

The effect of improving Nurses' Skill of Port-A care in a medical center of southern Taiwan

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Introduction

A Portal and a catheter (Port-A) is a device for patient of cancer to receive chemotherapy, general I.V., antibiotics, total parenteral nutrition or blood transfusion, especially chemotherapy drugs (vesicant chemotherapy) and total parenteral nutrition, to avoid injury by extravasation. If the Port-A were slipped, obstructed and infected, patient might need surgery again to remove and replace its base. Antibiotic treatment must continue after the operation, leading to longer hospitalization time. Therefore, this project aimed to improve the integrity of Port-A care at surgical ward of a medical center in southern Taiwan.

According to the catheter maintenance standard for the Nursing Department, a complete Port-A care was listed in (Table 1).

Table 1 Complete list of Port-A care

Items of Audit
(1) Accurate size of Port-A needle, and must be fixed with gauze if not fully inserted.
(2) Complete labeling of the dressing, including size and inserting time of the catheter and the start date of dressing change.
(3) Precisely follow the disinfection procedure to change the catheter every 7 days.
(4) The dressing is properly fixed and the OP-Site should adhere closely to the skin with the catheter setup.
(5) Health education activities must be documented in the nursing care instruction record.
(6) The catheter must be rinsed by intermittent push and shake with empty needle of more than 10ml in size and the tubing should be closed under positive pressure.

(7) Removed catheter must be rinsed with Heparin.

(8) Personnel must examine the integrity of catheter setup at each shift.

In order to understand the status of implementing maintenance of Port-A setup by the unit nursing staffs in accordance with the audit chart of the catheter maintenance standard for the Nursing Department, 16 nurses of the patient care units were cross examined by the ad hoc group (excluding the head nurse and the two auditors). From January 1 to January 31 of 2015, auditors were divided into three groups to examine personnel in shift at the patient care units by interviews and inspections to classify the care as complete in term of the eight items of the audit chart. Any incomplete item of audit would be further reviewed by open questions and answers and properly documented in the records. A total of 42 items was reviewed. Causes for incomplete Port-A care included improper fixation of gauze (64.6%), improper disinfection procedure (3.1%) and failure to educate patients (32.3%). According to survey questionnaires, many lacked the knowledge (42%) and the skills (44%) for the Port-A care, with the audit result of incomplete maintenance rate at 80%.

Method

After the analysis on current status, the confirmation of problems and the literature review, the ad hoc group would discuss the proposed problems of Port-A care and put forward various feasible solutions. The decision matrix analysis was used, where a total of 4 team members, including the head nurse, would vote by score of 1-3-5 for the feasibility, the economics, the significance and the effectiveness of each solution. Higher score indicated more likelihood for the solution to be used. The total score was listed in Table 2. Solution was believed feasible if the total score were above 60 after discussion. Therefore, feasible solutions included:

1. Organize on-the-job training.
2. Production of technical operation teaching aids.
3. Regularly check the specification and announcement.
4. Implement the audit procedure.
5. Draft the audit chart for catheter maintenance.
6. Institute a system of maintaining the integrity of catheter setup.
7. Draft the health education pamphlet.
8. Design the catheter maintenance guideline.

Table 2 Decision matrix analysis of reducing incomplete Port-A care

Problem	Solution	Feasibility	Economics	Effectiveness	Significance	Total	Use
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						Score	
A. Nursing personnel did not follow the standard to maintain the catheter setup	1. Organize on-the-job training	20	16	16	20	72	V
	2. Shooting training film for self-study	16	8	10	10	44	
	3. Production of technical operation teaching aids	20	20	20	20	80	V
	4. Purchase of technical operation teaching aids	12	6	20	6	44	
	5. Check the specification and announcement	18	20	14	14	66	V
	6. Implement the audit procedure	18	20	14	18	70	V
	7. Actual demonstration at the unit	8	6	8	10	32	
B. Lack of system for maintaining the integrity of catheter setup	8. Draft the audit chart for catheter maintenance	18	16	18	20	72	V
	9. Institute a system of maintaining the integrity of catheter setup	20	20	16	18	74	V
C. Lack of health education for complete catheter maintenance	10. Draft the health education pamphlet	18	14	18	20	70	V
	11. Design the catheter maintenance guideline	16	16	20	16	68	V

The on-the-job training was one of the focuses in this project, which was taught by clinical physicians of each unit, where nursing staffs could participate in the discussion and consensus of the course content. The course included the central nursing standard and technique. The analysis on the current situation showed problems in the Port-A care and clinical practice. By practicing with teaching aids on operational techniques, each nursing staff would follow the standard. The situational problems would test the awareness of nursing staffs. The course, specifically the technical operation, would be filmed and uploaded to the hospital department database to later review and practice of each step by the personnel.

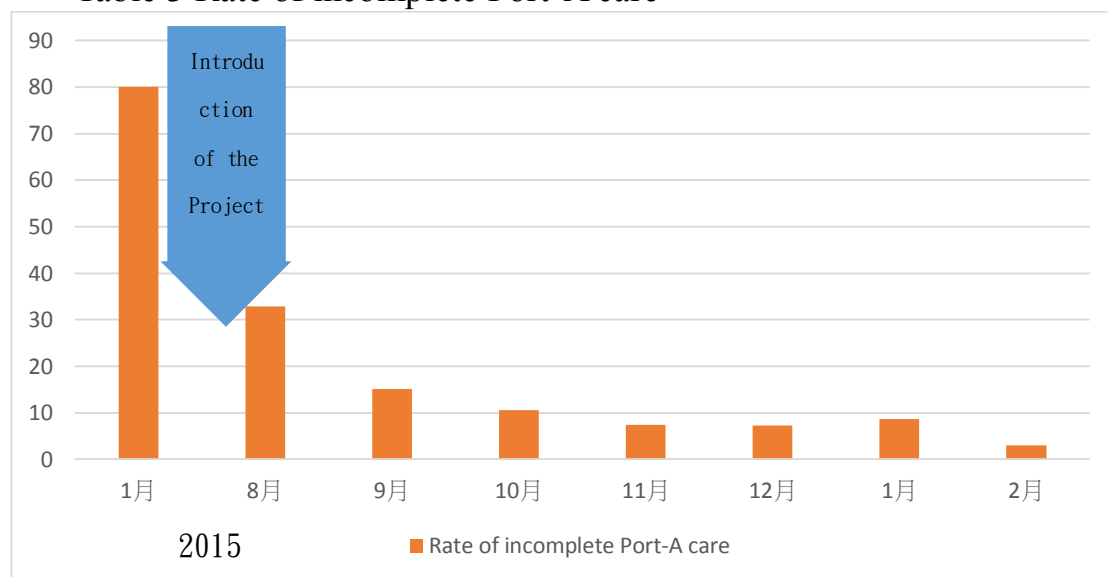
Result

For participation in the on-the-job training: A total of two training sessions for Port-A care was held in February and March of 2015. The participation rate was 100% and the satisfactory rate for the course was also 100%. The average accuracy rate for complete integrity of the Port-A care was 32.5% and it was significantly increased to an average of 92.5% for the accuracy

after the training, indicating a true improvement in both the knowledge and the skills in the Port-A care for nursing staffs.

For incomplete Port-A care: The audit results from August 2015 to February 2016 showed 32.8% (40 out of 122 cases), 15.1% (17 out of 113 cases), 10.5% (10 out of 96 cases), 7.4% (8 out of 109 cases), 7.2% (8 out of 112 cases), 8.7% (10 out of 116 cases) and 3% (3 out of 101 cases). The decreasing trend in ratio of incomplete Port-A care indicated the success of this project to reduce it to below 10% and without slippage, obstruction and infection of the catheter (Table 3).


Table 3 Rate of incomplete Port-A care



Discussion

In the course of the project, the unit nurses were willing to accept the guidance of the ad hoc group and together with the innovative use of medical wastes for teaching aids during the on-the-job training, teachers were able to attract their attention with simple devices (Table 4). With actual practice, the personnel were able to understand the correct maintenance procedure for the catheter setup, instead of imagination from reading technical guideline or manual. Any unfamiliar point or misunderstanding of the care could be immediately resolved by feedback recommendations shown by these teaching aids. As for the clinical audit, it was implemented with the general method, which was time-consuming and tedious that the catheter setups of these patients would also be inspected several times by the ad hoc group in addition to the regular inspection during the three shifts of personnel rotation. Although most patients were cooperative, some still complained that it was recommended to conduct the audit in selective sampling approach.

Table 4 Simple teaching aids

Exterior	Interior
	

Keywords: Port-A; Nursing education; Practice of teaching aids

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