

DEVELOPMENT OF THE VISITING NURSE URINARY MONITORING PROTOCOL

Hypothesis / aims of study

Home-care patients with an indwelling catheter (hereafter, catheter) may experience various complications associated with long-term catheter placement, such as catheter blockage, which is one of the main reasons for emergency nurse calls. We developed a paper-based protocol called the Visiting Nurse Urinary Monitoring Protocol (hereafter, Protocol). The Protocol provides instructions to visiting nurses who are responsible for prevention, assessment, and management of catheter blockages. We conducted a pilot test of the Protocol and found that certain errors were likely to occur because of the paper-based nature of the Protocol, such as incomplete checking and wrong procedure order. Therefore, we developed an electronic Protocol to solve these problems. We report the developmental process of the electronic Protocol and our results.

Study design, materials and methods

From May 2016 to December 2017, four researchers developed the Protocol using the following six steps: 1, development of electronic screens; 2, site map development; 3, computerization review; 4, security review; 5, order placement with a software professional; and 6, completion of the electronic Protocol.

Results

1. Development of electronic screens

Forty electronic screens were developed based on the paper-based Protocol. Display screens to show changes in vital signs, pictures of urine properties, and provide information on the associated catheter symptoms were added because these records can be accumulated in the electronic Protocol.

2. Site map development

A site map was developed based on the electronic screens described above and the assumption of the catheterized patient's condition.

3. Computerization review

The Protocol was developed for use on portable devices because it will be used by nurses visiting catheterized patients' homes and at their visiting nurse stations. The Protocol functions include decision-making support for visiting nurses and accumulation or browsing of catheterized patients' information. Therefore, the Protocol was developed as an application software (OS, Android) to be used on portable terminals.

4. Security review

Data will be stored in the portable terminals because the data volume will be small and the budget is limited. No server will be used and the portable terminals will not be connected to the Internet.

5. Order placement with a software professional

Development of the Protocol based on the predetermined screens and the site map was outsourced to a software professional and completed in 3 months.

6. Completion of the electronic Protocol

The completed electronic Protocol includes 45 display screens because additional screens for data browsing and a list of reports made to physicians were included with the original 40 screens. The structure of electronic Protocol screens and the home screen are shown in Table 1 and Figure 1.

Table 1. Electronic Protocol screen structure

Type of screen	Number of screens
Application startup	1
Log in	2
Menu	4
Patient selection	4
Factor identification of catheter blockage	7
Assessment of catheter blockage	21
Management of catheter blockage	10

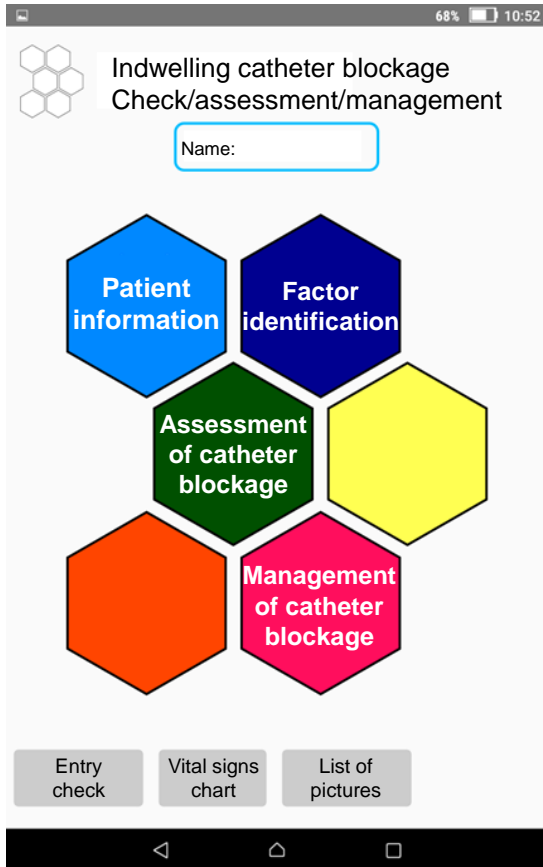


Figure 1. Application start up screen

Interpretation of results

The electronic Protocol enables users to check the catheter blockage-related factors, assess the catheter blockage, and manage it by following the instructions displayed on the screen. The Protocol functions, including browsing records, reviewing changes in symptoms over time, and taking pictures of urine properties, provide more information to be used by visiting nurses when making assessments and reporting to physicians.

Concluding message

The next phase will evaluate whether the electronic Protocol is usable by visiting nurses in patients' homes based on interviews with visiting nurses.

References

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