

Purple Urine Bag Syndrome: An Awareness Initiative Catherine Davis BSN, MPS, RN, CRRN

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Redefining possible for people with spinal cord and brain injuries

Introduction

Purple Urine Bag Syndrome (PUBS) is an unusual syndrome where indwelling urinary catheters and urine bags are discolored a purple color. Urine in the bag will appear in a range of colors, from grape juice purple to a pale yellow.

Background

- The first descriptions of purple colored urine were written in 1857. The term PUBS first came into use in 1978.
- Urine color is an important indicator in the spinal cord injury (SCI) population related to fluid consumption, infection, hematuria, and kidney function.
- The literature reveals that little is known about PUBS and a paucity of research studies exist related to the condition.
- Most of the articles on PUBS are single case-reports rather than experimental trials. There is little evidence correlating specific factors with the development of PUBS.

Possible Causes of PUBS

- discoloration of urine, catheters and urine bags results from indigo and indirubin, which are created in alkaline urine from the metabolization of tryptophan.
- The chain reaction begins with tryptophan in the large intestine. Tryptophan is normally where it is transformed by bacteria into indole.
- The indole is absorbed into the circulatory system and is transformed into indoxyl sulfate in the liver. With the introduction of various kinds of bacteria in the bladder, indoxyl sulfate is broken down into indigo and indirubin resulting in a purple discoloration.
- The longer that catheters and urine bags are in place, the more discolored they become. used.
- Some of the species of bacteria associated with the occurrences of PUBS are Klebsiella pneumoniae, E coli, Providencia, Proteus, Morganella, Pseudomonas, and Enterobacter.

Factors Associated with PUBS

- Based on current reports, PUBS is most often found in elderly patients with long-term factors that might contribute to the development of PUBS include constipation, dehydration, alkaline urine, and urinary tract infections (UTIs).
- Some studies report constipation as a contributing factor related to the process of transforming excess tryptophan into indole. Others have reported that even a slowing of peristalsis, as experienced by many in the SCI population, is enough to increase the chances of developing PUBS.
- Diets high in protein and calories may lead to larger amounts of tryptophan in the large intestine.
- Dehydration may contribute to constipation and UTIs, which are both considered risk factors by several case studies.
- The occurrence of PUBS varied between various case studies from 9.8 percent to 42.1 percent. While 42 percent may seem excessive, there is a definite need for the continued study of PUBS. Additional research studies that include groups, such as those with SCI, would aid in determining true risk factors from coincidence.

• The causation and origin of PUBS is not clearly understood. Some authors believe that the

absorbed in the small intestine. Excess amounts of tryptophan move into the large intestine

There seems to be little relation to discoloration and the brand of urine bags and catheters

indwelling urinary catheters, and is frequently associated with bacterial colonization. Other

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nclusion

UBS itself is relatively harmless, although is alarming visually and could be an ndication of a UTI. The more likely a person s to have colonized bacteria in their bladder and to suffer from frequent UTIs, the more ikely they are to develop PUBS.

The SCI population is generally at risk for leveloping PUBS because of long term rinary catheter use. More research needs to be done on PUBS to determine the difference between the actual causative factors versus oincidental factors.

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