DEVELOPMENT OF A PAMPHLET TO REDUCE ANXIETY AND FEAR IN CHILDREN REQUIRING INJECTIONS

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Development of a Pamphlet to Reduce Anxiety And Fear in Children Requiring Injections

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ABSTRACT

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To children the health care environment is a strange and scary place that often evokes feelings of fear and anxiety. One event contributing to a great amount of fear and anxiety in children is an injection. Injections are a common and necessary part of maintaining health in children therefore the fear and anxiety they lead to creates an obstacle for pediatric health care providers to overcome.

A child who exhibits injection related fear and anxiety often demonstrates negative behaviors. Despite these negative effects and the growing literature addressing the problem of this fear and anxiety, little has been published to evaluate and recommend methods of intervention.

The focus of this project is the development of a pamphlet containing recommended interventions health care providers can use with children requiring injections to reduce the amount of fear and anxiety they experience. A discussion of the background of the problem and relevant literature is included. The result of the project is a pamphlet, reference chart, and a parent education handout to be used by providers of pediatric care to assist children in experiencing decreased levels of injection related fear and anxiety.

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TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

Background

To children the health care environment is often a strange and scary place. Visits to a health care setting may lead to intense feelings of anxiety and fear in children. This fear and anxiety is usually the result of previous encounters with painful procedures, a strange environment, a feeling that they have lost control over the situation, and separation from their parent (Melamed, Klingman, & Siegel, 1984). In the primary care setting, the event that produces a great amount of fear and anxiety for children is an injection.

Due to the need to immunize children against various illnesses injections are common events during childhood. Multiple studies have shown a relationship between injections and intense feelings of fear and anxiety in children (Abbott & Fowler-Kerry, 1995; Polillio & Kiley, 1997). Fear of getting an injection is the third greatest fear reported by children (Boon, Humphrey, van den Heuvell, & van de Weil, 1992; Broome & Endsley, 1987; Polillio & Kiley, 1997). The prevalence of this injection related fear and anxiety is an area of increasing interest among researchers. To date, many studies have looked at the

prevalence of injection-related anxiety and the effect this anxiety and fear have on children (Biddinger 1993; Broome & Hellier, 1987; Polillio & Kiley, 1997; Ross, 1984). Injection related fear and anxiety was found to be a common problem among children. This fear and anxiety often relates to the anticipated pain of the injection or the common childhood misconceptions related to bodily intrusion and mutilation. Injection related fear and anxiety might result in negative effects such as an increase in pain perception, physical resistance, and uncooperative behaviors (Abbott & Fowler-Kerry, 1995). A child who is extremely upset by the injection experience may have such extreme behaviors that the parent may choose to avoid the experience in the future. The child that misses the necessary injections is at risk for developing a potentially serious illness. By intervening during the injection process an Advanced Practice Nurse (APN) has the potential to decrease the child's fear and anxiety resulting in fewer negative effects. It may be necessary for the APN to intervene with the parent as well. Parents have an impact on the way children deal with the injection experience (Blount, Davis, Powers, & Roberts, 1991). Educating parents about methods to help their child effectively cope with an injection may lead to a lower level of fear and anxiety in the child.

Problem Statement

Anxiety has been linked with various negative effects on children. Anxiety has been shown to increase pain

perception, which in turn increases fear and anxiety levels thereby creating a vicious cycle (Fowler-Kelly & Lander, 1987; McGrath & DeVeber, 1986; Polillio & Kiley, 1997). Anxiety and fear may also lead to the following: uncooperative behavior, physical resistance which increases the risk of accidental injury to the child, a physiologic response such as tachycardia, and possibly even avoidance of the health care setting (Harrison, 1991; Polillio & Kiley, 1997). Despite the growing literature that shows the prevalence of anxiety and fear as a problem, very little has been published in regards to interventions a provider can utilize to help decrease fear and anxiety in children requiring injections.

Purpose Statement

The purpose of this project is to develop a set of interventions that can be used by primary care providers to decrease fear and anxiety in children receiving injections. Each intervention is matched with the appropriate age group that would benefit from the use of the intervention. The provider can then refer to the recommended interventions for a child of a specific age to determine how to assist in decreasing the level of fear and anxiety. The goal of the intervention set is to provide health care providers with a quick, easy, and inexpensive way to help children experience a reduced level of fear and anxiety related to injections.

Conceptual Definitions

Children

The project interventions are designed to be used with children between birth and eighteen years of age. This is a large age range that encompasses various stages of development. Piaget's theory of cognitive development (1969) is used as a guideline for determination of appropriate interventions for the children depending upon their stage of cognitive development.

Anxiety

The literature identifies the concept of anxiety as a common phenomenon but often fails to define the concept. The definition derived for this project considers anxiety as an undefined fear or a painful uneasiness of the mind due to a vague, nonspecific threat (Biddinger, 1993; Roy & Andrews, 1991).

Fear

The concept of fear is not well differentiated from anxiety or distress in the literature. Like anxiety, fear relates to a perceived threat to an individuals personal security. The major difference is that fear relates to a defined event or threat such as an injection. For this project fear is defined as an emotional reaction to a real or unreal threat or danger that the child believes is capable of causing harm to one's self (Whaley & Wong, 1991).

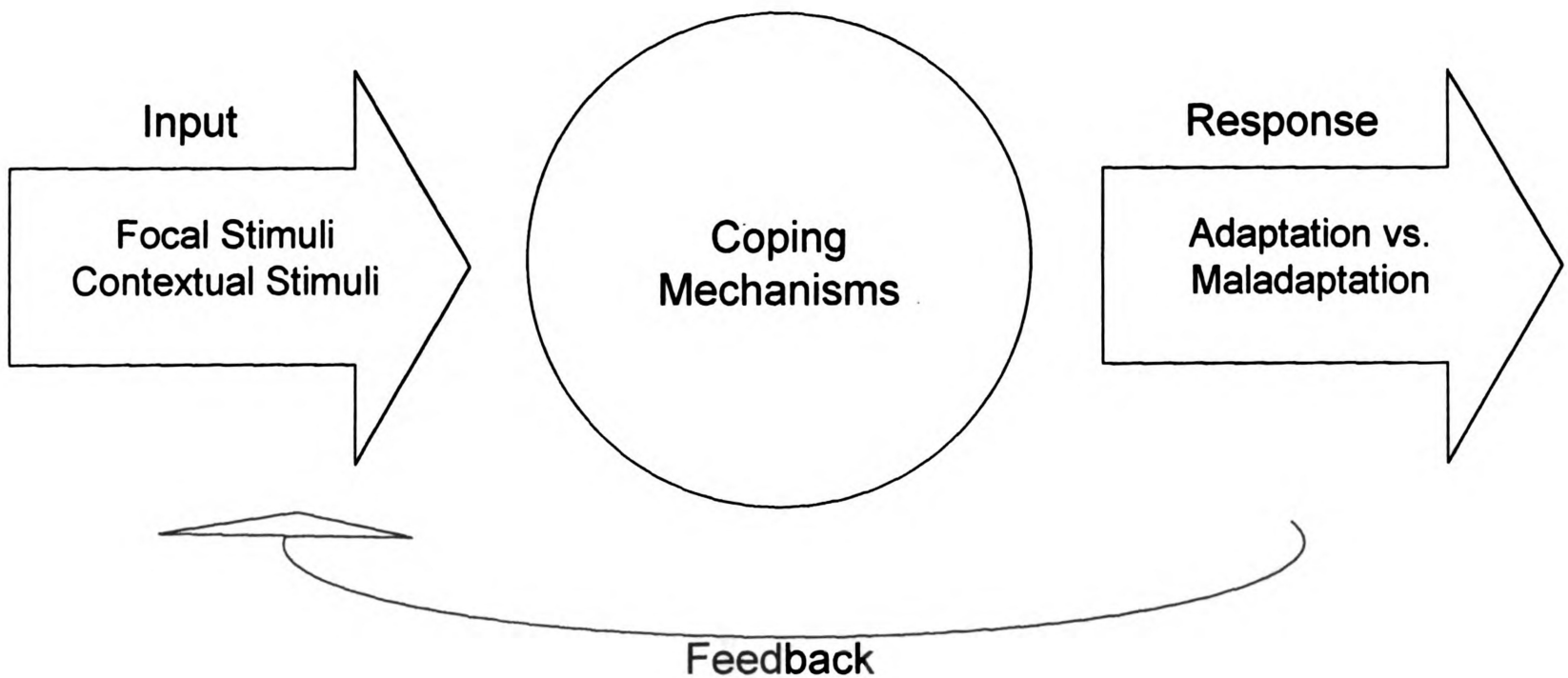
Conceptual Framework

The Roy Adaptation Model of Nursing (Roy & Andrews, 1991) can be used by the APN as a basis for addressing the problem of injection related fear and anxiety in children. The goal of nursing, according to Roy, is to help an individual adapt to the environment by processing and managing the environmental stimuli (Roy & Andrews, 1991). In the Roy Adaptation Model there are two types of stimuli that a person must process in order to adapt to the environment, focal and contextual (see figure 1).

Focal stimuli are defined as any internal or external stimuli that immediately confront an individual. The focal stimuli involve an internal change in an individual or an external change in the environment. The contextual stimuli are all the other internal and external stimuli that contribute to the situation at hand. The contextual stimuli may accentuate the impact of the focal stimuli. The contextual stimuli have a large impact on how the individual processes the situation involving the focal stimuli. The presenting stimuli are processed through the use of the individual's coping mechanisms and the result is a response of either adaptation or maladaptation.

Coping mechanisms are thought of as both innate and learned methods of responding to one's changing environment. Individuals are born with minimal coping mechanisms. Additional coping mechanisms are learned throughout development as the child is faced with unfamiliar stimuli in

Figure One: The Roy Adaptation Model of Nursing



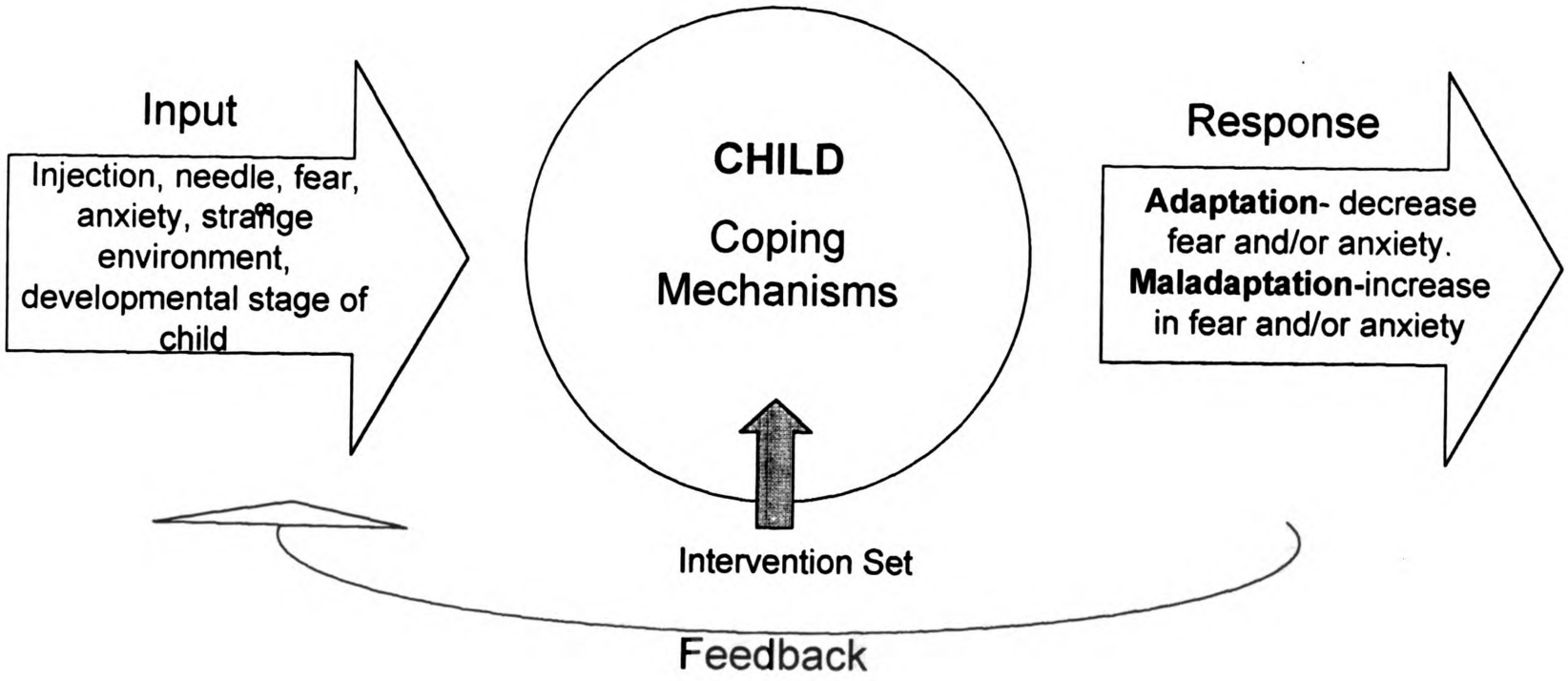
Adapted from: The Roy Adaptation Model (pg.8), by C. Roy and H.A. Andrews, 1991, Norwalk, CT: Appleton and Lange

the environment. An individual with appropriate coping mechanisms is likely to respond by adapting to the environmental stimuli. This concept is consistent with the American Nurses Association's definition of nursing with the focus on the human responses to actual or potential problems (Roy & Andrews 1991). The response proposed by Roy is either an internal or external reaction to the specific situations faced by an individual. To assist an individual in achieving a successful adaptation response, interventions must modify stimuli or assist the individual with development and recognition of coping mechanisms.

In relation to this project, an anxious and fearful child is faced with an impending injection with a needle (focal stimuli) as well as multiple contextual stimuli, such as expected pain and strange people. The child must rely on his or her own coping mechanisms to process the stimuli and develop a response to the situation (see figure 2).

Since it is not practical for a health care provider to intervene by eliminating the stimuli (needle or injection), the focus is on helping the child develop or recognize coping mechanisms to assist in managing stimuli. A child with coping mechanisms that enable the successful processing of stimuli has decrease in the amount of fear and anxiety experienced (adaptation). On the other hand, a child with ineffective or fewer coping mechanisms is unsuccessful at processing stimuli and the result is likely to be an increase in fear and anxiety (maladaptation). A child who

Figure Two: Application of Roy Adaptation Model to Project



is able to develop coping mechanisms and successfully cope with injections hopefully will experience less anxiety, less pain, less fear, is more cooperative, and is less likely to resist future visits to the health care setting for injections. As a result, the goal of nursing as defined by Roy is met since the child has successfully adapted to the environmental stimuli.

Developmental Framework

Piaget's Theory of Cognitive Development guides the application of the proposed interventions (Biddinger, 1993; Whaley & Wong, 1991). It is recognized that a child's coping mechanisms, fears, and one's ability to adapt are influenced by the child's stage of cognitive development (Biddinger, 1993; Whaley & Wong, 1991). According to Piaget, one's cognitive ability enables the individual to adapt to the environment. It is also thought that an individual's behavior allows one to establish and maintain equilibrium with the environment.

Children progress through Piaget's four stages of thinking to achieve logical thought. The sensorimotor stage occurs between birth and age 2. Simple learning involving repetitive behaviors, play, and imitation represents this stage. Sensations, curiosity, and experimentation guide these children in their learning. Toward the end of this stage the child begins to perceive a basic understanding of cause and effect and develops a minimal sense of object

permanence. Most fear and anxiety in this stage is related to stranger anxiety and the absence of a parent.

According to Piaget, the child progresses into the preoperational stage from age 2 to age 7. The child in this stage is quite egocentric. The child sees no point in another person's point of view and can not reason beyond the observable. Language and symbols are used in this stage to represent the child's environment. Their thinking is guided by imagination, play, questioning, and interaction with others. These children still experience stranger anxiety and fear the absence of a parent. At this stage of development children begin to fear medical experiences and may develop misconceptions related to medical events. It is also in this stage that children begin to associate specific events with pain and develop anxiety or fear related to the event.

Between ages 7 and 11 a child is in the concrete operational stage of Piaget's developmental theory. The child develops logical thinking and is able to classify and sort thoughts in order to solve a problem. In this stage the child can manage more than one situation at a time. Children begin to see another person's point of view as relevant and their line of thinking becomes more socialized. These children have intense fear and anxiety in regards to being hurt. It is quite common at this stage for a child to attempt to hide their feelings of fear and anxiety from others.

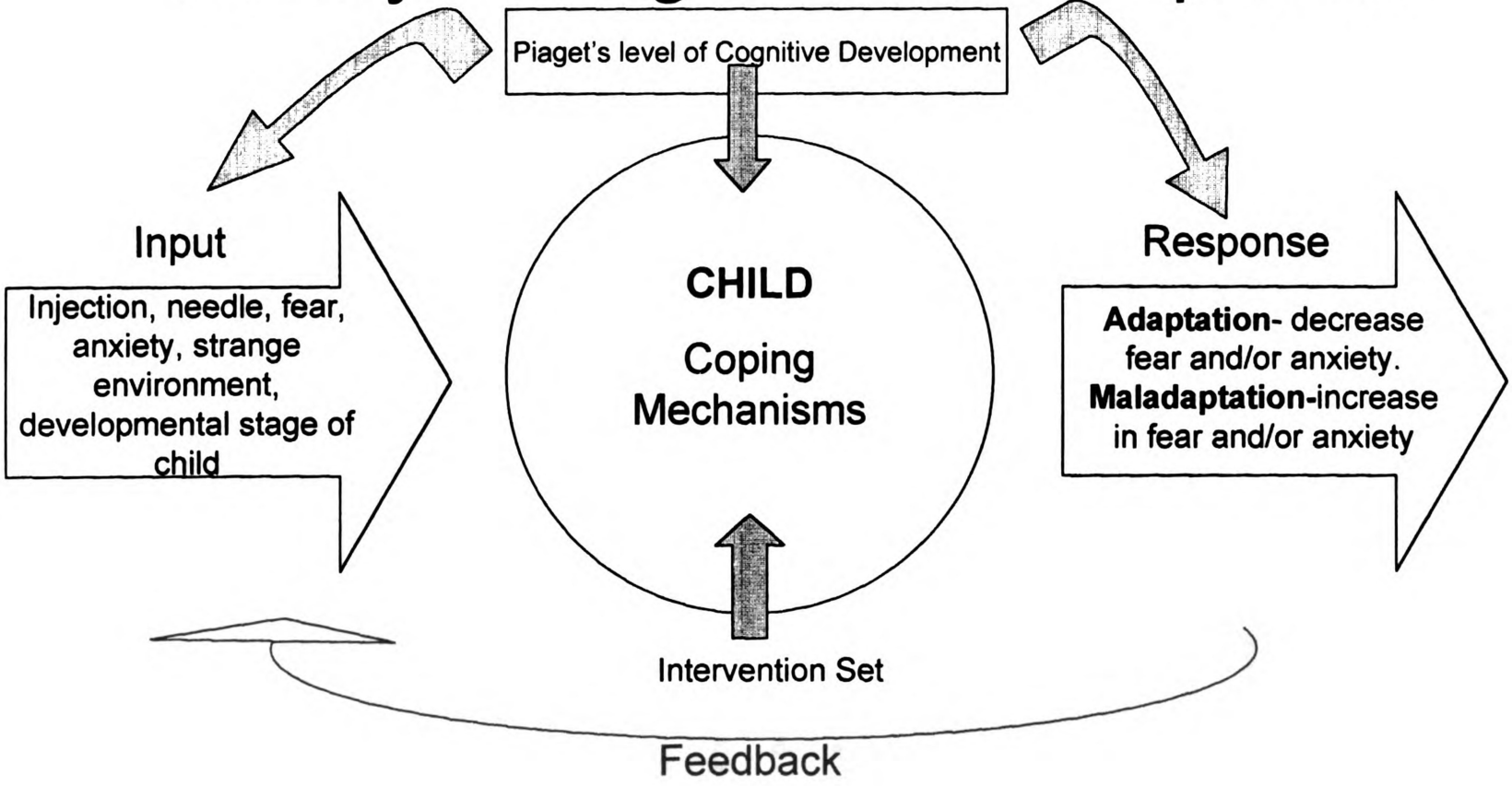
The final stage of Piaget's theory of cognitive development occurs from age 12 until 15 and is referred to as formal operational. The child begins to utilize abstract thinking and is able to consider abstract or philosophical matters. The child is flexible in thinking and adapts more easily to variations in thinking. This child may confuse ideal concepts with practical. The child no longer fears parental absence during the exam and does not experience stranger anxiety. The child may experience a greater level of anxiety if the parent is present. This child's greatest fear is related to the unknown and being injured. It is important to note that all individuals do not reach the formal operational stage of cognition.

It is important that the child's developmental stage is considered when determining age appropriate interventions. The identification of a developmental stage is entered into the Roy Adaptation Model as a stimulus that impacts a child's ability to adapt to the environment (see figure 3).

Review of Literature

The available literature relating to childhood fear and anxiety surrounding injections is quite limited. The search for relevant literature is complicated by the lack of differentiation between fear, anxiety, and distress. The three concepts are used interchangeably to represent the phenomenon children experience related to injections. The phenomenon referred to as fear, anxiety, and distress is generally exhibited by an uncooperative child, crying, loss

Figure Three: Integration of Piaget's Theory of Cognitive Development



of control, physical resistance, a sense of panic, muscle tension, rapid breathing, and an increase in heart rate (Boon, Humphrey, van den Heuvall, & van de Wiel, 1992; Bournaki, 1997; Harrison, 1991).

In the interest of clarity this phenomenon will be referred to as fear and anxiety throughout the remainder of the project. By observing children during the injection process, it was found that children experience varying levels of anxiety and fear with the younger children demonstrating consistently higher amounts of anxiety and fear, (Boon, Humphrey, van den Heuvall, & van de Wiel, 1992; Bournaki, 1997; Broome & Hellier, 1987). Various other studies (Abbott & Fowler-Kerry, 1995; Cohen, Blount, & Panopoulos, 1997) acknowledge the presence of fear and anxiety in children receiving injections, but the focus is on identifying interventions to reduce the amount the child experiences. The remainder of the literature review is dedicated to the specific interventions that are designed to decrease the amount of fear and anxiety children experience.

Information

Children's fear and anxiety is often related to misconceptions they have developed about the impending event, the injection (Harrison, 1991; Melamed, Klingman, & Siegel, 1984). These misconceptions lead to varying levels of threat depending upon the child's stage of development (Biddinger, 1993). By providing children four years old or older with honest information that is appropriate to their

stage of cognitive development the provider can clarify misconceptions and assist in decreasing the level of fear and anxiety. It is difficult to make recommendations for this intervention with children under four years old since studies have focused on the effect information has on anxiety and fear in children ages four and older. According to Biddinger (1993), Harrison (1991), and Melamed, Klingman, & Siegel (1984), providing four to twelve year old children with honest information about the injection experience resulted in a decrease in fear and anxiety as a result of the following factors:

1. An increasing sense of control and mastery related to the event.
2. A decrease in misconceptions related to injections.
3. The ability to anticipate the event and expect the sensory input.
4. An understanding of the importance and purpose of the injection information.

Several researchers have recommended providing children with information prior to an injection. According to Biddinger (1993), providing accurate information about injections allows the child to experience less fear and anxiety, a decrease in resistive behaviors, and helps the child cope with the event. In order for information to be successful it must be honest, appropriate to the development of the child, and include sensory information (Biddinger, 1993; Carpenter, 1992; Harrison, 1991; Melamed, Klingman, &

Siegel, 1984). A paper by Melamed, Klingman, and Siegel (1984) summarized various recommendations pertaining to providing injection related information and concluded that children provided with information about what they would feel, see, and hear were able to cope while experiencing a decrease in anxiety and fear. Biddinger (1993) provides the following examples of developmentally appropriate ways to provide a child with information related to injection:

1. Sensorimotor (2-7 years old)- benefit from play and demonstration that is accompanied by simple verbal explanation.
2. Concrete Operational (7-11 years old)- Best approach may be the use of a picture book that addresses the importance of injections and portrays a cooperative child receiving an injection.
3. Formal Operational (12-15 years old)- Information should be in the form of a verbal explanation related to the injection experience.

The literature available in relation to providing information to children about the injection experience outlines the benefit of information for children over two years old. Information can assist the child in experiencing a lower level of fear and anxiety.

It may also be beneficial to provide information about injections to the parents. Parental education is important since a parent's approach to the injection experience may impact the child's ability to cope (Immunization is Basic,

1995). Beginning at the first visit requiring injections, parents should be provided with suggested methods to help their child deal with injections. The information can be reviewed periodically during subsequent visits. Informed parents are able to support their children during the visit, which may aid in decreasing the amount of anxiety and fear experienced during the injection process (Biddinger, 1993). One example of an injection related information handout for parents is included in Appendix C. This handout advises parents on appropriate and inappropriate ways to help their children through the injection experience such as avoiding threatening children with injections and rewarding the child after the shot for a job well done.

Distraction

Distraction of the child has been found in research to be a relatively inexpensive and easy to utilize intervention that can decrease fear and anxiety in children (Cohen, Blount, & Panopoulos, 1997; Fowler-Kelly & Lander, 1987; Vessey, 1995). A study by Cohen, Blount, and Panopoulos (1997) utilized a selected cartoon video to distract children ranging from four to six years old throughout the injection experience. Distracted children were able to cope better with the injection. These children also experienced a 50% decrease in their level of fear and anxiety while requiring less restraint during the injection than did the non-intervention group. The children in the intervention group reported a 2.7 point decrease on a five point pain

scale. Fowler-Kelly & Lander (1987) found distraction with music to result in a significant decrease in the anxiety and fear the child experienced. The sample consisted of 200 children between 4.5 and 6.5 years old who were receiving regular immunizations. These children listened to children's music through headphones and reported scores of up to 1 point less than the control group on a four point pain scale. It is noted that the older children benefited more from musical distraction while the younger children were best distracted by the cartoon video. Younger children can also be distracted by puppets and toys during the injection process as a means of decreasing fear and anxiety (Vessey, 1995). Because this intervention is effective, inexpensive, and easy to utilize it has the potential to have a great impact on children's level of fear and anxiety.

Play

The literature available in relation to play as an intervention to decrease fear and anxiety is sparse. Young and Fu (1988) conducted a study that utilized needle play with four to seven year old children receiving injections. The findings included a significant decrease in fear and anxiety with the participants as demonstrated by lower pulse rate, lower self-reporting on a pain scale and a lower observed anxiety and pain rating by the participants. By allowing the child to be exposed to and handle the syringe and needle, the child will become familiar with the objects when exposed to them in the future. This familiarity

results in a decreased level of fear and anxiety. Whaley and Wong (1991) and Wong (1993) recommend the following forms of play to lessen the anxiety and fear children two years and older experience related to injections:

1. Let the child handle equipment (real or fake); let the child give pretend injection to a stuffed animal or a doll.
2. Have syringes decorated as animals, people, or creatures for the child to play with and take home with them.
3. Have a magic target on child's body where the injection will be given; cover spot with decorative Band-Aid.
4. Give reward for cooperation and bravery (i.e. sticker, pencil).

By incorporating play related to the source of impending pain the child becomes "acquainted" with the equipment and sees the experience as less threatening which leads to a lower level of fear and anxiety.

Parental Presence

The presence of a parent during an injection is well studied in relation to decreasing fear and anxiety experienced by the child. Much of the research is inconclusive in the recommendation of parental presence due to inconsistent results. A report by Blount, Davis, Powers, and Roberts (1991) critically reviewed various researchers recommendations in relation to parental presence and found that some children experienced a greater increase in fear

and anxiety when parents were present and others experienced an increase if parents were absent. The only consistent finding in this area of research was that older children experienced a lower level of anxiety and fear if the parent was absent. The younger children tended to experience an increase in fear and anxiety when the parent left the room than they did as a result of the injection. Based on the inconclusiveness of the results, Blount, Davis, Powers, and Roberts (1991) and Broome and Endsley (1989) recommended that the parent remain in the room to support the child unless the child requested that they leave. The parent may help by distracting the child or offering emotional support during procedure. It was thought that this would lead to the greatest chance in decreasing the level of fear and anxiety experienced by the child.

Topical Skin Anesthesia

The knowledge that an impending injection will be painful often leads to fear and anxiety in children. A method to decrease or eliminate this pain is likely to result in less anxiety and fear associated with the injection. One method to decrease this pain is through the use of a topical skin anesthetic such as EMLA cream or a topical refrigerant anesthetic, (Abbott & Fowler-Kelly, 1995; Halperin, Korin, Attias, Pellegrini, Greenburg, & Wyss, 1989).

An initial study in this area utilized EMLA cream with children receiving injections. The children, ages 4-8, were

asked to rate their pain level on a ten point pain scale with lower scores correlating with less pain. The children who used EMLA cream reported mean scores of 1.9 compared to a score of 5.6 in the control group revealing a significant difference. The cream numbs the skin therefore the children who utilized the cream experienced less pain, fear, and anxiety than those who used no cream (Halperin, Korin, Attias, Pellegrini, Greenburg, & Wyss, 1989). A major limitation to this intervention is the requirement of a one-hour time period for the cream to have the anesthetic effect. This reduces the usefulness of the intervention with injections because it requires too much time but the intervention may remain useful for blood draws. EMLA cream may also be useful in infants if applied before the visit to both thighs allowing adequate time to numb the skin. The injection sites are effectively anesthetized in order to reduce pain that may be experienced from the impending injections.

A more recent study by Abbott & Fowler-Kelly (1995) found that by using a topical refrigerant anesthetic such as Ethyl Chloride or Flouri-Methane, the child reported approximately 20% lower pain scale scores as compared to the placebo group. The children also experienced less fear and anxiety related to the injection. This aerosol product is very convenient because it effectively anesthetizes the skin within 15-30 seconds of application, which decreases the pain of injection and decreases the associated anxiety and

fear, (Drug Facts and Comparisons, 1999). It is a quick, inexpensive, and easy to utilize intervention to assist children in experiencing a reduction in fear and anxiety due to a reduction in associated pain (GeBauer, 1994).

Control

Multiple research studies reported that the child receiving injections experiences a loss of control that results in an increase in fear and anxiety (Carpenter, 1992; Hobbie, 1989; McDonnell & Bowden, 1989; Melamed, Klingman, & Siegel, 1984, Ross, 1984). This loss of control is the guiding factor for the development of multiple intervention to reduce fear and anxiety related to injections. The goal is to return a sense of control to the child in order to reduce anxiety and fear. In a related paper by Hobbie (1989) the importance of using relaxation as a means of restoring control was discussed. The impact of relaxation is recognized also by Wong (1993) as a self-controlled method to decrease fear and anxiety levels. The relaxation intervention requires the child age seven and older to concentrate on breathing while assuming a comfortable position. The result is a state of relaxation and a sense of control over the situation. This controlled breathing, relaxation intervention must be taught to the child and practiced in order for it to be effective. By restoring the child's sense of control, the provider is able to help the child experience a decrease in fear and anxiety. Teaching children relaxation as a means to instill control is a time

consuming intervention but the advantage lies in the child's ability to continually use the intervention when faced with other sources of fear and anxiety. Due to time constraints, this intervention may be reserved for those individuals who experience extreme fear and anxiety due to the increased risk of avoiding the health care setting or children who for whatever health reason will require many injections or blood draws.

The review of literature, although limited, reveals multiple interventions to aid in the reduction of fear and anxiety in children requiring injections. By utilizing the interventions that are appropriate to a child's developmental level, a provider is able to help the child cope with the injection. The goal of the interventions are to reduce the levels of fear and anxiety a child experiences in relation to an injection while helping them effectively adapt to the experience.

Project Development

Methodology

The proposed interventions are presented in the form of a written, educational pamphlet. The content was obtained from related literature that was discussed in the previous sections of this paper. Pamphlet's are cost effective and time-efficient methods to convey important information (Wilson, 1996). The pamphlet was chosen as a form of written education because the desired information can be easily distributed and presented in a clear, concise, and

consolidated manner (Bernier & Yasko, 1991; Venabi & Ferris, 1995). The important information is organized and presented in an appealing way that is quick and easy to read (Venabi & Ferris, 1995). Health care providers have demanding schedules that do not allow excess time to decipher the contents of lengthy written materials.

An educational pamphlet is a short, concise way to organize the important information related to the proposed interventions. The pamphlet will include a brief description of each intervention and recommendations on how to implement the interventions into one's own practice (Appendix A). The interventions that the provider should use vary depending upon the developmental level of the child. Since the pamphlet is not convenient to use if it must be referenced for every child, a quick reference chart is included with the pamphlet (Appendix B). This chart is organized according to age (developmental level) and matched with the appropriate interventions. The goal is for the provider to read the pamphlet and then, as a child presents for an injection, the provider can refer to the chart to determine which interventions are appropriate for that child. The health care provider also receives a printed compilation of recommendations for parent education to be distributed beginning at a child's first visit.

A parent education handout should be utilized to guide parents in dealing with the injection process. Parents are often anxious when their child requires an injection. The

parents anxiety is often noticed by the child causing the child to experience an increased level of anxiety and fear related to the injection experience (Broome & Hellier, 1987; Cohen, Blount, & Panopoulus, 1997). The provider can utilize a parent education handout beginning with the child's first visit to the healthcare setting. To achieve the greatest effect the information should be reinforced at every visit. Helping parents learn to assist their children in coping positively with the injection experience will result in a lower level of fear and anxiety in the child (Cohen, Blount, & Panopoulus, 1997).

Target Audience

The pamphlet is designed to be used by health care providers in any primary care setting including clinics, private offices, and health departments. It is recognized that it is often a person other than the provider that administers the injection. Since it is not practical to determine who is responsible for administering injections in various settings the recipient of the pamphlet will be the provider. The pamphlet will be distributed to health care providers working with a pediatric population. The desired outcome is the provider instructing the office staff on the proposed interventions, and overseeing the implementation of these interventions when children receive injections.

Evaluation

The proposed interventions must be utilized in order for this project to be successful in reducing a child's

level of fear and anxiety. The effectiveness of the interventions on decreasing fear and anxiety must also be evaluated. The pamphlet will be subjected to a peer review to determine readability and appropriateness of content prior to printing. As a method of evaluating the utility and effectiveness of the proposed interventions a simple "pilot" study will be conducted.

Twenty providers of pediatric health care will be randomly selected from the community directory. The pamphlet and intervention reference chart will be distributed to these providers. After two weeks, a follow-up letter with an evaluation form will be sent to the providers. The evaluation form is designed to determine if providers: a) read the pamphlet, b) saw a need for the interventions, c) implemented the intervention into their practice, d) noticed any change in the amount of fear and anxiety their patients experienced, and e) have any comments, suggestions, or recommendations to offer. After reviewing the returned evaluation forms any necessary revisions will be made to the intervention set/pamphlet. The pamphlet will then be made available to any provider that desires to utilize the interventions in practice, possibly by placing on the World Wide Web.

Implication for Advanced Practice Nurse (APN)

Since the introduction of immunization, injections have become a necessary and regular part of routine office visits during childhood. These injections are necessary to help

prevent children from developing serious illnesses. It is necessary for parents to bring children to the primary care office or clinic for the required immunizations. Children often experience high levels of fear and anxiety related to injections. These children exhibit uncooperative behaviors including crying, kicking and physical resistance, which may increase the chance of injury to the child during injection. These behaviors lead to a higher level of fear and anxiety and may actually increase the pain perception related to the injection. It is these reasons that may lead parents to choose to skip the visit rather than deal with the "hassle" and subject their child to the unpleasant experience, (Abbott & Fowler-Kerry, 1995). By utilizing the interventions that are recommended in the pamphlet the APN can assist the child in experiencing a lower level of fear and anxiety. Parents are less inclined to avoid the visits that involve injections if the child is less anxious or fearful. As a result these children will receive the required injections and are less likely to develop a serious, preventable illness.

The APN can utilize the interventions recommended in the pamphlet to help children deal with injections in a positive way. The interventions help children experience less pain, less anxiety, and lower levels of fear related to the injections. These interventions are inexpensive and easy to utilize therefore it is practical for the APN to use them in a primary care setting. The impact has the

potential to be widespread since these strategies may be used by children who are faced with anxiety or fear in another situation.

Implications for Research

The existing literature involving children and injections recognizes that injections are associated with high levels of fear and anxiety. The literature in the area of children's pain is beginning to increase but the deficit remains in the literature on strategies to decrease this pain. The available literature in relation to childhood injections and the associated fear and anxiety is minimal and quite outdated. The primary implication of this project is the identification of a common problem (injection-related fear and anxiety) that has very little existing research that addresses it.

New studies need to be initiated to address methods to decrease injection-related fear and anxiety. These studies may expand upon the current interventions or introduce new interventions to assist children in experiencing lower levels of fear and anxiety related to injections. One focus of future research could look at the interaction of parental involvement and distraction to determine if parents may be helpful in reducing the child's fear and anxiety. Another area of interest may investigate the incorporation of play with information in order to have a greater impact on reducing injection-related fear and anxiety. Future research could also do a more complex study looking at the

effectiveness of topical anesthesia. This could be done by doing a two phase study that involves utilizing the anesthetic with one injection and at the time of the next injection offering the child a choice to use or refuse. This may give some insight on whether the child actually felt a decrease in injection pain. By expanding the available literature base, a more comprehensive intervention set can be recommended. More evidence available to support the interventions would make providers more likely to utilize the interventions leading to a greater impact on the problem.

A researcher with adequate resources could evaluate the effectiveness of this project by studying the intervention set with children receiving childhood immunizations. According to Fowler-Kerry and Lander (1987) a bad experience with an injection during the early years of life may cause a child to experience a greater level of fear and anxiety related to future injections. One approach to help children avoid this would be the aggressive use of the intervention set with children and parents beginning at the first visit. This involves providing the parent with sufficient information and utilizing the recommended age appropriate interventions with the child receiving the injection. The researcher would follow the child from the first shot through completion of their pre-kindergarten shots to determine if the intervention group experienced a decreased level of fear and anxiety as compared to the control group.

The above study is limited by the extensive time and monetary requirements involved in completing the study. An alternate approach would be to study each intervention independently. This could be done in an urban area by randomly selecting pediatric providers and then randomly assigning their patients population to one of the interventions. The researcher would then evaluate the level of fear and anxiety and the associated change in levels experienced among the various interventions groups. This design would enable the researcher to gain a better understanding of the impact of each individual intervention as compared to the entire intervention set.

Implications for Education

Providers continually interact with children and parents during routine primary care visits. Injections are a routine part of these visits and the way that the provider approaches the injection experience may greatly impact the way that the child and parent respond to the experience. Educating providers about methods to decrease injection related fear and anxiety is essential. The interventions that are recommended in this pamphlet can assist the provider in helping the child cope with the injection experience. If the experience is less stressful the level of trust between the provider and the child or parent is greater. The pamphlet includes descriptions of the interventions and the appropriate age group that benefits from the intervention. The pamphlet is used as an

educational tool to teach primary care providers how they can help make the injection experience less fearful or anxiety provoking for children.

Parental education is also an important implication of this project. The parent education handout that is distributed to providers is used to educate parents who accompany their child during an injection. Using the handout provides an easy, inexpensive way to get important information to parents and potentially make a big difference in the way children perceive injections. The handout contains recommendations for parents to make the experience more positive which enables the child to experience less fear and anxiety. The result is a more positive and pleasant experience for the parent, child, and provider and enhances the existing relationship between all parties.

Health care providers and office staff must be aware of this problem and the potential ways to intervene in order to have an impact. The best way to educate these individuals is to incorporate the information into the curriculum. Physicians, APN's, registered nurses, and medical assistants all have some sort of formal education that could potentially include education on these interventions and how they can reduce a child's level of injection-related fear and anxiety. If the information is not included in the curriculum it could be disseminated in the form of a staff inservice in the practice setting. This would ensure that

all staff members were aware of methods they could use to decrease a child's injection-related fear and anxiety.

Conclusion

The proposed interventions are easy to use, inexpensive, and require little time to implement. Providers can use these interventions for all children requiring injections to decrease the anxiety and fear they experience. Decreasing injection related fear and anxiety results in a child that is less likely to experience negative effects such as increased pain perception or uncooperative behaviors. Lower levels of fear and anxiety also decreases the chance of a parent and child avoiding the experience all together and increases the likelihood that the child is receiving the required childhood injections. The result is an improvement in the child's overall state of health, which is consistent with the goals of primary care.

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APPENDIX A

Pamphlet

"Methods to Reduce Injection-Related Fear and Anxiety in Children"

Control/Relaxation

This intervention requires adequate time to be effective. The child must be taught to relax during a non-threatening event. This involves helping the child get into a comfortable position and teaching him/her to focus on breathing and pleasant thoughts. Children must be able to learn and practice the procedure on their own in order for it to be effective when used with a stressful event. This intervention is most effective when used with children experiencing extreme fear and anxiety related to injections or for children who require multiple or frequent injections.

Please acquaint yourself with the various interventions and refer to the attached chart to identify which interventions are appropriate for each age group.

For further information, contact:
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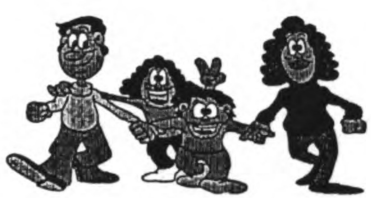
This pamphlet is part of a scholarly project, a requirement for the completion of a Master's of Science in Nursing at Michigan State University (1999).

Methods to Reduce Injection-Related Fear and Anxiety in Children

Produced by:
Lisa Vigneau, RN

Immunizations are essential to maintain a child's health status. This requires children to be subjected to multiple injections during the early years of life. A bad experience with an injection can create anxiety and fear or intensify an existent level of fear and anxiety which is carried over into injection experiences in the future. This pamphlet is designed to help health care providers make injections less stressful for children, resulting in lower levels of injection-related fear and anxiety.

The following evidence-based interventions have been found to be helpful in reducing injection-related fear and anxiety in children.



Information

It is important to provide the parent and child information about injections. Information for parents is aimed at teaching them to assist their child in dealing with the injection experience. (See attached handout "Helping your child cope with shots").

Information for the child must be age appropriate and honest. Never tell a child that a shot won't hurt- it does and this is sure to shatter any trust you have established. Just prior to the shot, use brief and simple explanations, picture books, and demonstrations to help a child understand what he/she will experience and why.

Parent Involvement

Parents should remain with the child during injections unless the child requests that they leave. Parents should be encouraged to help the child by providing support, distraction, and coaching. Discourage parents from threatening the child or scolding them for crying. Let the child know it is okay to cry.

Distraction

Distraction during the injection experience is very helpful. This can be done with finger puppets, conversation, or even with a cartoon video if resources allow.

Topical Anesthetic

The use of a topical anesthetic is easy, inexpensive, and effective in reducing injection-related pain. If injections are expected, infants may benefit from use of EMLA cream applied to both thighs at home prior to appointment. A fast acting approach involves the use of Ethyl Chloride, an aerosol, before injections. This effectively numbs the skin almost instantly.

Play

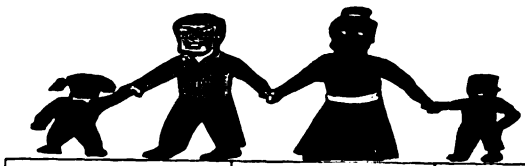
Play that involves either real or toy medical equipment allows the child to become comfortable with strange environment. The result is a lower level of fear and anxiety when confronted with the real injection. A real needle, syringe, and cotton balls may be used with older children while toys should be used with children under seven years old.

APPENDIX B

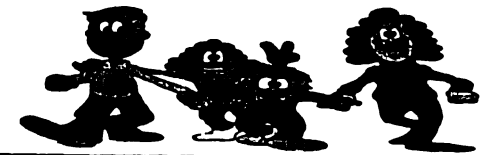
Chart

"Recommended Age Appropriate Interventions to Reduce Injection-Related Fear and Anxiety"

Recommended Age Appropriate Interventions to Reduce Injection-Related Fear and Anxiety



Recommended Interventions



	Information	Parent Involvement	Distraction	Topical Anesthetic	Play	Relaxation/ Breathing
Birth- 2 years	Information to parent, reinforce at later visits	Yes	Puppets, cartoons, or conversation	Yes, also may use EMLA	Use toy medical equipment with 1-2 year olds	NO
2-7 years	Simple verbal explanation to child	Yes	Puppets, cartoons, or conversation	Yes	Use toy medical equipment	NO (Possibly with mature 5-7 year olds)
7-11 years	Simple explanation to child, use picture book	Give child choice	Cartoons or conversation	Yes	Real or toy medical equipment	Use with extreme cases of fear and anxiety
12-18 years	Explanation to child, include why injection is required	Give child choice	Conversation	Yes	Use real medical equipment	Use with extreme cases of fear and anxiety

Appendix C

Parent Education Handout

"Helping Your Child Cope With Shots"

Helping Your Child Cope With Shots

Here are suggested ways to help your child deal with fears about injections.

- Put your own fear and anxiety about shots aside- do not talk about your fear of shots in front of your child.
- Discuss what will happen at the doctor's office. Play act before the appointment by using cotton balls, band-aids, and toy medical equipment.
- Explain that shots help keep children from getting sick.
- NEVER threaten your child with a shot, such as "If you don't behave the nurse will give you a shot". Doctors and nurses are "good guys" that help us stay well.
- Offer reassurances and support to your child. Hold childs hand, have them sit on your lap, bring a familiar item such as a teddy bear or blanket
- Distract the child as the shot is given. Use a puppet or just ask the child to blow out imaginary birthday candles.
- Congratulate your child for being brave and do not scold him/her for crying.
- Let child know you are proud of him/her- do not say the shot didn't hurt since it does hurt!
- Reward your child with a pleasant activity after the visit. Make it fun and let the child choose if possible. This returns their sense of control that is often lost during the injection process.
- Involve siblings in a supportive manner- do not allow them to tease the child.

- Adapted from *Immunization is Basic*, Michigan State University Extension Program, (1995).