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## Staff Education to Increase Knowledge and Education of Urinary Tract Infection to Reduce Rehospitalization

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# Walden University

College of Nursing

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Yia Lor

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Executive Summary: Staff Education Project

Staff Education to Increase Knowledge and Education of Urinary Tract Infection to  
Reduce Rehospitalization

by

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## Summary

Urinary tract infections (UTIs) are considered the most common infections in healthcare, particularly in nursing homes. If appropriate preventive measures are taken, infection rates will be reduced. The DNP project aimed to enhance clinicians' knowledge to reduce and prevent UTIs in nursing homes. This knowledge expansion also significantly has potential to reduce the risk of unnecessary hospitalizations. A knowledge gap was identified that focused on the necessary preventive measures to impact patient outcomes positively. Addressing this in nursing is essential because it can help reduce mortality risks.

The project question was: Does an educational module on UTIs expand the knowledge of healthcare providers in the nursing home setting? The project used a PowerPoint presentation to present evidence-based practice for staff education. Pretests and posttests were used to measure the impact of the education. Descriptive statistics were used to analyze the effect of the presentation on staff knowledge. The data were collected by having the participants fill out the 10 questions from the pretest and posttest.

The participants consisted of six registered nurses and six certified nurse assistants who directly cared for the residents. The pretest and posttest results showed an increased understanding of UTI on only one question out of 10 from 50% to 67%. The remainder did not change with six at 100% for pretest and posttest. The implications for nursing practice are that increased education and learning support will provide the

residents better care. Improved quality of care can support positive social change and ensure that the best care has been provided to reduce mortality and morbidity risks.

### **Background**

Urinary tract infections (UTIs) are the most prevalent in long-term care nursing homes (Viner, 2020). It is known to be the most common infection among residents in long-term nursing homes (Viner, 2020). It is essential for nursing staff to be aware of the signs and symptoms of UTI and to know what to do about it. Early prevention can help reduce UTIs. The lack of staff education can lead to a lack of knowledge about interventions that would help to reduce UTIs in nursing homes.

UTIs can be broken down into two categories: symptomatic and asymptomatic. Symptomatic UTI is the “presence of urinary tract-specific symptoms with significant bacteriuria, specifically with a quantitative count of more than 10<sup>5</sup> colony-forming units of bacteria per milliliter in one urine specimen” (Wu et al., 2020). Asymptomatic UTI is the “presence of bacteria in the urine without any clinical signs or symptoms suggestive of a urinary tract infection” (Wu et al., 2020). It is imperative for the staff to be aware of the differences between these types of UTIs and to understand what to do when it arises.

### **Project Question and Project Purpose**

The project question addresses whether increasing education and giving intervention tools to the staff will help reduce UTIs in nursing homes. This is an educational project aimed at the nursing staff who directly care for the residents in the nursing home. This project delves into the realm of education and knowledge about UTIs.

### **Evidence Supporting Project Change or Gap in Practice**

The lack of education and knowledge on identifying UTIs can lead to unnecessary treatment, such as being inappropriately treated with antibiotics (Wimmer, 2023).

Inappropriate treatment with antibiotics can lead to drug resistance and the use of other expensive, unnecessary antibiotics (Wimmer, 2023). The absence of staff education in utilizing evidence-based protocols to aid in evaluating and assessing residents can contribute to reducing UTIs among them. Recognizing early signs and symptoms can help treat earlier to prevent worsening complications such as sepsis (Wimmer, 2023).

### **Summarizing Evidence Support the Change and Strength of the Evidence**

CINAHL Plus, ProQuest, and PubMed with Full review and peer-reviewed dates between 2020 and 2025 were the databases used to find relevant literature to support the project. The keywords used were *urinary tract infection* and *long-term care or nursing home*. The search yielded 930 results, and six articles were used out of those. The article “Educational Interventions to Prevent Urinary Infections in Institutionalized Older Adults,” by Almeida da Silva et al. (2024), is a research article about a quasi-experimental study about the effectiveness of an educational intervention impacting nursing professionals to prevent UTIs. The sample was 20 people, and questionnaires were given during the pre and post-stage of the study. The post-questionnaire was done 6 months after the staff educational intervention. The overall results showed an increase of 52% in staff education regarding the signs of UTIs. This research article is Level II evidence in the evidence-based practice framework. This evidence level provides a strong design with relevant insights into the identified problem.

The second research article by Delgado et al. (2022), “Nursing Staff’s Role in Detecting Urinary Tract Infections in Nursing Homes: An Integrative Review,” discusses the importance of nursing professions to recognize the common signs and symptoms of UTIs in the nursing homes. The increased staff education will help identify signs and symptoms of UTI and will be significant in preventing inappropriate antibiotic usage (Delgado et al., 2022). This article is an integrative review that falls into Level V, which provides a comprehensive understanding and review of the topic by synthesizing diverse research.

In another research article by Weaver et al. (2022), “An APRN-led Initiative For Improving Nonlicensed Personnel’s Knowledge About Urinary Tract Infection in Long-term Residents,” a literature review showed that UTI occurrence had reduced from 21%–31% weekly to 0% per week. A UTI prevention protocol was initiated for non-licensed personnel with training to improve their knowledge to recognize the common signs and symptoms of UTIs (Weaver et al., 2022). This research article falls into Level V in evidence-based practice. It represents evidence from systematic reviews of descriptive and qualitative studies.

Acquiring the appropriate knowledge and education can help staff identify the signs and symptoms of UTI. This will help with earlier treatment, hence enhancing infection control. Proper education on UTIs helps staff identify the critical signs and symptoms of UTIs and the risk factors. The project aims to increase staff knowledge and education about UTIs. The practice-focused question was as follows: Does an educational

module on UTIs expand the knowledge of healthcare providers in the nursing home setting?

### **Staff Education Project Development**

The participants who were used to develop and implement the project were those in the direct care of the residents. The healthcare staff includes registered nurses, certified nursing assistants, and unit managers like the Director of Nursing. Due to the lack of staff education, residents were being sent to the hospital for frequent antibiotic usage or not being treated appropriately when needed. Unnecessary antibiotics can result in more infections from antibiotic-resistant organisms. The project was presented and agreed upon following a meeting with the facility's leaders regarding staff education on the UTI of the long-term residents. A PowerPoint presentation on UTIs (see Appendix A) was presented to the staff at the nursing home. The pretests were passed to the staff to assess their knowledge before the presentation. The pretests, as well as the identical posttest (see Appendix B), consists of 10 multiple-choice questions retrieved from Weaver et al. (2022). The test was graded out of 10, with the highest score showing a higher level of knowledge and a lower score showing lower knowledge out of 10 (Weaver et al., 2022). After the presentation, the posttests were passed out again to determine whether the staff had gained knowledge and education about UTIs. The staff members stayed anonymous by not putting their names on the questionnaire sheet.

The statistical analysis was conducted using descriptive statistics, which can help summarize the overall data and look at patterns and changes. I looked at the scores out of the 10 questions for each test for the mean score result. Then, I compared the mean score

from the pretests and posttests. From the data collected using the 10-item test questions, the mean score of one of the questions improved from the pretest to the posttest. The scores for the rest of the questions did not change.

### **Results**

The staff participating in the pretests and posttests comprised 12 out of 40, which is 30%. Of the 12 responses, six were registered nurses, and the remaining six were certified nursing assistants. These were day shift staff; unfortunately, most of the PM and night shift staff were absent. Notably, the pretest and posttests demonstrated an improvement in the knowledge of only one out of the 10 questions (see Table 1). However, the remaining questions did not exhibit any changes between the pretests and posttests. The pretest, confirmed by the posttest, revealed that the staff demonstrated some baseline knowledge of UTIs. Six out of the 10 questions had a ceiling effect noted, with 100% correct scores on both the pretest and posttest questions. Three questions did not reach 100% correct scores showing gap in knowledge in a few areas.

There are limitations to this project, including the fact that the PM and night shift staff were not present to participate in the pretest and posttest. Staff had to sign out immediately after their shifts since the organization needs to stay within the guidelines of not having staff stay over. If the entire staff had been involved in the project, the projected results would have been affected. I was unable to reach out to the staff since email was limited. Therefore, I could only go with what was being presented to me.

**Table 1***Pretest–Posttest Results by Question*

Questions	Pretest	Posttest	Change
Identify the reason that does not place the older individual at risk for a urinary tract infection.	50	67	34
Which is the best way to prevent urinary tract infections?	100	100	0
Urinary tract infections are diagnosed by:	100	100	0
Urinary incontinence is the initial sign of a UTI.	67	67	0
When a UTI is suspected, what action is appropriate:	100	100	0
A preventative activity for a UTI includes:	100	100	0
Which health conditions does not place a person at risk for a UTI?	83	83	0
Assessments for UTI is the responsibility of:	100	100	0
Routine toileting will prevent UTIs.	100	100	0
Which of the following is not a symptom of UTI?	100	100	0

**Conclusions**

In conclusion, the DNP project aimed to educate staff about UTIs in nursing homes to reduce rehospitalization. The data collected from staff was limited to the number of staff who were available to attend. If time were not limited, the results might differ, and the resulting data collection, with a more representative group of staff, may have been more informative.

### **Impact on the Organization**

The DNP project will positively impact the organization with the resources and education for the staff. The staff must understand and be educated on the signs and symptoms of UTI. Secondly, it can also give them the appropriate assessment skills to report to the providers to reduce unnecessary rehospitalizations. The staff education emphasizes UTIs and what to do when and if resident changes occur. The project's outcomes may positively impact the organization, particularly the staff, by educating and increasing their knowledge by changing and preventing multiple rehospitalizations.

Given the limited number of staff participants, it was difficult to determine whether there was a lack of education. Three questions in the pre-test did show less than a 100% correct score with mean scores between 50%-83%, indicating having some knowledge. One of these questions showed improvement after the PowerPoint presentation. The lack of education can lead to unnecessary rehospitalization, which in turn can increase the risk of mortality and morbidity; therefore, reinforcing knowledge of UTIs was an important topic.

### **Recommendations That Might Be Considered**

Based on the findings from this DNP project, it is still essential to have a well-designed staff education program on UTIs, and guidelines on how to act upon recognition of changes suggesting UTIs should still be implemented. This project was done via a PowerPoint presentation, but one-on-one communication could also be implemented to ensure all questions were answered. Since I was informed that staff does not have email access, it cannot be easy to access online education. Therefore, paper copies will be

beneficial. The staff education could also be presented through modules for staff to look at on their own time, especially with those who cannot be present. Lastly, this project was completed in a limited time. Ongoing implementation and education can still be done over time.

### **Implications for Nursing Practice**

The implications for nursing practice are to foster an environment with education and resources for staff to provide exceptional quality of care and safety. The positive impact of this project on social change would be to increase staff education and knowledge regarding UTIs and what to do. This increased staff education and expertise can positively impact the residents by ensuring that appropriate care is provided for them. To recognize UTIs and their proper actions, we must address the issue of rehospitalization. Reducing rehospitalization can minimize complications and enhance quality care, prioritizing patient-centered care.

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# Urinary Tract Infections in Long-Term Care

Yia Lor, MSN, FNP-C

## Agenda

What is a urinary tract infection?  
Risk factors for UTI  
Common Practices  
Prevention of UTIs  
What to do

## What is a urinary tract infection?

A urinary tract infection is an infection of the bladder, urethras, and ureters. Symptoms of a urinary tract infection include fever, pain in the lower abdomen, urgency, or frequent urination, pain, or burning sensation with urination, inability to empty the bladder, dark or tea-colored appearance of urine or blood in the urine (Weaver & Whitening, 2022).



## Risk Factors for Urinary Tract Infections



## Risk Factors:

- Indwelling catheter
- Female sex and hormonal changes in women during menopause
- Sexual activity
- Weak immune system
- Diabetes
- Congenital anomalies
- Pregnancy
- Kidney stones
- Older age in both sexes

(Weaver, V., & Whitening, M. (2022))

## Common Practices

## Medical Providers and orders:

Orders will include:

- Diet Type
- Activity
- Fluid intake
- Vital sign frequency
- Antibiotic, if necessary, based on urine results



## Prevention of UTIs

- Adhere to routine toileting schedule.
- Maintain adequate fluid intake of 6 to 8 oz per day. If residents have congestive heart failure or kidney disease, follow ordered for fluid replacement.
- Adequate mobilization.
- Staff to practice routine gloving when providing direct care.
- Assist handwashing if unable to do it alone.
- For female resident, wipe from front to back with perineal care.
- For residents with urinary bag such as indwelling catheter, maintain the urinary bag below the bladder to avoid backflow in to the urethra. Empty when it is 2/3 full.
- Always perform hand hygiene after removing gloves.
- Wash residents' perineum area with mild soap and waste after each episode of incontinence or urination; rinse with water to ensure that soap residue is removed and dry the area completely.

(Weaver & Whitening, 2022)

## Suspected UTI, what to do:

- Abrupt changes in mental status or decline in functional status
  - + fever, urgency, frequency, blood in urine or burning with urination
    - Notify charge nurse or assigned nurse right away
    - Nurse will contact provider
    - Obtain U/A with C&S. Send to lab. If no lab on site, place specimen on ice or in refrigerator within 30 minutes of collection
  - No fever, urgency, frequency, blood in urine or burning with urination
    - Watchful wait: Discuss residents' changes with assigned nurse
    - Assigned nurse will notify provider about mental or functional status decline
    - Increase fluids if no contraindication (record fluid intake)
- Pain or burning with urination OR acute pain, swelling or tenderness scrotal
  - Notify nurse
  - Nurse will notify provider
  - Obtain urine sample and send to lab

## Suspected UTI, what to do:

No fever, but two of the following symptoms: Urgency, frequency, flank/back pain, suprapubic pain, or blood in urine

- o Notify nurse
- o Nurse to notify the provider
- o Obtain a urine sample
- o Send the specimen to the lab

+ fever and at least one of the following symptoms: Urgency, frequency, flank/back pain, suprapubic pain, or blood in the urine

- o Notify nurse
- o Nurse to notify the provider
- o Obtain urine sample and send to the lab





Assessments:

Vital signs  
Mental status  
Call provider

## Final tips & takeaways


- Understanding what are urinary tract infections
- Understanding signs and symptoms of a UTI
- Assessments!
- Notifying a provider of any acute changes
- Prevention is the Key!



### References

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## Appendix B: Pretest and Posttest

Hello everyone! My name is Yia Lor, and I am a student from Walden University currently in the Doctor of Nursing Practice program. I am also a nurse practitioner and presently working in pain management. I am working on a Doctoral project focusing on staff education on urinary tract infections in nursing homes. This project aims to increase staff education and knowledge on urinary tract infections to prevent hospitalization.

Recurrent admissions to acute care hospitals will increase their mortality and morbidity risks.

I look forward to reading your responses and hope to educate you on urinary tract infections.

### *Demographic Information: Answer the questions below.*

How many years have you been in your role?

What is the highest level of education you have achieved so far?

What is your current role?

1. Identify the reason that does not place the older individual at risk for a urinary tract infection.
  - a. Old age.
  - b. Decreased mobility.
  - c. High-fat diet.**
  - d. Poor hygiene.
  
2. Which is the best way to prevent urinary tract infections?
  - a. Increase fluids.**
  - b. Take preventative medication.
  - c. Avoid caffeine.
  - d. Use an adult diaper at night.

3. Urinary tract infections are diagnosed by:
  - a. Urinary odor.
  - b. Deep yellow-colored urine.
  - c. A laboratory test.**
  - c. Changes in vital signs.
  
4. Urinary incontinence is the initial sign of a UTI.
  - a. Yes.
  - b. No.**
  
5. When a UTI is suspected, what action is appropriate?
  - a. Place the patient on bed rest.
  - b. Initiate isolation precautions.
  - c. Report your assessment as appropriate.**
  - d. Inform a family member that hospitalization will be necessary.
  
6. A preventative activity for a UTI includes:
  - a. Daily baths.
  - b. Wearing loose-fitting clothing.
  - c. Ensuring an adequate fluid intake.**
  - d. Maintaining a low-fat diet.
  
7. Which health condition does not place a person at risk for a UTI?
  - a. Dementia.
  - b. Diabetes.
  - c. Blindness.**
  - d. Previous strokes.
  
8. Assessments for UTI is the responsibility of:
  - a. The MD only.
  - b. The MD or the RN.
  - c. The MD, RN, or PCT.**
  - d. Any family member.
  
9. Routine toileting will prevent UTIs.
  - a. Yes.**
  - b. No.
  
10. Which of the following is not a symptom of UTI?
  - a. Confusion.
  - b. Pain or tenderness in the lower abdomen.
  - c. Fever.

**d. Localized rash.**