Prevention Techniques for Rejection in Pediatric Transplant Patients

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Introduction

-Currently in the United States, transplant rejection in the pediatric population is highly prevalent thus requiring a strict post-transplant regimen to help prevent rejection and related complications.

- Many undergraduate students and future new nurses will have experiences with post-transplant patients requiring rejection prevention techniques be taught to the students and new nurses so they can better educate their transplant patients/families in the future.

Purpose:

- Develop an evidence-based project to determine the most important post-transplant rejection prevention techniques in the pediatric population and determine risk factors for post-transplant rejection.
- Develop an education session to the future new graduate students from the University of Cincinnati College of Nursing during their pediatric rotation about the importance of preventing transplant rejection in the pediatric population and the post-transplant responsibilities of a nurse.
- Teach the students about the importance of timely anti-rejection medication administration, patient/family education about medication adherence, protective isolation precautions, and diet with lifestyle management.
- PICO Question: Will education of post-transplant rejection prevention techniques to UC nursing students enhance their knowledge and confidence about post-transplant responsibilities of a nurse compared to prior understanding of the post-transplant process?

Literature Search

Databases:

- CINAHL, PubMed and The University of Cincinnati Library

Search Parameters

- Peer-reviewed scholarly articles
- Articles published within the last 5 years

Keywords

- Transplant, Transplant medications, Pediatrics, Pediatric Transplant, Post-transplant, Liver transplant, Diet/exercise, Medication administration protocol, Transplant rejection, Transplant rejection prevention, Family management, Tacrolimus, Cellcept, Medication level variability index and Transplant education.

Foxx, R (2009). Organ-transplant [JPEG]. Retrieved from https://www.flickr.com/photos/42012110@N08/3876887750/in/photolist-6UA4Ef-7cnMjx-9YaFrH-vixum-2hEJ1vC-2dcX5hh-2ir3ozn9-wAW5iz-56JPdm-tMyMCT-QSUYBS-wSFYrw-3 8XaUE-HCTo4n-JEuGf8S-2ir3p7v-54fCvm-56GLFi-hqzKJM-Rsha4g-cF214C-5sQmE8-2i3yenM-2ir3oJ1-5FJrDS-4q2yDA-chTcPs-U5hwV-LwEeVY-LRbqte-2hbuZU7-JoJK1N-2fU1Hn2-f3PNsd-LYgXNF-LwEeRQ-ofHwP3-tsAYsR-uAFMot-VCUjzs-8RkWuV-xdJCu-KZf80X-JzJuhZ-oyYazR-xevMf6-9f4pCh-jQUjdC-Uu3gfP-d7Jr6f-

Current Evidence

Medication Adherence:

- The Medication Level Variability Index (MLVI) should be used to identify patients and families that are at a high risk for medication non-adherence.
- Taking blood trough levels for anti-rejection immunosuppressant medications should be taken thirty minutes before the next dose in order to get the most accurate level.
- Medication dosages should be adjusted based on the trough level if there is too low or too high of a concentration of the drug in the blood to ensure proper immunosuppression without having too high of a level.

Diet and Lifestyle:

- Research shows pediatric transplant patients spend more hours inactive than non-transplant recipients. As a result these patients had an increased incidence of hypertension, decreased glucose tolerance, and decreased HDL (high density lipo-protein) levels.
- Transplanted pediatric patients showed an increase in BMI standard deviation score, this increases their chances of developing hypertension and cardiovascular disease post- transplant.
- Exercise is encouraged in pediatric transplant patients to reduce these risks associated with inactivity and to optimize health.

Family Management and Psychosocial:

- Barriers to effective health management outside of the hospital setting should be reviewed and proper resources should be utilized to maximize effective health management by the family and patient.
- The Medication Adherence Self-Efficacy Scale—Revised was used to assess the patients or caregiver's self-efficacy which was a determinant of proper medication adherence and management of health post-transplant.
- Proper management of families with a transplanted pediatric patient and proper identification of psychosocial factors that may affect transplant management are important to optimize health of the patient and family.

Education Plan

Purpose:

- Educate UC nursing students during their pediatric rotation about the importance of preventing transplant rejection in the pediatric population by educating them on post-transplant responsibilities and anti-rejection techniques.

Learning Objectives:

- Understanding the importance of patient/family education of post-transplant responsibilities of a nurse.
- Define ways to prevent post-transplant rejection.
- Identify barriers as to why post-transplant rejection occurs in the pediatric population.

Implementation/Education Session

Location:

- University of Cincinnati College of Nursing

Audience:

- Junior nursing students during their pediatric rotation

Presentation Tool:

- PowerPoint presentation with audio voice over accessed via online classroom. Information included: anti-rejection medications, patient and family education about transplant adherence, diet/lifestyle management, psychosocial factors with transplant, barriers to transplant regimen adherence, and post-transplant responsibilities of a nurse.
- Surveys given pre- and post-presentation to gauge student understanding

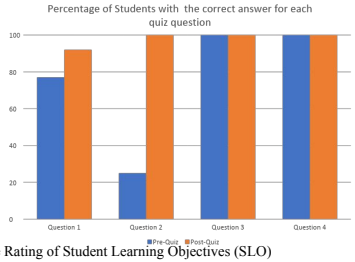
Questions asked:
Which of the following are barriers to post-transplant medication adherence? Select all that apply.
What is the time frame in which you can give an anti-rejection medication?
What are rejection prevention methods to provide to the patient/family during education? Select all that apply.
What are the nurse's responsibilities when caring for a post-transplant pediatric patient?
Using a scale from 1 to 5, with 1 being minimal agreement and 5 being full agreement, please rate your level of agreement about whether or not you achieved each learning objective. -Understanding the importance of patient/family education of post-transplant responsibilities of a nurse. -Define ways to prevent post-transplant rejection. -Identify barriers as to why post-transplant rejection occurs in the pediatric population.

(2007). Taking care of the young [JPEG] Retrieved from https://www.flickr.com/photos/kashif_noor555/1067012762 4/in/photolist-hTcoE-bLHzW2-2hjVUfb-Vdpp4y-dAuXXZ-2cAYLy5-pdAWSg-tSU5KJ-Qt9WLL-UQwicc-daJMcr-dfq94c-hxPHso-onKyN6-GAU9tC-9uzkMw-u7Ypl-hxyqE7-z5SCMu-dMebkC-2d85h5j-gDKh99-SLnrPL-aj1CDk-6y5dnt-3dJo6L-CHq3N3-5R2fUn-6vrYga-hxwEij-bLHHAx-bJfRMf-hxy79b-bLHCbi-CdZnqQ-iHGfEhJ-bLHHaT-qbBQBk-9AhgA2-obG5ik-8fXffy-9AhmY6-2exqdMJ-2dw1hHd-KCKJvP-WgG2ig-Rxbh43-7uXN3a-qHCimEk-HpACme

Feedback

Percentage of students with the correct answer for each question (12 student responses in total)

Pre-quiz:	Post Quiz :
Question 1- 77%	Question 1- 92%
Question 2- 25%	Question 2- 100%
Question 3- 100%	Question 3- 100%
Question 4- 100%	Question 4- 100%

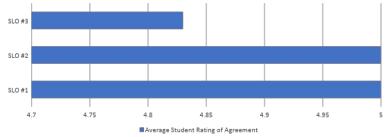


Average Rating of Student Learning Objectives (SLO)

SLO #1- 5.0

SLO #2- 5.0

SLO #3- 4.83



Overall, the results gathered showed that the presentation was successful in educating students on the predetermined learning objectives. Student responses showed evidence of learning from pre to post-quiz based on the increase in the percentage of students that got the answers correct. The student learning objectives were highly rated in agreement with improved learning with an average rating of 5 for objective one, 5 for objective two, and 4.83 for objective 3.

Lessons Learned

- Nurses should provide more education to patients/families on the importance of washing hands with soap and water, wearing a mask during social events, and taking prescribed anti-organ rejection medications efficiently.
- Prioritize the education to undergraduate nursing students to help aid in organ rejection awareness before they become a Registered Nurse.
- Continue to review education materials and extend research to increase knowledge on what nurses can do to help prevent organ transplant rejection in any population.
- Apply this information when caring for any organ transplant patient.
  - To prevent organ rejection.
  - To optimize patient health outcomes.

References

- References are available upon request

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