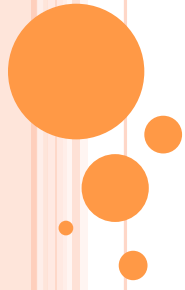


**EVIDENCE BASED EDUCATION: THE USE OF A  
DIGITAL VIDEO DISK (DVD) TO EDUCATE  
PARENTS ON THE CARE OF A CENTRAL  
VENOUS CATHETER: *DNP CAPSTONE  
PROJECT.***




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Conference: Defining Ourselves**

**OBJECTIVES**


- To outline risk factors for development of a catheter-related blood stream infection (CRBSIs);
- To describe the process of developing an education tool for providing information to patients and families;
- To acknowledge the importance of using evidence when creating tools for parent education of pediatric line infections.




## INTRODUCTION

- Short Bowel Syndrome (SBS) can be a congenital or acquired condition (Buchman, 2006).
  - Children with SBS need nutritional support to maximize growth and development and to provide fluid and electrolyte support (Goulet et al, 2006).
  - Total parenteral nutrition (TPN) is the gold standard of nutritional support (Messing et al, 2006).
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## INTRODUCTION

- Central venous catheters (CVCs) are required for the use of TPN.
  - CVCs are associated with complications such as catheter related blood stream infection (CRBSI).
  - CRBSI can be a major cause of morbidity, mortality, and increased health care costs.
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## **BACKGROUND AND SIGNIFICANCE**

- A large population of patients with SBS require long term central line access.
  - These children can have multiple central lines inserted and subsequently removed secondary to CRSBI.
  - In some patients the CRBSI cannot be successfully treated despite antimicrobial therapy.
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## **BACKGROUND AND SIGNIFICANCE**

- Failed medical management may lead to surgical removal of the CVC.
  - In several patients, options for vascular access are significantly reduced.
  - This can be a life-threatening scenario for children who require TPN to maintain their nutritional status.
  - The absence of central venous access is a contraindication to intestinal transplantation.
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## LITERATURE REVIEW

- Generally, more than 200,000 nosocomial blood stream infections occur each year.
  - The risk factors for these infections vary with:
    - type of catheter
    - location of the site of insertion
    - duration the line is in place
    - care used when accessing the catheter(Jarvis et al, 1991)
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## LITERATURE REVIEW

- The rate of CRBSI is higher in children and infants in pediatric intensive care units (ICUs) than in adults in ICUs.  
(NNIS, 2000)
  - CRBSIs account for up to 70% of re-hospitalizations in children and adults receiving home parenteral nutrition.  
(O'Keefe et al, 1994)
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## LITERATURE REVIEW

- CRBSI is used to measure the quality of line care (Richards, et al., 1997).
  - Low rates of infection are not related to the device used but the use of strict aseptic techniques both at the site of catheter entry and at the connectors (Howard, et al., 1989).
  - Educational programs on the use of aseptic technique have shown effectiveness in decreasing CRBSI (Smith, et al., 2003).
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## LITERATURE REVIEW

- Interactive and videotaped educational intervention has been used with adults in the past and has shown a reduction in CRBSI (Smith, et al., 2003).
  - DVD delivered education has contributed to adult patient knowledge, behavior and satisfaction in preoperative education (Lewis, et al., 2002).
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## LITERATURE REVIEW

- Smith, et al.(2003), conducted a clinical trial to evaluate an Interactive Educational Videotaped Intervention (IEVI) designed to prevent home TPN complications of CRBSI.
- A randomized placebo-controlled clinical trial was used to test IEVI that engaged patients in infection prevention problem-solving activities.
- It was concluded that IEVI reduced CRBSI which resulted in fewer hospitalizations and improved quality of life.


## LITERATURE REVIEW

- Coopersmith, et al. (2002) performed a pre and post intervention observational study targeted at RNs and developed by a multidisciplinary task force to correct practice with CVC insertion and maintenance.
- There was a 66% decrease in CRBSI after the intervention
- Educational programs can have a substantial impact on morbidity, mortality, and health care costs associated with CRBSI.


## PROJECT PURPOSE

- To reduce the incidence of CRBSI in children with SBS through evidence based education.
  - To establish content validity of a pilot training DVD.
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## PROJECT

- Internal review board approval was obtained from the University of Pittsburgh and Robert Morris University.
  - A 30 minute educational digital video disk was created using PowerPoint and video.
  - I Movie was used for editing.
  - An educational power point presentation was developed from the policy and procedure utilized at Children's Hospital of Pittsburgh of UPMC for care of a CVC.
  - The presentation was written at a 5<sup>th</sup> grade reading level.
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## PROJECT DESIGN


- A nurse educator was filmed in lab using a vascular access mannequin, Chester Chest™.
  - The nurse demonstrated hand washing, the proper way to put on sterile gloves, flushing the catheter, changing a running IV to a heplock, changing the cap, changing the dressing and managing complications.
  - I Movie was used to edit the presentation and video and place them together with voice over to create the pilot DVD.
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## PROJECT


- The pilot DVD, a copy of Children's Hospital of Pittsburgh of UPMC policy and procedure, a semi-structured questionnaire and a reference page were sent to a panel of expert consultants.
  - Four consultants were asked to compare the policy and procedure to the training DVD.
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## MEASURES

- The 8 item likert-scale questionnaire was designed to establish content validity.
  - The 4 possible responses were;
    - 1 = not relevant
    - 2= somewhat relevant
    - 3= quite relevant
    - 4= very relevant.
  - Content experts were asked open-ended questions to assess their overall opinion of the education tool.
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## CONSULTANT QUALIFICATIONS

- All expert consultants have at least 10 years of clinical and teaching experience.
  - All hold terminal doctoral degrees in nursing education.
  - All hold faculty appointments at regional universities.
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## RESULTS-QUANTITATIVE

- Experts rated all items “to a satisfactory degree” or “to a high degree”

## GRAPH-QUANTITATIVE

Question	High Degree	Satisfactory	Small	Not at all
1-steps in dressing change	3	1	0	0
2-prevention of infection	4	0	0	0
3-indications for central line placement	3	1	0	0
4-how to change the cap	4	0	0	0
5-how to flush the central line	3	1	0	0
6-how to heplock the central line	1	3	0	0
7-how to manage complications	3	1	0	0

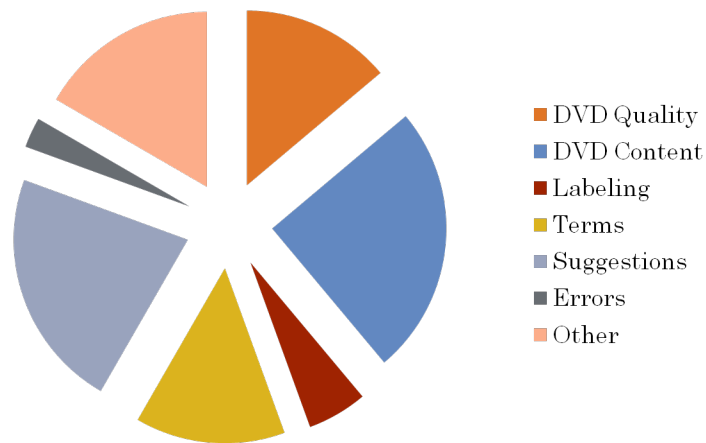
## RESULTS-QUALITATIVE

- Comments from the panel of experts were reviewed and 7 themes were identified:
  - DVD quality
  - DVD content
  - labeling
  - terms and definitions
  - suggestions for additional content
  - errors
  - other




## GRAPHIC OF QUALITATIVE DATA


Comments



## DISCUSSION

- Although some limitations are noted, this study lays the foundation for a much needed educational tool.
  - The information gathered from this initial project will facilitate the development of a professional DVD.
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## CONCLUSIONS

- Parents and caregivers are asked to care for medically complex children on a regular basis.
  - In order to provide care, they must be educated on the use of medical equipment.
  - Ideally, delivery of information using technology should be continually reinforced.
  - Providing education using a DVD allows the parent/caregiver to correlate auditory information with visual demonstration of steps in caring for their child's central line
  - A DVD can be viewed multiple times and may be a tool to teach family members and staff who care for the child.
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## FUTURE PROJECT

- Application in review for funding to develop a professional DVD and evaluate parent knowledge with pre-test/post-test.

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