



# Pediatric Clips

**NURSING**

## *Moderate sedation and anxiolysis for children in medical imaging*

*By Christa Barlow, MS, CNP-AC, and Sarah Seim, MSN, CNP*

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Pediatric Nursing Clips by Pediatric Advanced Practice Nurses at Dayton Children's provides quick reviews of common pediatric conditions.

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### CASE STUDY

Lily is a 5-year-old girl who presents to the department of medical imaging for a voiding cystourethrogram (VCUG). Lily has a history of recurrent urinary tract infections (UTI), was seen by a pediatric urologist and referred for this test. Lily was previously catheterized in her physician's office for a urine culture and her mother stated Lily complained of burning with urination for about 48 to 72 hours after catheterization. It was a traumatic experience for Lily and several office staff members had to help hold her for catheterization.

Lily's mother asked how the test would be performed. The urologist explained that a VCUG requires the insertion of a urinary catheter so contrast liquid can be inserted into the bladder. The contrast liquid flows into the bladder through the catheter while the radiology technologist takes x-rays throughout the study. When the bladder is full, the child can release the liquid by urinating. From this test, the radiologist can see if fluids are moving in the right direction. This can provide information to the urologist for the need for further treatment.

Lily was examined by the pediatric nurse practitioner prior to her VCUG test because the insertion of a urinary catheter can be an upsetting experience for a child. Some children benefit from anxiolysis (anti-anxiety) or sedation medications prior to the insertion. Lily's health history was unremarkable, except for her history of recurrent UTIs. On physical exam, Lily appeared anxious. She was sitting on her mother's lap and her heart rate and blood pressure were slightly elevated. It was determined that Lily could benefit from anxiolysis (anti-anxiety) medication prior to her VCUG.

Two options were available to help Lily alleviate her anxiety. The first choice being an oral medication, midazolam (versed), which can be administered by mouth. The medication begins working in about 10 to 20 minutes. This medication can help alleviate anxiety and has a short-term amnesic effect.

The second choice for Lily was nitrous oxide, which is a gas that is inhaled. It acts quickly and provides sedative and analgesic effects. Recovery from nitrous oxide is rapid, as the effects of nitrous oxide

disperse quickly when the gas is no longer being inhaled.

After discussing these two options with Lily, her parents and the radiologist, it was decided that Lily would be administered nitrous oxide during her VCUG test. A registered nurse (RN) specially trained in the administration of nitrous oxide and a child life specialist accompanied Lily for her test. The RN showed Lily a soft, bubble gum scented mask that was placed over Lily's nose. Nitrous oxide was slowly titrated until Lily reached a calm and pleasant state. The child life specialist talked to Lily, using visual imagery to keep her feeling calm and relaxed.

The urinary catheter was successfully placed, while the patient was breathing the nitrous oxide. Lily tolerates the procedure well and when the VCUG was completed, the RN slowly titrated the nitrous oxide level down until Lily was breathing straight oxygen. Lily was discharged to return home with her parents. Lily and her parents were happy with the nitrous oxide gas received during her procedure.

### CASE DISCUSSION

Pediatric sedation and anxiolysis are two methods used to help children successfully complete medical tests that are long or uncomfortable. For example, an MRI (magnetic resonance imaging) often can take a minimum of 45 minutes. During the test, the patient cannot move so

the MRI can obtain accurate pictures. Some older children are able to handle this with the help of video goggles or music; however, some children cannot successfully complete this exam without moderate sedation or anxiolysis.

Children scheduled to receive moder-

ate sedation (which is often used for an MRI) must follow the eating and drinking guidelines of no solid food or milk for six hours prior to the procedure, no breastmilk for four hours prior to the procedure and no clear liquids for two hours prior to the procedure. Children scheduled for

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anxiolysis (such as nitrous oxide gas for a VCUG) are asked to have only a light meal prior to their arrival. Restrictions are communicated to the parents prior to the day of the test, so the child is properly prepared for the type of sedation or anxiolysis that will be needed.

Sedation methods are selected based on the type/length of test, and age/weight of the child. When the history and physical is complete, the nurse practitioner and

radiologist will discuss the best medication and appropriate doses to complete the test.

Parents will be given home post-sedation instructions with guidelines of any possible post-sedation complications. Radiology nurses make follow-up phone calls to the child's parents/caregivers the following day to check on the patient and answer any questions the parents may have.

## REFERENCES

Colletti, James E. and Doyle, L. Pediatric Procedural Sedation. *Pediatric Clinics of North America* 2006; 53:2

## FEATURED NURSE SPECIALISTS



**SARAH SEIM, MSN, CNP,** is a certified pediatric nurse practitioner in the department of medical imaging at Dayton Children's.

Sarah completed a bachelor's degree at Clemson University in addition to receiving bachelor's and master's degrees in Nursing from the University of Cincinnati. She is certified in Pediatric Advanced Life Support and is experienced in sedation, urgent care and outpatient surgery.



**CHRISTA BARLOW, MS, CNP-AC,** is a certified acute care nurse practitioner in the department of medical imaging at Dayton Children's.

Christa completed her training at Wright State University and is certified in pediatric acute and primary care. She is certified in Pediatric Advanced Life Support and is experienced in sedation and pediatric cardiothoracic surgery.

## MEDICAL IMAGING AT DAYTON CHILDREN'S

The medical imaging department at Dayton Children's offers a full spectrum of imaging for pediatric patients. Radiologists are available 24 hours a day, seven days a week for consultation and to read studies. The department has state-of-the-art technology to provide the most accurate pediatric images with the lowest doses of radiation; we know that when it comes to imaging kids, less is more. Parents gave medical imaging 100% in satisfaction surveys when asked about the level of care given to their child's comfort and needs. Medical imaging is also available at five conveniently located community locations. For more information, visit [childrensdayton.org/locations](http://childrensdayton.org/locations) or for more information on medical imaging at Dayton Children's call (937) 641-3381.



For further information about The Children's Medical Center of Dayton or its nursing program contact the nursing recruiter at 937-641-5372 or [marketing@childrensdayton.org](mailto:marketing@childrensdayton.org).



One Children's Plaza  
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