The Role of Quality Control Circles in Sustained Improvement of Nurses, Handover in Emergency Department

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Abstract

Purpose: Compared to common departments, the handover defects in the emergency department are continuously increasing due to its environment and complexity. In this study, the quality control circles activity is carried out to lower the handover defect rate in the emergency department.

Method: The list is checked to determine the handover defect rate as 13.8%. In order to lower the nurses handover defect in the emergency department, we are planning to carry out the quality control circles activities and adopt the model plan-do-check-action (PDCA) in next 12 months.

Results: In terms of PDCA circle, nurses handover defect rate are lowered to 5.5% from original 13.8% in the emergency department. The handover quality has been obviously improved, nurses' sense of professional value and the patients' degree of satisfaction has been obviously improved as well.

Conclusion: The handover defect rate can be lowered by QCC in the emergency department, improve health care quality and secure patients' safety.

Keywords: The Quality Control Circles Nurses Handover

Introduction

Handover is a process to hand over patients’ information, the care plan and care responsibilities between patient caregivers. Unclear handover will give rise to adverse impact on continuous care for patients [1-2]. Patients in the emergency department are characterized by critical and complex conditions, large fluidity, numerous treatment and care items. In this case, oral handover is easy to bring about a loss of information, information inconsistency or even error and other problems, which will affect patients' subsequent care and recovery. The study demonstrates that, the handover defect may lead to higher hospitalization expenses and lower patients' satisfactions, and trigger more adverse events will be caused thereof from [3-5].

The quality control circle (QCC) follows the process "plan-do-check-action", which is a comprehensive and scientific management mode and has taken excellent effect in the medical field[5]. In this study, a QCC was established to lower the nurses handover defect rate in the emergency department, which not only improved our handover defect rate, but also promoted the application and practice of quality management and control tools.

Methods

Determine the theme of QCC

A QCC team named as "Emergency ROOM" has been established to deliver the concept of "heal the wounded and save the dying, no delay is allowed" the quality control circles contain totally 8 members, including two head nurses in the emergency department, 6 nurses in the emergency department. Director of Nursing Department who is responsible for nursing quality acts as the instructor for this activity. In this activity, a QCC meeting will be held once each month to assess, feedback the performance of each team member, conclude experiences and shortage, amend the nursing measures, so as to realize the continuous improvement of quality.

The theme of QCC we determined is "Lower the nurses handover defect rate in the emergency department". The main causes are as follows, first of all, the handover defect rate obtained in domestic investigation is 17.4%-60.30%[6-8]. Secondly, patients in the emergency department are characterized by large quantity, serious conditions and large fluidity. Thirdly, nurses in our department are characterized by their young age, low level and large fluidity.

Propose activity plan

According to the process and theme of QCC, activities and duration of each member to implement each step under the plan will be mapped to a Gantt chart. Overall plan of the activity is approved by the nursing department and executed during August 2017 to February 2019.

Current situation investigation and target setting

Through sorting the process, the bedside handover part is determined as the critical link of improvement. Members of quality control circles team prepare the check list (list 1), five members are in charge of following a nurse's check during nurses' bedside handover.

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Before check, personnel who are in charge of check will accept unified training to secure same quality of check. There are 63 nurses, who have been working in the emergency department for more than one year, are in charge of check. There are 4131 inspection items in total, with a defect rate of 13.8%. Through the Pareto drawn, the form illustrates that: The handover defects mainly reflect at two aspects: patients information handover and catheter handover. In view of this basic goal is set, the ability to circle is evaluated, and then the goal value is calculated by formula. The formula is current situation value - improvement value = current situation value - (current situation value * important points of improvement * circle ability) = 13.8% - 13.8% * 81.1% * 65% = 6.5%.

Causes analysis and countermeasures making

The fish bone diagram is drawn from four aspects including personnel, environment, system and method by using the brainstorming method (figure 1). The potential capacity caused by the principle of "5,3,1" is graded and five main reasons are selected by the method of 80/20: 1. Patient information is not familiar 2. Information transmitted error 3. Numerous items to be handed over 4. Insufficient training 5. Nurses lack experiences and qualification. For the five causes, a follow-up check list is made and drew a pareto and three root causes are identified finally. For the three root causes, several countermeasures are formulated by using the brainstorming method. Finally the countermeasures are developed through integration and sorted by the principle of 5W1H, namely: (1) the overall care of the responsible team is implemented in the emergency department (2) formulate handover control list (3) SBAR standardized communication.

| Checked by: | Check date: |
|-------------|-------------|
| Shift number: | Post: |
| Diagnosis: | Education background: |
| Inspection items | Inspection results |
| I. Patients situation | |
| 1. Principal diagnosis | Handover | Not handed over | Handover inaccurate |
| 2. Changes of vital signs | Handover | Not handed over | Handover inaccurate |
| 3. Vital signs of patients with positive symptom | Handover | Not handed over | Handover inaccurate |
| 4. Inspection results of positive checks | Handover | Not handed over | Handover inaccurate |
| 5. Key points of nursing | Handover | Not handed over | Handover inaccurate |
| 6. High danger risks | Handover | Not handed over | Handover inaccurate |
| 7. Abnormal mental state | Handover | Not handed over | Handover inaccurate |
| II. Venous channel | No venous channel | indwelling needle piece(s) | PIOC | CVC |
| 1. Specification for identification | Handover | Not handed over | Handover inaccurate |
| 2. Effectiveness management | Handover | Not handed over | Handover inaccurate |
| 3. Fix properly | Handover | Not handed over | Handover inaccurate |
| 4. Catheter blockless | Handover | Not handed over | Handover inaccurate |
| 5. Local situation | Handover | Not handed over | Handover inaccurate |
| 6. Cathetering depth | Handover | Not handed over | Handover inaccurate |
| III. Catheter conditions | No catheter | |
| 1. Specification for identification | Handover | Not handed over | Handover inaccurate |
| 2. Cathetering depth | Handover | Not handed over | Handover inaccurate |
| 3. Fix properly | Handover | Not handed over | Handover inaccurate |
| 4. Drainage situation | Handover | Not handed over | Handover inaccurate |
| 5. Local situation | Handover | Not handed over | Handover inaccurate |
| IV. Bedside instruments and units | No instruments and units | |
| 1. Parameter accurate | Handover | Not handed over | Handover inaccurate |
| 2. Connected correctly | Handover | Not handed over | Handover inaccurate |
| 3. Unit safety | Handover | Not handed over | Handover inaccurate |
| V. Special situation handover | No special situation handover | |
| 1. Special drugs | Handover | Not handed over | Handover inaccurate |
| 2. Special treatment | Handover | Not handed over | Handover inaccurate |
| 3. Special infection | Handover | Not handed over | Handover inaccurate |

Table 1 Emergency Department Nurses Handover Defect Rate Check List
Figure 1 Emergency Department Nurses Handover Defect Causes Analysis

Figure 2 Emergency Department Nurses Handover Standardized Process
Countermeasure implementation

Firstly, the overall management of the responsible team is implemented. According to the matching and level of human resources, the structure of the team responsibilities is optimized, and responsible team for holistic care is implemented as a unit. Head nurses select team members according to experiences and qualifications. Each team is limited to 8-10 team members; the patient's condition is communicated in real time and dynamically by the person on duty every day through WeChat. Then the handover list is formulated. Next, the preliminary draft of handover list is formulated on the basis of summarizing experiences, consulting literature and the semi-structured interview. Then an emergency department nurses handover list is developed through two rounds of experts enquiry. After which, the relevant training is carried out according to the content of the list, and employed it clinically. Thirdly, the SBAR communication mode is used during patients situation handover. In the course of the morning collective handover in the department, the situation of key patients is transferred through SBAR mode. Single disease SBAR communication mode was developed. During the bedside handover process, SBAR mode is used to hand over the patients situation. SBAR communication handover is as the last station in OSCE assessment.

Inspection

After the activity, the same check list is used to calculate the handover defect rate again. The Chinese version nurses handover handover report. After random inspection, the feedback information of experts enquiry. After which, the relevant training is carried out according to the content of the list, and employed it clinically. Thirdly, the SBAR communication mode is used during patients situation handover. In the course of the morning collective handover in the department, the situation of key patients is transferred through SBAR mode. Single disease SBAR communication mode was developed. During the bedside handover process, SBAR mode is used to hand over the patients situation. SBAR communication handover is as the last station in OSCE assessment.

Discussion

The investigation of Agency for Healthcare Research and Quality's (AHRQ) shows that, 49% medical staff are negligent in handover work by missing patients information. In this study, after establishing QCC, the patient information handover defect rate in the emergency department dropped to 5.5% from original 13.8%. This study demonstrating that, QCC is exceedingly effective in lowering nurses handover defect rate and improving the handover quality. Information continuity is ensured through the overall management of the responsible team. By relying on the We Chat platform, nurses can learn about patients' situation even if not on duty. There are many projects to be transferred for patients observed in the emergency room. The list enumerates the key points of handover shifts to avoid missing and reduce the occurrence of information missing due to memory or interruption events [11-12]. SBAR communication can realize clearer and complete handover, highlight the key points and make it easier for nurses to receive information in shifts [13-14]. In this process, the nurse's ability to think independently has been improved. Through the knowledge learned, the ability to analyze and summarize is also strengthened. The patient information can be clearly mastered, and the main question of patients can be precisely determined, so that the content delivered by nurses is more appropriate, so as to provide timely and safe medical services for patients.

Nursing quality depends not only on the effectiveness of nursing quality management methods, but also relies on nurses' quality awareness and participation in quality monitoring organization. In this study, the handover quality is checked monthly by four circle members under the quality control method and record it in the handover report. After random inspection, the feedback information is collected in time by circle members through communication and discussion with handover nurses. The implementation of measures should be constantly improved to ensure the effectiveness and improve the quality of handover.

Conflicts of interest: Authors report no conflict or competing interest.

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| Dimension          | Before QCC | After QCC | t     | p     |
|--------------------|------------|-----------|-------|-------|
| Information quality| 27.48±2.13 | 30.36±2.68| -7.314| 0.000 |
| Interaction support| 17.47±1.81 | 19.39±2.60| -5.271| 0.000 |
| Efficiency         | 15.40±1.66 | 16.58±1.37| -7.784| 0.000 |
| Total score        | 60.39±3.22 | 67.73±3.09| -14.377| 0.000 |

Table 2 Comparison of handover quality scores before and after implementation of measures
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