The voiding cystourethrogram: minimizing patient and parent distress in an invasive radiologic procedure

Meghan Amorosa

Bank Street College of Education, mamorosa@bankstreet.edu

Follow this and additional works at: https://educate.bankstreet.edu/independent-studies

Recommended Citation
The Voiding Cystourethrogram: Minimizing Patient and Parent Distress in an Invasive Radiologic Procedure

By

Meghan Amorosa

Child Life

Mentor:

Genevieve Lowry

Submitted in partial fulfillment of the requirements of the degree of

Master of Science

Bank Street College of Education

2016
The Voiding Cystourethrogram: Minimizing Patient and Parent Distress in an Invasive Radiologic Procedure

Meghan Amorosa

Abstract

The voiding cystourethrogram (VCUG) can be considered one of the more distressing invasive procedures that children may experience in the outpatient setting. This paper will investigate the relationship between this radiologic procedure and child and parent distress. After a brief description of the VCUG, child distress will be discussed and evidence of distress and long-term effects will be presented. Parental distress will be explored with specific regard to anxiety transference and parental behavior during the procedure. Strategies for minimizing patient and parent distress during the VCUG will be examined in conjunction with the role of the Certified Child Life Specialist (CCLS), including preparation, coping techniques, restraint and the use of sedation. Finally, suggestions will be made to parents in an informative handout to aid them in supporting their child through this invasive procedure.
# Table of Contents

Abstract 2

About Voiding Cystourethrogram 4

Child Distress and Long-Term Effects of VCUG 4
  ● Distress and the VCUG 4
  ● Child’s Age and Developmental Stages 5
  ● Previous Experience with VCUG 6
  ● Long-Term Effects: Memory 7
  ● Long-Term Effects: Behavior 8

Parental Distress and Behaviors During VCUG 9
  ● Anxiety Transference 9
  ● Parental Behavior 9

Strategies for Minimizing Patient and Parent Distress 11
  ● Preparation 11
  ● Coping Techniques 14
  ● Post-Procedural Play 15

Other Considerations 15
  ● Restriction 16
  ● Sedation 17

Conclusion 18

References 20

Appendix A 23

Appendix B 26
About Voiding Cystourethrogram

The voiding cystourethrogram (VCUG) is a radiologic procedure commonly carried out during childhood to diagnose vesicoureteral reflux, in which urine flows backward from the bladder towards the kidneys (Felber, Schabmann, Inschlag, Karesch, Ponocny-Seliger, Friedrich & Voelkl-Kernstock, 2011). During the procedure, the child must lie on an exam table while the physician cleans the genital area and inserts a catheter into the urethra; the bladder is then filled with contrast (Felber et al., 2011). Images are captured with a fluoroscope while the bladder fills, and the child is asked to void on the table when they feel the urge to urinate (Felber et al., 2011). Due to the invasiveness of catheterization and the command to void in public, VCUGs can involve high levels of psychological and physical distress for the child (Felber, Schabmann, Schmiedek, Friedrich & Voelkl-Kernstock, 2014).

Child Distress and Long-Term Effects of VCUG

Distress and the VCUG

While the VCUG is considered the standard of investigation for diagnosing reflux in children, less attention has been paid to the stressful effect of this potentially painful procedure (Robinson, Savage, Stewart & Sweeney, 1999). Many aspects of the VCUG can be experienced as distressing to both the child and their parents. The anticipated anxiety of the procedure; the examination of the child’s genital area by a stranger; the insertion of a catheter into the child’s body; the embarrassment of lying uncovered on an exam table; and the command to urinate in front of those present in the exam room are all aspects of the VCUG that create the possibility for distress in the child (Felber et al., 2011). It has been found that each phase of the procedure puts different demands on the
child, with the anticipatory phase (in which the child is waiting for the procedure to begin) the least distressing and the catheterization phase (in which the genitals are cleaned and the catheter is inserted) the most distressing (Felber et al., 2011). Age may play a factor in which phase is considered more distressing, as voiding on the exam table may be experienced as particularly traumatic for younger children who have recently been toilet-trained (Gebarski, Daley, Gebarski, Keshavarzi, Hernandez, Ivanzic & Gebarski, 2013). Finally, the VCUG renders the child dependent on those in the room, as they may be separated from their parents and their legs may be forced apart and held down (Stashinko & Goldberger, 1998).

The overall perception in healthcare is that the VCUG is a short and painless procedure, despite evidence that it is distressing to children (Stashinko & Goldberger, 1998). In one study, parents tended to rate their child’s distress and their own distress as higher than staff ratings, indicating that parents see this procedure as having a significant impact on their child’s level of distress (Giramonti, Fox, LaRaia, Halpern, Dangman & Kogan, 2011). In another study, 27% of the children were found to have high scores indicating severe distress on a scale measuring their reaction to the procedure (Robinson et al., 1999). The level of distress experienced by children undergoing a VCUG varies according to the age of the child and the child’s previous history with the exam.

*Child’s Age and Developmental Stages*

In general, younger children experience a higher rate of distress during the VCUG, especially with regard to catheterization (Felber et al., 2014). Specifically, distress has been found to be most severe among children ages one to four, and lowest in children under the age of one year, who have less capacity for memory of such an event.
(Robinson et al., 1999). Older children tend to start out at a lower distress level in the anticipatory phase; their increase in distress during catheterization is smaller than in younger children, and they tend to calm more easily at the beginning of the filling phase, resulting in their distress remaining lower throughout the rest of the procedure (Felber et al., 2014). In contrast, younger children remain at a high level of distress throughout the procedure, possibly due to their inability to easily regulate their reactions to changes in stimuli (Felber et al., 2014).

For infants under the age of one year, separation and pain are potential issues they may experience in the hospital setting (Rollins, Bolig & Mahan, 2005). Frequently the most distressing aspect of the VCUG for this age group is catheterization because of the discomfort; separation from a caregiver may also present a challenge if the female caregiver is pregnant or the facility does not allow caregivers in the fluoroscopy suite. For toddlers and preschoolers ages one to six, a fear of bodily injury, issues surrounding toilet-training, loss of control and distress due to bodily restraint are developmentally appropriate responses to the VCUG experience (Rollins et al., 2005). While catheterization can cause distress for this age group, the voiding stage of the exam poses a particular challenge to children who have been recently toilet-trained, as they have difficulty reconciling the logic of urinating onto an exam table. Older preschoolers may have less difficulty in remaining still for the procedure than toddlers with the use of proper coping techniques. For school-aged children ages six to twelve, concerns about privacy and intrusion of a foreign object into the genital area may arise during a VCUG, and the overall experience may cause anxiety (Rollins et al., 2005). Though VCUGs are
uncommon among teenagers, concerns about privacy and independence from parents may be present in this age group (Rollins et al., 2005).

**Previous Experience with VCUG**

There is contrasting evidence on whether previous experience with VCUG increases anxiety and distress in children. Some patients may experience a habituation effect upon experiencing several procedures, the theory being that the more children have an experience, the more likely they are to become accustomed to its effects and the more likely it is to become a routine. However, some studies have found that previous experience with an invasive procedure is not associated with child coping or distress, meaning that increased experience of a procedure does not lead to habituation (Mahoney, Ayers & Seddon, 2010). Both Felber et al. (2014) and Giramonti et al. (2011) found no significant influence of previous experience with VCUG on children and parent’s levels of distress in a current VCUG. In comparison, Robinson et al. (1999) asked parents one week after the procedure to rate their child’s distress during the VCUG. Among those rated by their parents as experiencing “severe distress”, 36% had already undergone a VCUG, indicating that parents consider this procedure to be increasingly traumatic on their children (Robinson et al., 1999). While some patients may experience a habituation effect, many will continue to experience high levels of distress each time they are subjected to a VCUG.

**Long-Term Effects: Memory**

When considering long-term effects, it is important to note the role that memory plays in a child’s reaction to traumatic experiences. Many believe that children are not capable of producing valid memories of subjective trauma experiences, but there is
evidence that traumatic memories may be present in children as young as 16 months and persist well into adulthood (Stashinko & Goldberger, 1998). In invasive procedures, children who experience high levels of pain and behavioral distress tend to form negatively exaggerated memories that later predict children’s pain and distress in future procedures (Noel, McMurtry, Chambers & McGrath, 2010). Additionally, children with negatively exaggerated pain memories are at risk for developing medical phobias and avoidance of medical care as adults (Noel, et al., 2010). In terms of memories specific to VCUG, children ages three to seven were able to accurately recall 88% of the components of the procedure immediately after the exam and 83% of the components six weeks later (Stashinko & Goldberger, 1998). Age does not appear to factor into the accuracy of recall, as younger and older children make the same number of errors when recalling their VCUG experience (Sjoberg & Lindholm, 2005). This evidence implies that children retain memories of their VCUG experience and that those who had a distressing experience can replay precisely the aspects of the procedure they found most traumatic, thereby affecting their emotional well-being in the long-term.

**Long-Term Effects: Behavior**

The long-term effects of the VCUG are perhaps most evident in the behaviors that children display in the weeks and months after the procedure. Gebarski et al. (2013) found that behavioral changes, clinging to parents and disturbances in toilet-training and sleep routines were common after a child experienced a VCUG. In another study, one-third of parents reported behavior changes in their child after the procedure, including difficulty passing urine, a fear of medical personnel and general irritability (Robinson et al., 1999). Repetitive play that imitates the VCUG, difficulty talking about the procedure
and fear generalized to other healthcare settings are also potential effects that have been observed (Stashinko & Goldberger, 1998). From this evidence, it is possible to conclude that the level of distress experienced during a VCUG can significantly influence children’s behavior in the long-term.

**Parental Distress and Behaviors During VCUG**

*Anxiety Transference*

When facing new experiences in the hospital setting, parents and caregivers may find it difficult to regulate their own anxiety in order to provide support for their children during an exam or procedure. Anxiety may therefore transfer from the parent to the child, as children often take cues from their trusted caregiver. In one study, parents who reported experiencing high distress during the VCUG also reported that their child experienced greater distress, and overall parental anxiety scores coincided with child distress scores (Giramonti et al., 2011). Trait anxiety played a role in influencing child distress, as parents who were lower in trait anxiety tended to use more problem- and emotion-focused coping strategies rather than reassurance or criticism, resulting in ratings of less distress by staff members in both parents and children (Giramonti et al., 2011). Overall, decreasing parental anxiety decreases child distress during the VCUG (Gebarski et al., 2013).

*Parental Behavior*

Parents and caregivers can have an impact on child distress when they are present during a VCUG. Certain behaviors displayed by the caregiver can increase or decrease child distress throughout the exam. Behaviors such as inappropriate reassurance, criticism or apology towards the child can result in increased distress (Giramonti et al.,
In contrast, coping behaviors such as distraction or humor can decrease a child’s distress and help the exam go more smoothly (Giramonti et al., 2011). Two studies by Felber et al. (2014) and Felber et al. (2011) investigate specific parental behaviors and their effect on child distress.

Felber et al. (2014) explored the influence of different types of adult behavior on their child’s distress during the VCUG, including distraction through non-procedural-related talk to the child, humor shown to the child and commands to the child to use coping strategies. The results found that distraction and non-procedural talk were related with decreased child distress, especially during catheterization, and that humor decreased distress overall in children, especially during the catheterization and voiding phases (Felber et al., 2014). Interestingly, parent’s commands to use coping strategies (such as commands to “breathe”) were not correlated with decreased distress, but it should be noted that there was no rehearsal of coping strategies with children prior to the examination (Felber et al., 2014).

In another study, Felber et al. (2011) investigated parental soothing behaviors and their effect on child distress during VCUG, and made the distinction between reassuring comments by parents and soothing noises such as “sh sh”. The authors speculate that parental reassurance (such as “you’re okay”) increases distress during catheterization because these comments provide inconsistency in the experience when a parent reassures the child before the exam begins but the child is then subjected to the painful stimulus of the catheter (Felber et al., 2011). Thus, parental reassurance was found to increase child distress, especially when parents reassure their children during the anticipatory phase, leading to higher distress during catheterization (Felber et al., 2011). In contrast,
soothing noises such as “sh sh” were found to decrease distress throughout the exam; the authors speculate that this is because such noises do not convey any information about the events of the exam, but rather display the emotional involvement of the parent (Felber et al., 2011). In reality, the tone of reassuring comments indicates potential anxiety in the parent, and may be doing more to reassure the parents than to reassure the child (Felber et al., 2011).

**Strategies for Minimizing Patient and Parent Distress**

The work of the child life specialist can be essential in reducing patient and parent distress during medical encounters. Certified Child Life Specialists (CCLSs) are trained to promote effective coping in children and their families through preparation, education and expressive activities (Child Life Council, 2015). The role of the CCLS in a pediatric radiology department is to assess the individual needs of the patient and family prior to the test and provide developmentally appropriate preparation and coping techniques (McGee, 2003). These services and strategies can be effective in minimizing patient and parent distress during a radiologic exam such as a VCUG.

**Preparation**

It is important for children to feel successful and competent in mastering challenging life experiences, and this is certainly true of any invasive medical procedure (Stashinko & Goldberger, 1998). Preparation prior to a VCUG is important for both parents and children in terms of gaining mastery of the experience. In some cases, preparation can begin as soon as the appointment is made for a VCUG, if the contact information for the CCLS is made available to parents. Parent-guided preparation can be initiated prior to the procedure date with the consultation of the CCLS and can help
alleviate anxiety (McGee, 2003). This also allows time for the parent and child to practice strategies to enhance coping and lets the CCLS clear up any misconceptions that the family may have about the upcoming exam (McGee, 2003).

While some facilities may allow for a phone consultation prior to the exam, many children will be meeting the CCLS on the day of their exam with little knowledge of the upcoming test. Upon meeting in person, the CCLS can assess the child’s temperament, interests and information processing abilities to tailor the preparation and coping strategies to his or her needs (McGee, 2003). The CCLS can assess the parent’s expectations regarding the child’s ability to cooperate with the exam, clear up any misconceptions and create a partnership that empowers the parent in the care of their child (McGee, 2003). In addition, parents are often calmed by knowing what to expect in advance of the test, which can negate any potential transference of anxiety from parent to child (McGee, 2003).

Preparation can vary based on the developmental stage of the child. For infants, the preparation and involvement of their caregivers in the medical experience is key. For toddlers between the ages of two and three, exploration of the environment and the materials used in the exam can be helpful, as well as the recreation of the events with a doll and catheter (McGee, 2003). Preschoolers can be prepared from a sensory perspective with simple descriptions on how he or she will be positioned and the steps of the procedure (McGee, 2003). Demonstration with a doll and rehearsal of the procedure (e.g., practicing lying still) with narration can be appropriate for some children in this age group (Stashinko & Goldberger, 1998). School-age children, who are beginning to think logically, may be interested in more sophisticated descriptions of the VCUG using
concrete language and references to anatomy within the body (McGee, 2003). Adolescents may prefer in depth explanations about the procedure and may want to take a more proactive role in their health care.

One preparation tool that may be particularly effective with children is a storybook that uses pictures of the facility’s radiology department and fluoroscopy suite to tell the story of the child’s VCUG. Gebarski et al. (2013) hypothesized that the use of a storybook to prepare children for VCUG would improve child tolerance of the exam. Children who were prepared with the book were more likely to have high scores on a tolerance scale across age levels, and children ages two through six in particular showed improved tolerance in comparison to those who were not prepared with the book (Gebarski et al., 2013). Parents can also play an important role in preparing their child for a VCUG. Through the provision of an informative handout with information about the procedure, suggestions can be made to parents on how to prepare their child and what their role can be during the exam. Such a handout can be sent to parents prior to the appointment so that they can practice strategies to enhance coping with their children, clear up misconceptions about the procedure, and can become supportive and active participants in their child’s care (McGee, 2003; see appendix B). While parents are the best support for their children, in an unfamiliar medical environment, parents may need specific instructions on how to best assist their child during stressful procedures, and such a handout can be beneficial in this regard (Felber, et al., 2011). Regardless of the method used and the age of the child, preparation for the VCUG experience can decrease child distress, increase tolerance of the exam, and help lessen the potential for negative long-term effects from the procedure.
Coping Techniques

Distraction and coping techniques are integral in lessening child distress during VCU; the CCLS can assess the child and caregiver’s coping styles and provide support during the procedure (Vilas, 2009). When distress is lessened during the catheterization phase with effective coping techniques, children experience less distress throughout the rest of the procedure (Felber et al., 2011). There are potential changes to the way that the procedure is conducted that can aid in a child’s coping. For example, the use of a position of comfort during catheterization, in which the child is lying on his or her back with legs straight (for boys) or legs in a “froggy” position (for girls) with his or her head in the caregiver’s lap, can provide a sense of security for the child (Stashinko & Goldberger, 1998; see Appendix B). In addition, ensuring that the child is covered by a gown or blanket during the filling phase and limiting the number of people in the room (especially those of the opposite sex of the child) can provide the child with privacy during such an intimate examination (Stashinko & Goldberger, 1998). Finally, the use of familiar terms and simple language by staff can help avoid misinterpretation; a CCLS can narrate events as they are happening in child-friendly and developmentally appropriate language (Stashinko & Goldberger, 1998).

Specific coping strategies will also vary based on the developmental stage of the patient. The VCUG experience can be made less distressing for infants through the involvement of caregivers and the use of alternative focus with novel visual stimuli (McGee, 2003). The use of sucrose water can also soothe infants under the age of one year with the approval of the radiologist performing the exam and the caregiver. Toddlers and preschoolers can be distracted with toys, bubbles or a favorite cartoon, and
a comfort item from home such as a blanket or stuffed animal can provide a sense of normalcy during the exam. Relaxation techniques can be introduced to school-aged children as a form of coping; breathing exercises, for example, can lead to relaxation of the sphincter muscles that control urination, helping to facilitate catheterization (McGee, 2003). Adolescents may wish to use a personal cell phone or other hand-held device during the procedure for distraction.

*Post-Procedural Play*

Regardless of the type of medical encounter, children will leave the hospital or doctor’s office with memories of the experience. In the case of a potentially traumatic encounter, children may find themselves desiring an outlet to process their memories and emotions as a result of their invasive procedure. The opportunity to explore real and pretend medical equipment after a procedure allows children to gain mastery of their medical experience (Vilas, 2009). In this way, the roles are reversed as children become “physicians” caring for their “patients”, giving back to children the sense of control that they may have lost during the procedure. Parents can support their children after their VCUG by providing opportunities for medical play at home with dolls, stuffed animals and a pretend doctor’s kit.

*Other Considerations*

Two issues that appear frequently in the literature are the immobilization of children and the use of sedation in invasive procedures such as VCUG. These are also two factors that vary significantly among institutions and the staff who are performing the procedure. The recurrence of these themes warrants some exploration of their impact on the patient experience.
Restriction

Restriction of a child’s mobility is a common feature of pediatric care, especially during invasive procedures. “Restriction” can be defined as a practice that occurs when risk-benefit favors immobilization for the purpose of delivering safe and timely care to the child (Brenner, Treacy, Drennan & Fealy, 2014). Among nursing and other clinical staff, restriction is so commonplace during procedures that often staff do not realize that they are doing it (Brenner et al., 2014). In some circles it is seen as a necessary evil of working with children because it is “the only way” to ensure the child’s safety and protect not only the child but also those around him from harm when the child might be kicking or fighting to get away from clinical staff (Brenner et al., 2014). It appears that expediency of care and the desire to “get the job done” with little regard to the individual child’s needs are two influencing factors in the use of restriction with children undergoing invasive procedures (Brenner et al., 2014).

Research, however, shows that restriction can impact children in negative ways in the long-term. Restriction has been linked to speech delays, high rates of recall of the distressing procedure and raised cortisol levels after a procedure is finished (Brenner et al., 2014). Younger children and those with developmental challenges may be particularly vulnerable to the stress of being restricted for a procedure, as the operate in a microsystem with little capacity to understand the experience, express their fears or concerns and cope with the stress of being restricted (Brenner et al., 2014). The use of parental holding and upright positioning has seen success in reducing child distress during IV starts while keeping the child, parent and clinical staff safe from harm (Sparks, Setlik & Luhman, 2007). While true upright positioning is not possible during
catheterization in a VCUG, a reclined position in which the child is lying with his or her head in the caregiver’s lap can allow for sense of comfort as well as the restriction of the child’s hands by the caregiver, resulting in safe access to the genital area (Stashinko & Goldberger, 1998). In reality, parents should not be expected to restrain their children, but rather can participate in comfort positions, soothing dialogue and normal parental behaviors during an invasive exam such as a VCUG (McGee, 2003). Participating in normal parenting behaviors during a procedure also gives parents a concrete role, potentially decreasing their own anxiety and therefore impacting their child’s distress. Overall, causing distress to a child, even with potential clinical gain, is something that should be avoided by all healthcare professionals (Brenner et al., 2014).

*Sedation*

There is some disagreement in the research about the potential benefits of the use of sedation during VCUG. The range of sedation options used during this type of exam ranges from conscious sedation (e.g., oral midazolam or nitrous oxide) to general anesthesia. The benefits of conscious sedation are that it creates a fast-acting amnesia and reduces anxiety with few side effects, and in one study a majority of parents whose children had a VCUG with oral midazolam stated that they would only do the test again with the sedation (Stashinko & Goldberger, 1998). Unfortunately, there are not many radiologic alternatives to the VCUG for successful diagnosis of vesicoureteral reflux, as some reflux is only present when the child voids, indicating a need for this exam (Herd, 2008).

In some of the literature, sedation is discouraged during VCUG because it may interfere with urethral sphincter control, meaning that children will not be able to empty
their bladder properly at the end of the exam which can potentially invalidate the results (McGee, 2003). Furthermore, a pro-active approach involving pre-procedural preparation, the promotion of active coping strategies and proper catheterization techniques can eliminate the need for sedation, which carries risks and costs for the hospital (Bates, 2012). Others state that sedation such as oral midazolam has little to no effect on the exam’s ability to diagnose reflux, and anesthetics such as nitrous oxide could be used to put the child to sleep during catheterization only, allowing the child to wake and complete the exam after the catheter is placed (Herd, 2008). Increasing the use of sedation in VCUG would also provide an alternative to physically restricting a child’s movement (Brenner et al., 2014). Most authors are in agreement that more research is needed. Regardless of the use of sedation, it is still important to prepare the parent and the child for their VCUG experience to minimize distress (Gebarski et al., 2013).

Conclusion

The voiding cystourethrogram (VCUG) is a widely used radiologic study to diagnose vesicoureteral reflux in children, but can be potentially distressing because of its use of urethral catheterization and the requirement of voiding a full bladder onto an exam table. Children may experience long-term negative affects and can be influenced by their caregiver’s behavior and anxiety level. Distress can be minimized during this exam through interventions by a Certified Child Life Specialist (CCLS), including preparation of the child and family and the provision of various coping techniques. Preparation by the family prior to the procedure through a handout created by a CCLS can also minimize anxiety for both parents and the child. Restriction and sedation are two other considerations during VCUG that may minimize distress, but each have their own
potential negative impacts on the child and family. With the clinical support of the CCLS and proper preparation, the child and parent’s VCUG experience can be made less distressing and long-term negative impacts can be avoided.
References


Maimonides Infants and Children’s Hospital (n.d.). “I’m Having a VCUG! (Boys)”. Brooklyn, NY: MMC Patient Education.


Noel, M., McMurtry, C.M., Chambers, C.T. & McGrath, P.J. (2010). Children’s Memory for Painful Procedures: The Relationship of Pain Intensity, Anxiety, and Adult


Appendix A

Thank you for choosing *(hospital name)* for your child’s upcoming Voiding Cystourethrogram (VCUG) in our Pediatric Radiology Department. This handout will provide you with information about the procedure and ways that you can support and prepare your child for this exam.

**About VCUG**

VCUG is short for “Voiding Cystourethrogram”, a type of fluoroscopy (x-ray) procedure in which a radiologist takes pictures of the bladder and kidneys to see how the urinary system is working. A VCUG can check for problems in the structure and function of the urinary system, looking at the bladder’s size and shape, blockages or reflux in which urine flows backwards towards the kidneys.

---

**Before: Preparing Your Child**

This description of the VCUG is written in child-friendly language for you to prepare your child prior to the procedure. It can be helpful for your child to know what is going to happen during the test and to practice lying still in the appropriate position. If your child is an infant, it may help you understand and be prepared for the steps of the procedure.

- First, we will ask that you change your clothes into a hospital gown so that your clothes don’t get wet.
- The doctor will ask you to lie on your back on the bed. Girls will be asked to put their feet together with knees out in a “froggy leg” position, and boys will be asked to keep their legs straight.
- The doctor will clean your private area with brown soap, and then slide the catheter *(a thin plastic tube)* into your bladder *(a small balloon in your belly that holds your pee)* following the path that your pee takes when leaving your body. This may feel uncomfortable, but it only takes a moment.
- Once the tube is in place, the doctor will tape it to your leg so that it does not come out until the test is done.
- Then, using this tube the doctor fills your bladder with a clear liquid called contrast. You will see this liquid in a bottle that hangs on a pole near the bed. This liquid
creates a shadow when the doctor uses an x-ray camera to see how your bladder is working.

- The radiologist will take pictures while your bladder is filling. The x-ray camera does not touch you and it does not feel like anything when it is taking pictures, just like with a regular camera, except that this camera can see the inside of your body. The doctor may ask you to turn onto your side to take more pictures. The doctor will ask you not to pee while your bladder is filling up.
- When you feel like you need to use the bathroom, the doctor will ask you to pee right there on the table. You may use a plastic container (bedpan or urinal) to pee into. The doctor will remove the plastic tube.
- There are towels and sheets to clean you off as soon as your bladder is completely empty. The doctor will take one final picture, and then you can get dressed and go home.

During: Supporting Your Child
(You may choose to edit this paragraph based on the protocols in place at your facility, such as whether parents are allowed in the room during the procedure or if a child life specialist will be available.)

If you are not pregnant, you can be in the room with your child during the procedure. We will provide you with a lead apron to cover your body. Your role during the test will be to help remind your child to remain still and talk softly to him or her in a comforting manner. A Certified Child Life Specialist (CCLS) may be present during the procedure to provide support to you and your child. This may be through distraction, play, relaxation techniques or guided imagery. The CCLS can also demonstrate the VCUG prior to your procedure using a cloth doll and catheter, and answer any questions that you may have. Below are some recommendations we make for parents based on the age of your child.

<table>
<thead>
<tr>
<th>Developmental Stage</th>
<th>Suggestion</th>
</tr>
</thead>
</table>
| Infants (0-2)       | • Parental presence is important to promote secure attachment  
                      • Familiar items such as a pacifier or blanket can provide comfort during the procedure  
                      • The catheterization phase is usually the hardest part of the procedure |
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Information</th>
</tr>
</thead>
</table>
| Toddlers (2-3)    | ● Parental presence is important  
● Using a calm voice can help lessen anxiety  
● The voiding phase may be difficult for toddlers who have recently been toilet-trained because of the confusion of urinating on a bed |
| Preschoolers (3-4)| ● Parental presence is important  
● Preparation on the steps of the procedure and how the child is positioned can help them understand what to expect  
● Distraction during procedure can be provided to ease distress |
| School-Age (6-12) | ● May be curious about the medical aspects of the procedure and their anatomy  
● Preparation can provide information about the procedure and clear up misconceptions about what will occur  
● Privacy can be maintained by covering the private area with the gown during the filling phase |
| Adolescents (12+) | ● Parents can take time talking openly with teens about the procedure  
● Privacy is important and can be maintained during the procedure  
● Teens can also have a choice about whether to have their parent in the room |

**After:**
After this type of procedure, many children feel a desire to play doctor or reenact scenes from the event in order to process what has happened to their body. You can encourage your child in this play while answering questions and providing accurate information about what happened. It may also be helpful to reinforce that this type of intimate procedure can only be performed by a doctor in the presence of a parent, so that your child knows that they are safe.

For more information or questions about preparing your child for their appointment, please call *(name and phone number of child life specialist)*. We look forward to seeing you soon!
Appendix B

Figure 1. “Froggy leg” comfort position. This figure illustrates the appropriate comfort position that can be used during catheterization in VCUG. (The Royal Children’s Hospital Melbourne, n.d.).

- The adult sits behind the child and remains close to soothe, comfort or distract the child
- Depending on the procedure, the child is positioned sitting upright, lying down or sideways
- Useful for pin care, catheters, dressings, drain removal, plaster, injections, intravenous insertion, blood work or port/central line access