

Effect of PRIME Project on the prevention of infection and errors in intravenous treatment



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Introduction (Backgroud)

Medication administration is one of the most tasks of nursing work and nurses are not only in charge of the overall medication administration process but also play a key role in to prevent medication errors as performers who finally deliver drugs to patients. More than 85% of inpatients are receiving various intravenous injections. However, intravenous injection therapy can cause various complications such as systemic infection with increased body temperature, varicose inflammation such as infiltration and blood at the injection site, air embolism, nerve damage, and abnormal location of the venous tube, so careful management should be carried out during the treatment. In addition, medication errors account for 31.8% of the total patient safety accidents, and drug preparation, incorrect dosage, and inappropriate administration are the causes. Accordingly, **this study aims to prevent complications and administration errors related to intravenous injection and contribute to improving the patient safety culture by applying a detailed clinical practice guidance program to support nurses' medication work during intravenous therapy.**

Objectives

The purpose of this study was ensuring patient safety by applying a safety injection practical project for nurses to prevent complications and medication errors and support clinical practice in intravenous(IV) infusion therapy.

Hypothesis

We have established three hypothesis as follows.

1. The compliance rate of clinical practice for safe injections will improve compared to before PRIME project implementation.
2. Medication error occurrence rate will be reduced compared to before PRIME project implementation.
3. Central vein complication rate will decrease compared to before PRIME project implementation.

Methods

Developed and named PRIME(Preventing Risks of Infections and Medication Errors in IV infusion Therapy) program for evidence based safe injection clinical practice to encourage unit-based activity. PRIME program consisted of Team organization and teaching, evaluation and monitoring, result analysis and action plan implementation and applied Plan-Do-Study-Act(PDCA) tool. PRIME program was applied from June 2019 to November 2019 to four medical-surgical units. Evaluation and compliance rate was monitored and analyzed every month.

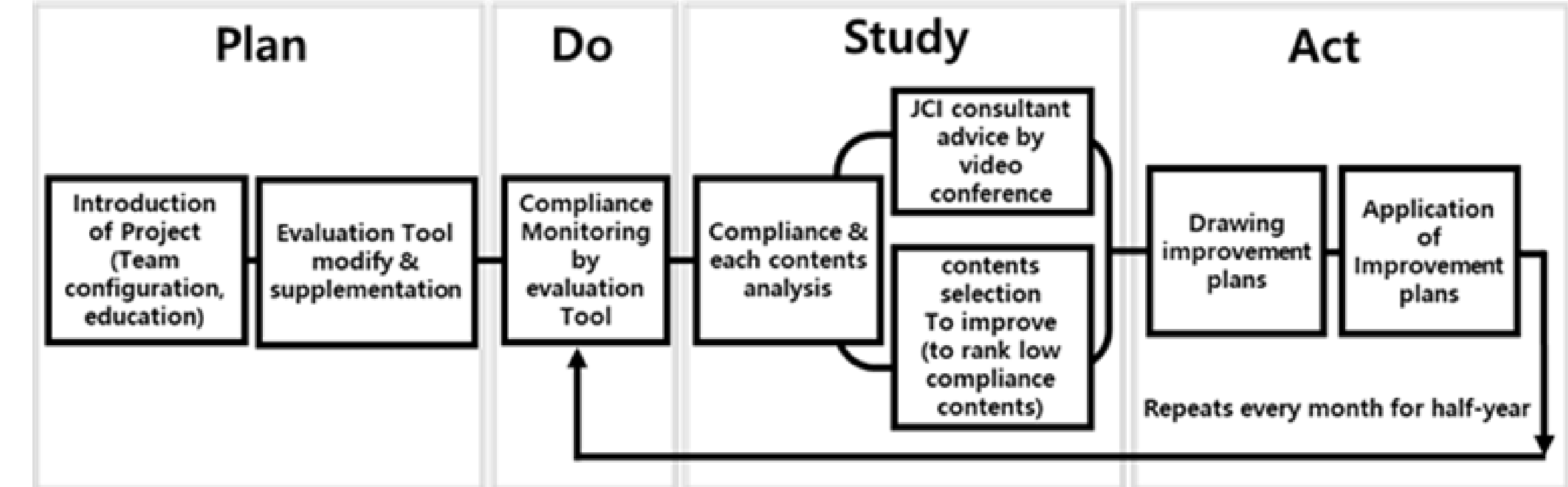


Figure 1. Study design

Team organization and teaching	Evaluation and monitoring	Result analysis	Action plan
.Lead team -Nursing department, Infection Control team, QI department .Champion team -expert nurse .Education contents (Time: 8hours) -Theoretical contents - Clinical Practice	.Development evaluation tool . Apply tool -evaluation monthly -each department -interview and observation nurses about intravenous injection . Monitoring each department	.Evaluation each contents .Detail contents analysis .Problem from evaluation result and violation of policy and procedure .Lead team meeting .JCI consultant advice by video conference	. Action plan in detail -one to one education -development education materials -campaign for medication safety

Figure 2. Prime Project contents

Research tool used by modifying and supplementing clinical practice checklist for safe injections provided by PRIME program. General matters were analyzed as real numbers and percentages, and tests of hypothesis were compared and analyzed by using t-test and Wilcoxon signed rank test.

*PRIME Program : developed by JCI(Joint commission international) for preventing risks complications and medication errors in IV therapy

Improvement activities



Education with material and newsletter for safety for medication



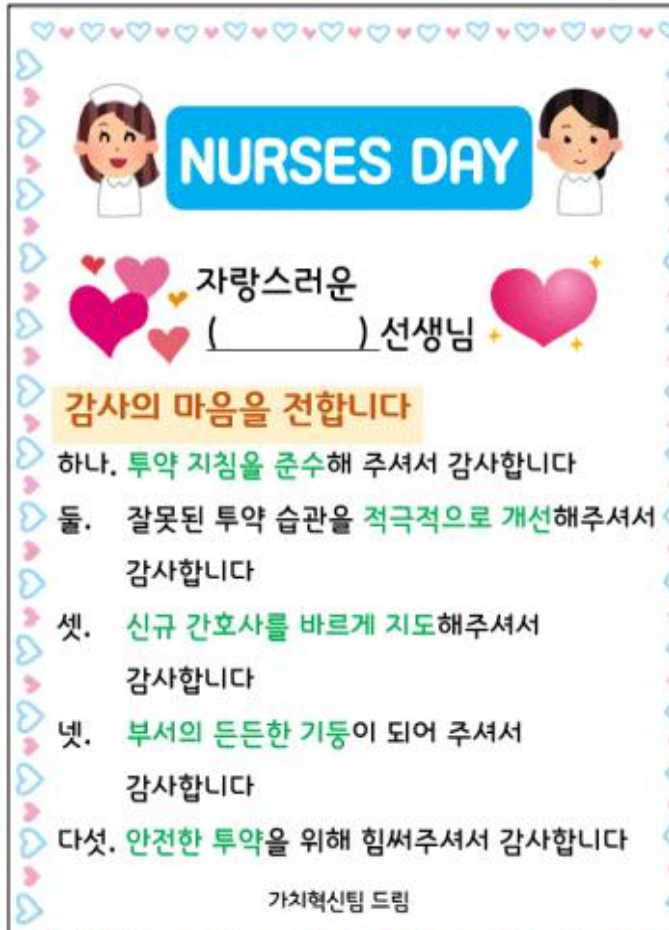
Monthly monitoring for 6month and one to one education each nurse



Video conference and discussion

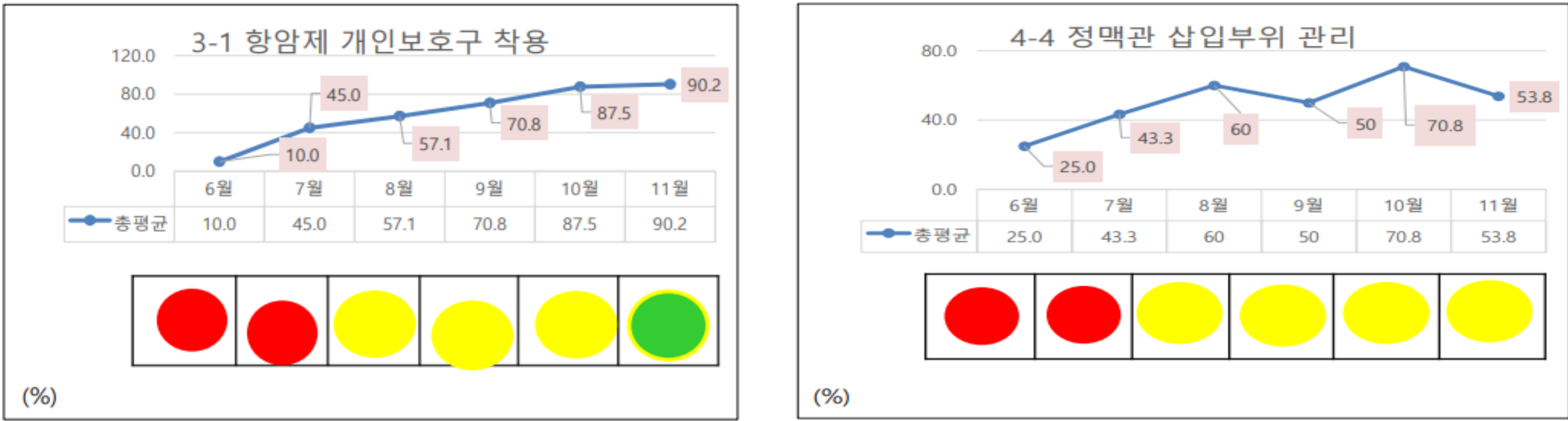


Campaign for nurses to encourage medication safety



Thank you message for nurses

Results



Share monthly result with dash board by detail item for each department

Table 1. Compliance rate of each contents after intervention

Contents	pre intervention	post intervention	t	p
	Mean±SD	Mean±SD		
Compliance rate	65.26±22.15	90.65±9.5	-7.052	<.001

Table 2. Medication error occurrence rate after intervention by unit)

Unit	pre intervention(%)	post intervention(%)	Z	p
Total	19.4	4.8	-1.604	.109

Table 3. Central vein complication rate after intervention

Contents	Pre	Post	Differences	t	p
Total complication rate(%)	1.3	0.7	0.6	0.585	.59
Infection incidence(%)	0.2	0	0.2	2.138	.099
Obstruction incidence(%)	0.7	0.6	0.1	-0.715	.514
Self removal incidence(%)	0.3	0.1	0.2	0.854	.441

Conclusion

The PRIME project was drawn **unit-based activity** through **standardizing evidence based safe injection clinical practice** from conventional practice. As a result, it improved nurses' competency and practice of patient safety and quality improvement.