adequate care is important. The appropriate care and management of CVADs can reduce the potential for associated complications. Nurses are the primary care providers; therefore, a routine involvement in quality maintenance should be done. The clinical audit should be repeated at a regular interval to maintain the quality. In-service education should be conducted to educate the nurses regarding CVAD care and documentation standards.

The experiences and knowledge from this project should be used by the writer to get involved in introducing more changes in the organization. Maintaining good communication with the team will ensure adequate support.

5.6 Summary and conclusion

The organizational developmental project selected by the writer was implementing a visual assessment tool to improve CVAD care provided by the nurses. The need for the change was evident from the literature review carried out in Chapter 2. HSE change model guided in the formation of a strategy which aided in the achievement of the set objectives. The role of effective communication to reduce the resistance has been highlighted.

Evaluation conducted in chapter 4 showed 54% increase in adherence to documentation standards, which shows that the care was carried out more appropriately than before. Kilpatrick evaluation model was used to evaluate the project. This study explored nursing documentation adherence and other related factors through both qualitative and quantitative methodologies. The study used
different methods of data collection: informal interviews, participant observation, and audit.

From the experience of implementing and evaluating this change and getting more involved with the organizational members, the writer is confident to be a leader and promote the team to move together to assure patient safety and quality.
References


**Appendix 1: 7- S Organisational Analysis**

<table>
<thead>
<tr>
<th></th>
<th>The 7- S Model</th>
</tr>
</thead>
</table>
| **Structure** | Important features of the organisation chart and the interconnection within the whole system  
- Department of Health  
- HSE  
- Hospital Board  
- Service Division  
- CEO, Deputy CEO, Director of Nursing  
- Patient care, Centre for nursing education  
- Clinical Nurse Managers  
- Nurses  
- Nursing Students |
| **Strategy** | Processes of goal formulation for the organisational growth  
- Department of Health  
- Hospital board, Strategic plans |
| **System** | Routine processes including how information moves around the organisation  
- Director of nursing meetings  
- Monthly director meetings  
- Monthly CNMs’ meetings  
- Monthly ward meetings  
- Study days  
- E-learning programmes  
- Informal study sessions by CPCs’ and senior nurses |
| **Staff** | Personnel categories who are involved in the organisational change  
- CVAD sub group  
- CNM 2 and CNM 1  
- Nurses  
- Student nurses |
| **Style** | How the managers behave in implementation of the change  
- Depends on the organisational culture |
| **Skills** | Skills in learning and implementing the knowledge into practice  
- Competencies  
- Level of knowledge |
| **Shared Values** | Understanding the readiness and resistance to change  
- Core fundamental set of values shared by nurses and governing boards (Nursing and Midwifery Board of Ireland NMBI) |
# Appendix: 2 SWOT Analysis

## Strengths, Weakness, Opportunities and Threats involved in the project

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Support from the CVAD subgroup</td>
<td>- Time limit in providing education due to the busy environment of the unit.</td>
</tr>
<tr>
<td>- The change agent’s access to the Co-Workers</td>
<td>- Nurses finding difficulty in allocating time for documentation</td>
</tr>
<tr>
<td>- The change will aid in the adherence to the policy</td>
<td>- Additional paper work</td>
</tr>
<tr>
<td>- The change will improve the adherence to the documentation guidelines</td>
<td>- Change is mainly directed towards nurses even though the benefit is for the patients</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>- To liase with CVAD subgroup and the stake holders</td>
<td>- Sustainability</td>
</tr>
<tr>
<td>- To help the documentation committee</td>
<td>- Staff resistance</td>
</tr>
<tr>
<td>- Change can be rolled out in the whole organization</td>
<td>- Time limitation for the documentation.</td>
</tr>
</tbody>
</table>
## Appendix: 3 PEST Analysis

<table>
<thead>
<tr>
<th>Political</th>
<th>Economical</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Published guidelines of SARI suggested using tools like visual assessment tools and care bundles.</td>
<td>- CRBSI leads to increase stay in the hospital which in turn will result in increased costs.</td>
</tr>
<tr>
<td>- Improvement in documentation according to the NMBI standards.</td>
<td>- CRBSI will result in increased use of diagnostic procedures and antibiotics.</td>
</tr>
<tr>
<td>- Improvement in health care quality reflects on government popularity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social</th>
<th>Technological</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Using the visual assessment tool will reduce readmission and increase stay in hospitals</td>
<td>- The assessment tool is available in the hospital intra-net.</td>
</tr>
<tr>
<td>- Enables admission to patients waiting for beds</td>
<td>- Nurses’ experience of using the hospital intranet helps in the easy access to the tool.</td>
</tr>
<tr>
<td></td>
<td>- The tool is easily accessible on the intranet with the other care plans.</td>
</tr>
</tbody>
</table>
Appendix: 4 Power / Interest Grid for Stakeholder Analysis

- CVAD sub group
- Clinical Nurse Manager
- Nurses
- Doctors
- Patients
Appendix 5: Force Field Analysis

Implementation of visual assessment tool to ensure CVADs are checked regularly and care provided is documented.

**FORCES FOR**
- Increased demand of CVADS and Increased CRBSI
  
  SCORE: 5
- NMBI documentation policies
  
  SCORE: 4
- Non consistency in CVAD care
  
  SCORE: 3
- Legal and ethical obligations
  
  SCORE: 4
- Improve communication between nurses
  
  SCORE: 2

**FORCES AGAINST**
- Staff resistance
  
  SCORE: 4
- Increase work load of nurses
  
  SCORE: 2
- Lack of awareness of legal obligation
  
  SCORE: 3
- Increase paper work
  
  SCORE: 1

**Total Score For Against**

<table>
<thead>
<tr>
<th>Against</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Total Score**

<table>
<thead>
<tr>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

Scoring: IMPORTANCE: (5) Very Important to the Change (1) of little important
# Appendix No: 6 Audit tool

**Patient No:**

<table>
<thead>
<tr>
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<th>Date and time of documentation</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CVAD Type Documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>Reason for use of CVAD documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>Condition of entry site checked and documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>Documented if Bio-patch is in place or not</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Date of dressing renewal documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>Date for next dressing renewal documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>7</td>
<td>Needle-free connectors changed (Mon &amp; Thur)</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>Check if dressing is intact and clean</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>9</td>
<td>Documented re patency of lumens</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>10</td>
<td>Patients temperature is checked and documented</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>11</td>
<td>Documented if there are any signs of infection</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total score Yes</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total score No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score N/A</td>
<td></td>
<td></td>
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</tbody>
</table>

Total Percentage(Total score of yes + No &N/A as a percentage of 10)
# Appendix : 7 Visual Assessment Tool

## Central Venous Access Device (CVAD) Care Plan

### Daily Assessment Continuation Sheet

Problem No: ❏

Name: __________________________  MRN: _____________________________

1. CVAD Type: ________________ Insertion Date: ________________

Reason for insertion: __________________

Removal Date (if Applicable): ________________

<table>
<thead>
<tr>
<th>Date:</th>
<th>Reason for use:</th>
<th>Site free from infection:</th>
<th>Biopatch Insitu:</th>
<th>Dressing renewed:</th>
<th>Needle free connectors changed (Mon and Thurs):</th>
<th>Initials:</th>
</tr>
</thead>
</table>

75
# Appendix: 8 Pre & Post Intervention Audit Results

<table>
<thead>
<tr>
<th>No</th>
<th>Compliance categories</th>
<th>Pre Intervention Dec 1st- Jan15</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Documentation about the CVAD types on the patient</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Reason for the use</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Condition of entry site checked and documented</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>4</td>
<td>Documented if Bio-patch is in place or not</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Date of dressing renewal documented</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>Date for next dressing renewal documented</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>Needle-free connectors changed (Monday &amp; Thursday)</td>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>Check if dressing is intact and clean</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>Documented re: patency of lumens</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>Patients temperature is checked and documented</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>11</td>
<td>Documented if there are any signs of infection.</td>
<td>20</td>
<td>90</td>
</tr>
</tbody>
</table>
Central venous access devices (CVADs) are an essential part of modern health. A visual assessment was introduced to check all the central venous access on the patients in the ward. This tool will ensure that all nurses who care for, manage and maintain CVADs optimise effective and safe care. It will also help the nurses to encourage best practice, minimise the risk of infection associated with the care and management of long-term use of CVADs and support standardised documentation practices.

**Aims & Objectives**

**Aim:** The core aim of this project is to implement a visual assessment tool to ensure that all the CVADs on the patients are checked on every shift and the care provided is documented properly.

**Objectives:**
- Conduct an audit in the beginning of December 2015 and end by 15th January 2016 on a randomly selected sample of clinical records.
- To conduct informal educational sessions for 27 nurses working in a specific oncology unit how to use the visual assessment tool that is to be implemented and the importance of using it by 20th of January 2016.
- By 28th of February observe that the nurses will carry out the dressings, care and flushing of a CVAD when not in use and changing of a needle free device according to hospital policy.
- By 10th March to observe that the nurses are using the visual assessment tool after providing CVAD care on a daily basis.
- Evaluate the effectiveness of the proposed change using audit post introduction of check list by 30th of March.

**Methodology**

The HSE model was used as a change model to guide the project implementation. The reason to choose the model is the people centred and consistent approach which helps to manage resistance and uncertainty.

**Evaluation**

Several sessions of informal education were conducted. The educational sessions and the ability to achieve all the five objectives were evaluated using Kilpatrick's four level training evaluation model (1959). The set objectives were achieved.

**Evaluation Continued**

Figure 1: HSE Change Model

A SWOT and PEST analysis was done to identify the internal factors and external factors that affect the change. Stake holders analysis and force field analysis helped to identify the stake holders and the forces that supports and weakens the change. Informal educational sessions were conducted to make the nurses aware of the importance of using the tool and how to use it. An audit tool was used to evaluate the change. 15 clinical records were audited before and after implementing the change.

Figure 2: Resistance

**Conclusion**

The implementation of the tool helped in the improvement of the documentation standard. Delivery of proper and safe care of Central Venous Access Device will help in the prevention of associated infections. Central venous access devices have potential for serious complication which will result in not only the increased length of hospital stay and increased costs but also poor job satisfaction among nurses who are involved in the care.

**Organisational Impact**

There was an overall 54% improvement in documentation standards. Pre implementation results - 39% and post implementation results - 93%.

**References**

# Appendix: Gantt Chart

<table>
<thead>
<tr>
<th>Activity</th>
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<th>Oct</th>
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