THE DEVELOPMENT OF AN IMMUNIZATION PROTOCOL IN A RURAL AREA TO INCREASE IMMUNIZATION RATES

Scholarly Project for the Degree of M. S. N.

MICHIGAN STATE UNIVERSITY

TAMYRA HENIGAN

1998

DATE DUE	DATE DUE	DATE DUE

THE DEVELOPMENT OF AN IMMUNIZATION PROTOCOL IN A RURAL AREA TO INCREASE IMMUNIZATION RATES

By

Tamyra Henigan

A Scholarly Project

Submitted to
Michigan State University
in partial fulfillment of the requirement
for the degree of

MASTER OF SCIENCE IN NURSING

College of Nursing

1998

ABSTRACT

THE DEVELOPMENT OF AN IMMUNIZATION PROTOCOL IN A RURAL AREA TO INCREASE IMMUNIZATION RATES

By

Tamyra Henigan

Immunization rates in Michigan have been determined to be lower than most other stats and especially in the small Northeastern county called Montmorency County. The literature identifies multiple reasons for lower vaccination levels including a deficiency in provider knowledge and missed opportunities. This project focuses on developing an immunization protocol to be used in a small, rural community health center, which provides primary health care in Montmorency County. The project focuses on health system barriers in place that prevent timely vaccinations and develops a protocol for primary care providers to follow to decrease missed opportunities and increase provider knowledge of vaccinations. The implications for nursing education, practice and research are included.

ACKNOWLEDGMENTS

I want to thank my scholarly project committee made up of Patty Peek, RN, MS, CS, PNP chair, Katherine Dontje, RN, CS, MSN and Cindy Gibbons, RN PhD. Their patience, understanding and guidance were a tremendous help. A special thanks to Patty for the extra meetings and encouragement that helped to see me through.

I also wish to thank my husband Mike for his patience with me through this and the time he spent helping me pull things together on the computer. He saved me even more hours of work. I also would like to acknowledge my mother for helping me out as a new mom and watching my son Kyle so I could get some uninterrupted time. Each and every one of you had a contribution to this project. I thank you all.

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

In the eye of the public, prevention has slowly began to evolve as a major contributor to being "healthy." Prevention of disease is the attempted eradication of illness before it occurs (Harris & Leininger, 1993). Unfortunately, too many vaccines are no longer perceived as miracle, preventative therapy against fighting disease but rather as a nuisance (Jost, 1993). Recent evaluations suggest that the health care delivery system bears much responsibility for lower vaccine rates (Altkinson, 1997). The health care system must, therefore, bear the responsibility of determining new ways to increase immunization levels to keep families healthy.

Some of the barriers the health care system has placed in the way of adequate immunizations include missed opportunities, confusion about true contraindications and indications, and inadequate systems in place to provide immunizations. Whether a child receives vaccinations from a health department or local health clinic, a more organized way of providing immunizations must be in place.
The changes occurring in the health care system provide new and challenging opportunities for prevention oriented tasks. According to the Department of Health and Human Services (1995), one goal of health care is for at least ninety

percent of two-year olds to achieve complete immunizations. One way to potentially attain this goal would be to develop an immunization program or protocol for a rural area. Part of this program would include increasing the use of primary care. Primary care encourages an ongoing relationship between patients and clinicians and fosters participation by patients in decision making about their health and health care (Sharp, 1996).

Presently, prevention of the most common, potentially serious communicable diseases of children is possible via immunizations. In the United States, Michigan ranks 50th in the number of properly immunized children, only 61 % of Michigan children are adequately immunized(Michigan Department of Public Health, 1995). The nation's average is higher at 74% (Michigan Department of Public Health, 1995). Even though immunization against common childhood illnesses constitutes one of the largest illness prevention programs in the United States, America has become lax in assuring that children receive this simple, cost effective disease prevention measure (Aronson, 1993). If Americans want to stay healthy, then prevention of disease and childhood illnesses, via immunization, must be a priority (Aronsen, 1993).

According to recent US census bureau reports, approximately 25% of all Americans live in rural communities, and twenty one of the states have more than 60% of their counties designated as rural (Bushy, 1993). A rural area is one described as a town of 2,500 people or

less (Harris & Leininger, 1993). Rural populations have higher infant and maternal morbidity, higher rates of chronic illness and greater poverty (Bushy, 1993). Rural patients tend to be older, poorer, less educated and less insured; all characteristics associated with lower levels of preventative care (Harris & Leninger, 1993).

Montmorency County, Michigan is a small county in the northeast section of Michigan with approximately 9,513 residents of which 2,217 are children (Michigan League for Human Services, 1996). It is a rural area with limited health care resources.

Most of the clientele that this health center serves are on state assistance, have little money, poor transportation, and no private health insurance. Many of these people are unemployed. In Montmorency County 36.3% of children fall below 125% poverty level (Michigan League for Human Services, 1996). In Montmorency County the community health center is the primary source of health care, serving approximately 5,833 persons.

The immunization compliance rates of Montmorency County, in October of 1994, were about 82% (Primary Health Care Profile of Michigan, 1996). These rates have fluctuated greatly in the last couple of years and continue to do so. This is due to the variety of health care providers that have come and gone and the more recent trends to encourage vaccinations. The recent push for proper immunizations at the state level and local level by local

clinics and health department have been contributing factors in helping this level to be as high as it is currently.

The advanced practice nurse (APN) can contribute to a healthy America by participating in efforts to increase the percentage of children immunized. The care provided by APN's emphasizes early intervention and ongoing management of patient health status (Schaffner-Ludwig, Beymer & Wiggins, 1995). APN's are registered professional nurses who, after additional formal education, provide advanced nursing care in an expanded role, emphasize wellness promotion and illness prevention, treat acute and stable, chronic illness management to individuals, families, and communities (Schaffner-Ludwig, Beymer & Wiggins, 1995). The APN can provide positive patient outcomes in terms of increasing these immunization levels and preventing disease.

To incorporate this promotion of health, the APN must plan, implement, and evaluate specific interventions (Bigbee & Jansa, 1991). These services need not be implemented exclusively during visits devoted to prevention. The illness visits are equally important, and, by looking at all visits as potential "missed opportunities," APN intervention will increase immunization rates (Bigbee & Jansa, 1991).

Missed opportunities to immunize is one reason why an immunization protocol needs to be developed. A missed opportunity occurs when there is the failure to vaccinate a child at any health care visit when immunizations are due if there are no contraindications to do so (Wood, Halfon, Pereya, Hamilin, & Grabowsky, 1996). The staff of the

community health center needs to be educated on how to decrease the amount of these missed opportunities. The staff also needs to provide missed opportunity education material to families.

To be effective, health care must function as a partnership between the family, the health professional, and other community health and human service providers. It is time for healthcare to become more comprehensive and intensive. This will be most effectively achieved through an approach that views the child, family, and community as a seamless continuum (Schor, 1995).

The purpose of this scholarly project is to develop an immunization protocol for health care providers and staff at Thunder Bay Community Health Services, which would allow greater ease in the administration and recording of vaccinations. Ultimately, this would hopefully achieve an increase in immunization rates by overcoming some of the possible barriers to immunization.

Conceptual Framework

In this section of the paper, the general systems theory will be reviewed and discussed in relation to the protocol. This protocol will offer specific guidelines, which are realistic, achievable, comprehensive and patterned to meet the particular needs of the practice and patient population. Subsystems to be utilized in this protocol include the community, health care system, and the provider subsystem. As a provider, one works within the health care system which is a subsystem of the community. Primary care

is the way to connect personal health care services with families and communities to forge closer relationships between personal health services and public health (Sharp, 1996). All three systems must work together to provide good health care for patients. To have healthy communities free from disease, the immunization status of children must increase to prevent outbreaks. The key concepts are boundaries, open and closed systems, the feedback loop and how these relate to the provider and health care system within the community.

General Systems Theory

General Systems Theory, originated from the work of Ludwig van Bertalanoffy in 1968, describes the interrelationships between subjects, whether this be humans or inanimate objects. Systems theory is a scientific exploration of "wholes" and "wholeness" (van Bertlanoffy, 1980). In order to be classified as a system, several conditions must be met. These included a set of interacting components within a boundary that filters information, works within the environment, and is more than the sum of its parts. This theory helps one to understand how a person or group functions as a whole within a changing environment (Hamric & Spross, 1983).

A system refers to the enduring repetitious patterns and the way that parts of the system interact; the system seeks stability and must be able to change to maintain this stability (Day, Gilbert, Settles, & Burr, 1995). A steady state is maintained by a continuous flow of energy within

the system and between the system and the environment (Fawcett, 1984). In systems theory the whole is greater than the sum of its various parts, and a change on one part will have an impact on the whole (van Bertalanoffy, 1968). Because of this, one must study relationships in relation to one another and not as isolate units. Any effect on one part of the system will affect it as a whole.

The diagram above is one system with boundaries which is further broken down into smaller subsystems. Each part of the system has a boundary. A boundary refers to the line of demarcation between a system and the system's environment (Fawcett, 1984). It is the line forming the closed circle around selected variables with an interchange of energy. This boundary may be permeable, hence the dotted lines, and the greater the permeability the greater the interchange of energy between the system and the environment, refer to Figure 1. The boundaries, the interaction with the environment and the wholeness of the system play a part in the stimulus that is received which leads to a certain response. Each set of boundaries is a system by itself but which also is intertwined with others.

The flow of energy between a system and its environment is called feedback (Fawcett, 1984). Feedback helps to maintain a steady state of functioning and serves to increase the probability of the survival of the system (Becvar & Becvar, 1982). Feedback is the communication the system receives from its different parts. This communication helps the system to make the necessary changes

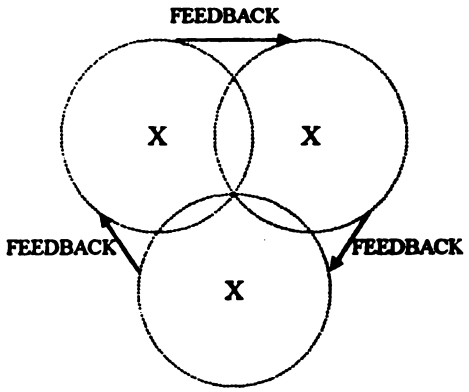

Figure 1.

to maintain homeostasis. In Figure 1 communication can be visualized by the arrows moving from one subsystem to another with the exchange of information.

Variables that can have influence in the feedback loop include age, amount of education, type of health care system, patient profiles, and whether the area is urban or rural. The type of health care system refers to an open or closed system. An open system is more adaptable and accepts change more readily; whereas, a closed system is just that- more closed. It does not readily accept change or allow for the flow of communication to be a part of it. Open and closed systems deal with the art of input and output allowed through boundaries to maintain the state of "equilibrium" (Becvar & Becvar, 1982). The open system is more adaptable to change because it is more capable of importing information from the environment into the system. The

system then reorganizes the information for its use and exports it back to the environment (Hezel & Russell, 1994).

For example, someone living in a rural area may have more limited access to health care in the community. Due to this, the provider must be adaptable to the patient and the patient's ability to make it in for appointments. If the family is more of a closed system, the provider needs to adapt to ways that cause less stress on the family with the least amount of change necessary to achieve optimum health care goals. The ease of health care will reduce unnecessary stress and tension upon patients. Providers must also be willing to reduce clinical barriers such as the need for appointments for every immunization. This adaptability demonstrates more of an open system.

Tension, stress, strain, and conflict are terms that refer to the forces that alter system structure and can affect the feedback mechanism (Fawcett, 1984). Tension, stress, strain and conflict can alter the feedback loop. If these forces are not averted, then they may influence the patient's willingness to come back in to see the provider for other health care visits. These negative concepts interrupt the way one would interpret the stimulus coming in, thereby altering the response. They can also have an influence on how open or closed the system is. A staff that is more open will adapt and change the stimuli coming in more effectively than in a closed system.

Application of General Systems Theory to

Immunization Project

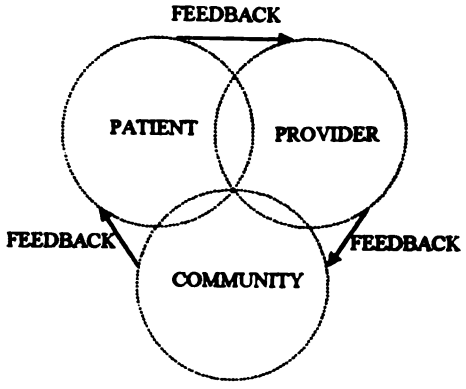

Figure 2.

For the purposes of this paper, the term provider means a physician, physician's assistant (PA) or advanced nurse practitioner (APN). The patient is the person for whom the provider administers health care, perhaps including the patient's parents since many of the patients are children, and decisions related to the patient are made by the parents. The community means the area the patient lives in and is a part of, such as the town or county the person lives in and the people in this area with whom the person or the person's family is associated.

The provider, patient, and community are components of the immunization protocol. The most important stimulus in this protocol is the provider. The provider, plus the patient and family ultimately makes the decision to

vaccinate. The provider takes many different things into consideration when making this decision. Some of the catalysts that the provider reviews include an illness and the discovery that the child is not up to date with immunizations. However, the provider should assume a proactive attitude such as sending a reminder that the patient needs to be seen. The health care provider will have some families that will initiate the need for immunizations. There may be other instances where the community will initiate the immunization process. This may be done because of an outbreak of a disease or a massive review of the school reviewing immunization records.

Once a stimulus puts the protocol into action, the stimulus must be interpreted so an affect or response will begin. In this interpretation phase the health care system reviews its goals or purpose, interprets communication and information it receives, utilizes the ideas of the protocol and can be influenced by the encouragement it receives. In doing so the system has begun to adapt to the environment. As the system interprets the communication and information it receives, it begins to integrate this information within itself and its subsystems.

As the system processes this information it is able to make decisions that allow it to maintain a steady state. From the information a chain of responses is developed: an increase in the immunization status, an increase in the documentation of immunizations, a homeostatic state of the system, a decrease in illnesses and possible savings in cost

due to decreased illness. Depending upon the response, this information goes back into the feedback loop to begin another stimulus reaction. This protocol will be a stimulus whether it is initiated by the health clinic or by an acute visit. When the protocol is followed, then the provider may be able to utilize the health care visit and increase the potential for a healthier community by immunizing a child.

As a person interacts with one system, one also interacts with other systems (Becvar & Becvar, 1982). The provider is a part of the health care system, which is a part of the community. Each individual "system" will have different stimuli and responses and may have slightly different goals to achieve the common interest: an increase in immunizations. Lifelong protective measures are developed within the young family that receives cues from health care providers and society (Bigbee & Jansa, 1991).

The health care clinic that will be used in this protocol is a community health center. A community health center is a partially federally funded clinic, usually in more rural areas, that provides quality health care in areas that have fewer health care providers.

Because it is located in such a rural area, it is the only health care link that many families have and, therefore, plays a vital role in contributing to healthy children. A part of the funds provided by the government helps subsidize the costs of visits and also helps supplement special programs such as health education programs. The health center has a community-based board

which helps to oversee the general running of the health center (Department of Health and Human Services, 1991).

This particular organization is in need of a structured immunization protocol to increase the immunization rates of children in this small rural community. When writing this protocol, the input of the staff at Thunder Bay Community Health Center was received to gather data on the health care workers who deal with immunizations on a daily basis. A protocol will only be as good as the people who use it, so by gathering their ideas on certain aspects of the protocol, the process allowed some interchange of ideas. This system is more of a closed system although the input of the staff is being utilized more. This specific protocol with the staff's input has been most helpful, bringing fresh ideas to an old problem.

Another factor that contributes to the effectiveness of this protocol is the need for ideas to overcome the barriers that arise for this clinic's providers in administering vaccinations. The health care system in place now is in disrepair, requiring both enhancement of outreach capacity and modification of policies and practices to remove barriers (Adhoc group, 1993). Ideally, immunizations should be given as part of comprehensive child health care; however, the health care system should not wait for this general goal to be materialized before the surge for improved vaccinations is begun.

This protocol, when implemented, has the means to greatly increase the immunization rates of this community health center, helping to provide standards for the providers and other health care workers to follow to achieve this increase. The barriers that the clinic has in place that may be keeping the immunization levels low will hopefully decrease and levels will rise. The immunization process is an important and somewhat overwhelming system in its own right. Breaking this system down into the subsystems and decreasing some of these barriers should help the staff with the immunization issue.

Review of Literature

This section will provide a brief overview of the literature that supports the beneficial use of immunizations and the support for a more formalized way of giving them. The objective of adequate immunizations and appropriate well child care is to avert premature death or illness from preventable infectious diseases and to allow early intervention and preventive measures (Mustin, Holt, & Connell, 1994). Immunization has been shown to be cost effective. Immunizations are a critical investment, and one that not only prevents illness but also reduces costs; it is estimated that for every dollar spent now on immunizations, as many as twenty nine dollars can be saved by preventing disease in the future (Centers for Disease Control and Prevention, 1996). Failure to provide vaccines to vulnerable younger children is found to be the cause of recent marked increases in measles cases in 1989 and 1990,

as well as increase in the incidence of whooping cough in the United States since 1976 (Mustin et al., 1994).

In August of 1996, the Centers for Disease Control reported results on a survey of the immunization statistics of two year olds. Nationwide 25,247 households were interviewed, and in Michigan 624 were contacted. This survey found that only 61% of Michigan's children aged 19-35 months had received the recommended vaccinations. This was the lowest percentage in the United States (Michigan Department of Public Health, 1995).

The Department of Health and Human Services (1993) found that, while most children have received immunizations by the time they enter school, many are not vaccinated as early as recommended. Given the low immunization levels among young children, it is reasonable to suspect that there are substantial numbers of children now susceptible to pertussis, polio, mumps, rubella, and hemophilus. The incidence of vaccine preventable illness in the United States has risen in the past decade, and causes include missed opportunities to immunize, patient noncompliance, clarity of immunization practices and uncertainty among physicians regarding immunization practices (Zimmerman & Giebank, 1992). Burman (1996) found that some health care system barriers included lack of reimbursement, fragmentation of health care, lack of insurance coverage, lack of availability of appropriate support services, and lack of knowledge of standards.

Griffith and Rahman (1994) found a few other barriers included clinician uncertainty about what preventative services to provide, lack of office system for delivering these services and the need for clinician training that emphasizes acute versus preventative care. Griffith and Diguiseppi (1994) also found that insufficient organization of staff and support, poor dissemination of information, and discrepancies in what vaccinations and when to give them were further barriers.

Data interpretation suggests that many parents obtain their information on vaccinations from the media and family rather than the health care provider due to some of the previously mentioned barriers (Adhoc group, 1993). It is time for the providers to re-educate themselves and the public on immunizations and increase the immunization rates.

Missed Opportunities

One of the health system barriers associated with low immunization rates is the failure to receive immunizations at health visits when immunizations are due, often referred to as missed opportunities (Wood, Halfon, Pereya, Hamilin, & Grabowsky, 1996). Unfortunately, there has been the misleading idea that the only time to give immunizations was with a health maintenance appointment. Although these appointments are very important, a health maintenance visit should not be an exclusive time to give vaccinations.

Hahn and Berger (1990) found that most patients do not schedule health maintenance visits. Therefore, the realistic way to provide preventative services is to

integrate preventative medicine into all illness visits. Many times a window of opportunity is missed because of an inappropriate understanding of when vaccinations can be given. When children are in the clinic, every opportunity needs to be taken to ensure that the children are adequately immunized and the immunizations are properly documented. Hahn and Berger's study was done in a midsize midwestern city where the patients were predominantly white, lower middle class and blue collar. Although there are some population differences between the Thunder Bay health care facility and the one being discussed here, there are enough similarities from which to draw some references.

Lack of Provider Knowledge

Along with missed opportunities, lack of provider knowledge on immunizations is another contributing factor of low vaccination rates. One of the misconceptions is the belief that giving a child multiple vaccinations for different diseases at the same time increases the risk of side effects. Another misconception is the belief that children with colds or low grade fevers should not receive vaccinations (Center for Disease Control, 1996). It is important to stay current with state and federal regulations and recommendations so that accurate information may be given to parents when providers vaccinating the children. Incorporating provider education into an ongoing, active process of quality improvement will increase the chances of successful adaptation of clinical guidelines (Wood, Halfon, Pereya, Hamlin, & Grabowski, 1996).

A lot of responsibility falls on the provider. It is critical that providers are educated on immunizations and stay updated on all the changes. Many barriers would be overcome if protocols were in place to educate staff on administration of vaccines in order to decrease the number of missed opportunities and to help provide correct information to families. The latest valid contraindications to administering vaccinations are twofold. If the child has a history of immediate anaphylactic reaction to a previous vaccine, then that child should not receive it. The other valid contraindication occurs when the child has a moderate to severe illness with or without fever (Osguthorpe & Morgan, 1995).

There are more "false" contraindications that cause many providers much confusion. In these following circumstances the child can be given vaccinations: local reactions to previous immunizations, mild gastrointestinal illnesses and/or acute illness with low-grade fever. Other considerations include the current use of antibiotics, a premature infant, recent exposures to an infectious disease, history of penicillin allergy, being in the convalescent phase of an illness, family history of convulsions, SIDS (Sudden Infant Death Syndrome) or an adverse event following another family member's vaccination. There are also no contraindications for administering several shots together (Osguthorpe & Morgan, 1994).

In a survey of public and private providers in a Los Angeles area a questionnaire was given to assess knowledge

on immunizations and true contraindications. The correct responses and noncorrect responses showed that providers have important deficits in their knowledge of the immunization schedule and the appropriate contraindications to vaccinate which might lead to missed opportunities to vaccinate and low immunization coverage (Wood, Halfon, Pereya, Hamlin, & Grabowski, 1996). It is important that the provider's knowledge be accurate about immunizations so that providers do not defer immunizations when they should be given.

Clarity of Issues

Besides the missed opportunities, there are other barriers for the providers to overcome in administering vaccines. Another common barrier may be the increasing complexity of the recommended immunization schedule (Centers for Disease Control, 1997a). Frame (1992) also found provider uncertainty about immunizations to be a barrier. As a result of ongoing, new research, there are often changes made to the immunization schedule. Some of these changes may be the addition of a new vaccine or a change in the actual administration schedule of a vaccine. Again, this substantiates the reason to have protocols in place for providers to follow.

Ways To Increase Rates

There are different ways immunization levels may be increased. The Baltimore immunization study focused on low income, high risk children (Frank, Dewa, Holt, Hughart, Stobino, & Gager, 1995). A sample group of children were

randomly chosen and tracked from the population of births that occurred between August of 1988 through March 1989. The data from four hundred and fifty children was eventually used. This immunization study deduced that household resources and convenience are important influences on the timeliness and completeness of immunizations. Children whose provider was from a hospital clinic were more likely to be up to date with immunizations because of the convenience and less stringent demands (Frank, Dewa, Holt, Hughart, Strobino, & Gager, 1995). Making it easier on the household financial resources and making the process of obtaining immunizations more convenient can help increase the immunization rates of children. The less stringent demands such as not requiring physicals and doctor appointments to receive immunizations could also help. Jost (1993) recommended several ways to help increase immunization rates, eliminating unnecessary prerequisites such as required physicals, need for physician referral, high administration fees, inadequate hours, inappropriate health education, and inefficient record keeping systems. The APN must recognize these barriers and act as client advocates and change agents (Doty, 1996). It is critical to do this to establish a trusting relationship with families upon which to build. Many families need guidance and knowledge to achieve and maintain health. Providing this regular source of primary care will help the APN offer recommended services at appropriate intervals (Burman, 1996).

One way that has been used to make the recording process for immunizations easier is using a more computerized system. Computerized childhood immunization records have been introduced in Manitoba, Canada with good success (Roberts, 1994). In this system, each individual with insured medical coverage has a unique identification number. The system uses specific billing codes to identify immunizations billed by providers. Together with dates of services, this information is used to construct an up to date immunization schedule. An easier and less complicated immunization process is a bonus to the health care system. Computer based systems and telecommunications are likely to become key elements of the primary care infrastructure. A computer based system has many clinical applications: profiling patterns, producing reminders for needed services and opening up access for consultants and support services (Sharp, 1996).

There is a National Immunization Program promoting the development and maintenance of computerized registries as key data resource to provide information needed to improve and sustain high levels of immunization coverage (Centers for Disease Control, 1997a). The idea of providing free vaccines is in response to the poor immunization levels of children. The CDC believed that by taking away the cost barrier of vaccination and providing free immunizations, optimum levels of health care would be achieved. This is a new concept that has only recently taken place, so there are no current studies on whether the immunization rates have

begun to increase in areas where this free service is being utilized.

This national program helps maintain databases that enroll all children at birth and stores information on all immunization encounters, consolidates records and provides practice based immunization coverage assessments. This program is called the Vaccines for Children Program (VFC). It will promote immunization at every opportunity and identify and target interventions for increasing immunization levels (Centers for Disease Control, 1997a). It eliminates the need to refer elsewhere for vaccinations due to cost.

The VFC program was created to remove vaccine costs as a barrier and, therefore, will help to reach more children than ever before, allowing more parents to receive free vaccines for their children. This program supplies vaccine at no cost to public and private health care providers who enroll and agree to immunize eligible children (Department of Health and Human Services, 1992). Children from birth to eighteen years of age are eligible to receive free vaccines if they either do not have health insurance, are enrolled in state programs, are American Indian or Alaskan native or have health insurance that does not include vaccine as a covered benefit (Department of Health and Human Services, 1992). Community health centers are eligible for the program. Of the nation's 540 community health centers, 65% are located in rural areas (Wakefield, 1990).

Protocol Development

This section will describe the process in developing a protocol that will potentially help health care workers increase immunization rates at a community health center in rural Northeast Michigan. The protocol attempts to provide a system that will reduce the barriers that are in place when administering vaccines. The hope is that by having a simplified and common process the practice of administering vaccines will become easier, there will be less missed opportunities, and, thereby, more children will get vaccinated. The protocol provides common means for health care workers in a rural area to provide immunizations in a safe and efficient manner. The protocol was developed so that everyone involved in the immunization process understands the importance of vaccinations and how the clinic may best provide this service.

A clinical practice protocol defines comprehensive clinical processes for a target population (Gawlinski, 1995). For the purpose of this paper, the clinical process being defined is one of ordering, administering and recording vaccinations. The target population is of children in the age between birth and two years receive immunizations.

The protocol is based on the standards of the CDC (Wood, Halfon, Pereya, Hamlin, & Grabowski, 1996). Eighteen standards were developed in collaboration with the thirty five member working group (Adhoc group) representing twenty two public and private agencies (Appendix A). This group

included state and local health departments, physicians and nursing organizations, and public and private providers (Altkinson, 1997). The protocol was developed to utilize the work already done by the CDC and use it as a working format for the community health center. By doing so, the process of providing immunizations will be easier with guidelines set up for the health care staff to follow.

The protocol will include utilization of "The Vaccine Automated Computer System" (VACS) which helps provide the capability to obtain and share all immunization information within the northeast Michigan geographical region. The ultimate goal is to tie in to the statewide VACS system once the region's objectives are operative. The Michigan Primary Care Association has been the vital key to this system and has helped provide moneys for new computers to link in to this system.

The protocol will be implemented in a series of steps. The staff must first be educated on what this protocol is and the responsibilities each member has. The clinical coordinator will be in charge of setting up an inservice for all staff who will be working with the protocol. At this inservice the staff will review missed opportunities, the forms used to record vaccinations and the new VACS program. In this packet would be the most recent immunization schedule, specific pamphlets on disease (e.g. DPT or MMR), health maintenance flowsheet, immunization schedule and an example of computer health care printouts.

Other educational tools will be utilized to minimize missed opportunities. A copy of the latest immunization schedule should be posted in each waiting and examination room, so that the parents may review while waiting to access the health care provider. There should also be a copy of the true contraindication chart, providing material for the parents to review while waiting for the provider, and the provider should initiate the need for vaccination, explaining and reinforcing this information.

After the inservice, the protocol will begin implementation. As with any new protocol there are adjustments. To ensure the most optimum visit, the protocol is put into place the day before the health care visit. A part of getting the patient's chart ready for the next day's appointment is having the receptionist place a phone call to remind the patient of the appointment time and request the parent to bring in the child's immunization record. The receptionist would also print a computer printout of the child's immunization record. This process would be done with all children.

The information the computer can provide is a significant factor. Once the information has been entered into the computer (age, name, vaccinations, and the facility where given), that information will be obtainable by anyone that is technically connected. The computer information that may be accessed will be the types of vaccinations each child has received, when given, and where given. The computer will provide a printout with information on what

vaccinations are due and when the next ones will be due; under the comment section, there will be comments that identify which immunizations are due and when they are due. This would allow the provider and support staff to easily identify the vaccination status of the child. The data computer sheet also provides basic demographic information (Appendix B).

This system also allows for a profile listing of children within a certain age group that do not meet the immunization requirements (Appendix C), allowing auditing to be done within the age groups. Part of this protocol includes inputting this information into the computer. It can provide output of percentages and numbers of children that meet the criteria and those that do not. The system also allows for recall listing and provides information on why the child would be recalled (Appendix D).

At the beginning of each health care visit, the child's records need to be reviewed to determine if immunizations are due. The VACS system will minimize the time spent doing this. If records are correctly updated in the computer, then staff should be able to receive a printout from the computer that would state what, if any, immunizations are needed. At this point the nurse could also make sure the child's immunization record that the parents have is accurate. One should always have the most updated immunization schedule nearby to review for any questions. Education materials related to the needed immunizations may

then be handed out for parents to review. The nurse will alert the provider if the child needs immunizations.

Once the provider examines the child, a decision is made to immunize or not. Once the decision has been made and explained to the parents, the provider will alert the nurse by writing orders on the vital sign sheet. Before the injections are given, the educational material is reviewed, questions answered and a consent form signed. It is important to get this consent form signed because it allows the nurse to gather pertinent information to make sure there are no unknown reasons for the child not to receive the vaccinations. These questions include things such as allergies to eggs or being around immunocompromised persons. The nurse must then mark the shots on the child's shot record and update the chart. The nurses will note on the computer printouts if the injections were given, and this information can then be entered into the computer records by the staff at the end of the day.

Protocol Flowsheet

Flowsheets are the most commonly used tool for tracking health maintenance in practice. A flowsheet must be brief, organized so that dates of health maintenance can be seen at a glance and be placed prominently in the chart (Frame, 1992). The health maintenance flowsheet (Appendix E) will be placed as the first sheet seen on the right hand side of the chart. It has a place for the date, lot number and initials of who administered the injection (see Figure 3).

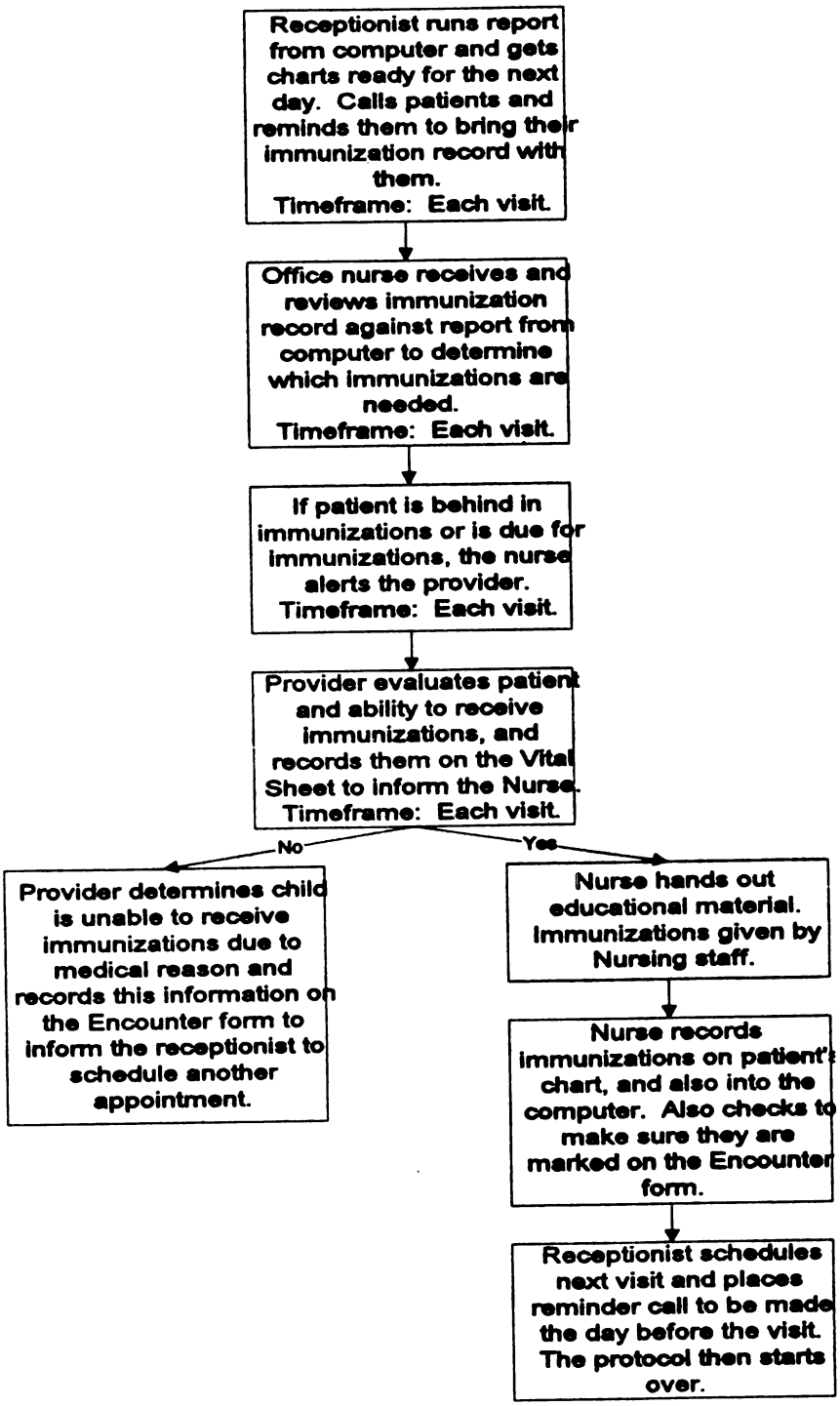

Figure 3. Flowsheet

If the child is unable to receive vaccinations due to a true contraindication, then it is important to review with the parent the need to schedule a time to bring the child back in to receive the vaccinations so the child can be up to date with the appropriate vaccines. This will be written down on the encounter form for the receptionist to schedule. If the child needs to come back for a well child check to receive the next series of vaccinations, that will also be written down on the encounter form for the receptionist to schedule. The process starts over again when the front desk staff calls the day before appointments to confirm the appointment and reminds the parent to bring in the immunization record.

As with every change, there may be some resistance to a new protocol even though it will simplify the process later. There are ways to counter this resistance within the staff. One way is to incorporate some of the ideas of the staff in the protocol. Another is to use motivational techniques. Some types of motivational techniques could include a lunch provided by the clinic for reaching certain immunization goals and another may be providing individual recognition on a pegboard in the waiting room. These types of activities recognize and commend staff's efforts to follow the protocol and by doing so increase the clinic's immunization rates.

Because this is a federally funded community health center, there are certain immunization rate goals that the clinic sets that are submitted in the yearly grant. The use of this protocol can help the clinic achieve these goals. A

recent clinical outcome measure audit revealed that only 65% of the clinic's pediatric patients below two were fully immunized following ACIP guidelines. Due to these low immunization rates, the goals the clinic established are to increase screening of pediatric patients at the clinic from 59% in 9/96 to 80% in 9/98. This is a reflection on the provider's concern and ultimately a reflection on the staff's commitment to increase these levels to acceptable standards. Reaching and maintaining these goals can make the difference between receiving all grant moneys for which the health center applies.

Evaluation

This section discusses how the protocol will be evaluated in terms of its effectiveness. This can be accomplished by outlining a specific program to immunize children and record vaccinations. If health care workers, along with support staff, are decreasing "missed opportunities" and following a specific plan, then there should be an increase in immunization levels of children seen in the clinic. If there are parts of the protocol that hamper the ability to give immunizations effectively, then those aspects will need to be determined and changed accordingly.

A goal should be set to accurately and efficiently achieve a certain immunization level with smaller goals made to achieve this main goal. These goals should also reflect the clinic's grant goals. In the first year the immunization rates should be at 80%. In three years the

rates should be at 85%, and in five years, the goal of 90% should be reached. Although implementation of this protocol will help, it takes time to achieve a 90% level, therefore, everyone involved should work towards this goal over a five year period of time.

The clinic should first obtain estimates of the immunization status of the children now in the clinic. Ten charts from each of the age groups: two month, four month, six month, nine month, twelve month, fifteen month and two years, will be randomly selected. The immunization records in these charts will be reviewed to determine the vaccination update of each child. This can easily be reviewed using the computer printout the VACS system will provide.

This information will then be compared when the new protocol is in place. The first audits should be done every three months. After the first year, the audit could be performed every six months. The audit can be performed using the information on the profile listing of the different age groups. Ten charts could then be randomly chosen from each age groups previously mentioned. It can be determined if the child is up to date with immunizations by reviewing the status on the VACS system. The automated system will be online in one year so the double check will no longer be needed.

If problems are encountered within the system, then these will have to be changed. A quality assurance committee will be established to track the immunization

rates and determine if the protocol is working effectively. The providers and nurses on this committee will address problems that occur. This way there will be input from all involved.

The staff will have an opportunity to review the protocol after it has been in use for one year. This year is needed to provide the staff the opportunity to use it and work with it before any decisions are made about its effectiveness. It also allows enough time to gather data for review to check on the immunization rates. Decisions to change parts of the protocol will be made as a group. If there are any blatant problems with the protocol, the quality assurance committee should review and discuss these with the clinical coordinator in case changes need to be made in a timely manner.

Obviously, for this new system to be accurate and worthwhile, the system must have correct information input. If the quality assurance team finds that information is not being entered into the computer or documented, then this problem will be passed on to the clinical coordinator. Reminders may have to be made to individuals to make sure this is being done on a regularly basis.

There are also other ways the clinic could check the effectiveness of the protocol. One way would be to monitor missed opportunities. The quality assurance team could review to see if there was documentation that immunizations were being addressed at every visit and not just health

maintenance visits. It would be up to the facility in terms of which evaluation process would be the best.

Research could also be done to determine client satisfaction with the protocol. A survey could be done to determine if the patients' parents liked the reminders and encouragement to get immunizations done. Most parents today like to know what is happening with their children's health and how to prevent disease. Parents have always known that children need vaccinations but have not always known what to expect, when children can get vaccines or not get them and what the vaccinations are expected to prevent. Education seems to play a larger role in today's health and the APN must meet that challenge. APN's provide quality health care to the family, and this is reflected in practice via notes and satisfaction surveys.

Implications

This section discusses the implications this protocol will have on vaccinating children. This protocol deals with the health maintenance issue, and since advanced practice nurses may deal with many health maintenance issues, it is an area that should be of utmost concern to the APN.

Nursing Practice

The implications of this protocol will have a great impact on the APN's nursing practice. The APN can utilize the role of leader and educator to inservice other providers on the use of this protocol. As the usefulness of this protocol becomes evident with increased immunization rates, other health care facilities may want to use it. As a

health care provider, the APN wants a positive outcome (no disease) and an increase in immunization status. A higher compliance rate is one of the goals of developing a quality immunization program. The protocol provides a formal structure for health care workers to follow while shortening up the time of determining which immunizations are due by using the VACS system. This system can help overcome many barriers that lead to missed opportunities in the health care field.

Nurses need to utilize this protocol to decrease missed opportunities. Having a nursing staff that routinely follows guidelines will facilitate provider time spent on reviewing information with families and determining a child's vaccination status. It is the health care staff's responsibility to listen and understand concerns, fears, and beliefs.

If the patients are given accurate rebuttals, the patients will be better informed and able to make accurate judgments concerning specific issues centered around immunizations (Centers for Disease Control, 1997b).

As this protocol is put in place and the positive effects of it can be seen, there will be other implications it will have. There could be an increase in the call for nurses to take this a step further. This protocol could be the first step to an immunization clinic. The APN can further develop guidelines for nursing to give immunizations to families without seeing the provider if there are no contraindications for the child. Zimmerman and Gierbank

(1992) found that standing orders for nurses to administer routine childhood immunizations according to schedules may help increase coverage and relieve some of the burden off the physicians, physician's assistants, and advanced practice nurses.

The immunization clinic could be established with a nurse leading it under the direction of a provider. It would be a time for parents to bring their children in to be immunized if they knew, or thought, the child was due for immunizations. The nurse conducting the clinic would be trained by the providers to know indications and contraindications to giving immunizations. A provider would always be available to ask questions if there was any doubt. The same protocol would be followed in terms of recording the information.

The APN needs to advocate for the use of vaccinations and to educate the importance of immunization to parents. People always have ready excuses on why something wasn't done or can't be done. This counterproductive thinking needs to be altered so that the barriers or perceptions of the negative aspects of immunizations will be reversed. The family needs to understand the unpleasant consequences that could happen if the immunizations are not given.

Nursing Research

Now that a protocol is in place it will be important to research provider and staff satisfaction with the protocol. Does this protocol make the task of giving immunizations easier? Are there fewer missed opportunities? Health care

staff will need to determine if the goals are being met. Guidelines should help to provide a more formalized path with increased satisfaction.

Research could be done on whether the VACS system makes the task of doing immunizations easier. Is there less time involved in figuring out what is due and documenting the information? Does there seem to be more time spent getting the charts ready? Does this system provide for more accurate records, which, in turn, can lead to fewer missed opportunities?

A research project could be established to track aspects of this clinic with the protocol compared to a similar clinic without a protocol. This could lead to the protocol being utilized in other facilities as others know the protocol and its success. Staff satisfaction rates and the immunization rates of children in each site could be reviewed and compared.

Another research project could be to explore families' reactions to the protocol and to having immunizations checked at every clinic visit. Do families view this as more of a nuisance or is the proactive check appreciated? Are families bringing their immunization cards with them to be checked against the computer printout for discrepancies? The protocol should make the process easier for everyone, but, if it does not, this should yield information of how to make changes it to make the protocol more adaptable to families.

The information the VACS system can provide could also be used as a statistical base for further research. There is a lot of information put into the computer from which numerous types of data could be gathered. Information can be obtained in regard to specific age groups, specific geographic areas, or the immunization status of specific vaccinations.

Nursing Education

It is important that the APN become a part of the team that reviews processes that deal with vaccinations and substantiate the advanced practice nurse's role within this field. The role as a change agent and consultant in this program is very important. The general systems model can be very beneficial in developing an immunization program. One of the key concepts in developing a program is education. One needs to assess the concepts of the general systems model so one can understand how to develop a program. Health professionals need to make the most of contacts with patients. Rates of immunizations will not increase unless health care providers dedicate themselves to full implementation of these standards (Shalala, 1993).

Protocols are a vital aspect of any APN's practice. Protocols provide the steps to help make decisions for safe practice; a protocol provides the standards of care the APN provides and helps to define the scope of practice. A protocol can be advantageous in that it helps to identify the limitations and when the provider should refer elsewhere when necessary. The APN needs to clarify and substantiate

the need for protocols to the public. That is why the role of the APN as an educator is so important. Health care workers need to keep updated on research being done that leads to health care changes. It is the responsibility of the APN to act as a change agent and to make sure the proper changes would be made in the protocol and practice to reflect these changes.

APN's can educate other nursing students on the importance of using such protocols as the one in this project. Health care providers should review the reasons why the protocol came to be, the research findings, and the evaluations of staff who had been involved in the process. An explanation to nursing students or to others who may be thinking of implementing the protocol would begin with where the process started and why. The Thunder Bay Community Health Services clinic had low immunization rates without a formal process of administering vaccinations. This protocol was developed to gain a formal process, and, by doing so, the goal to increase the vaccination rate of children will be achieved. Hopefully, an immunization clinic may be developed from this process.

The APN also needs to be a participating provider when analyzing the data. The data must be accurate and thorough. APN's have the knowledge and educational background to do research and analyze. APN's have important skills needed to educate others in the process. As a provider, the APN utilizes clinician skills in determining whether if a child should or shouldn't have a vaccination. As a researcher and

educator, the APN must be able to review data objectively and decipher ways to use this information to improve the protocol or to bring about a new idea.

As the APN identifies the need for change within the protocol or practice, the need and means to substantiate this change will be as important. Change is usually met with some resistance; therefore, the APN needs to be aware of attitudes of co-workers and what change will mean to each person involved in the change. This will mean being an leader for those to follow while being an attentive listener to concerns.

Conclusion

This protocol was developed to increase immunization rates in a small rural area in Northeast Michigan. The protocol developed guidelines for health care workers to follow when providing vaccinations to children. Along with the barriers the community health center has in place, the protocol will also increase immunization rates.

One of the main barriers is the lack of provider knowledge related to patient and parents' confusion over immunization schedules. This protocol uses different avenues to decrease some of this confusion, thus increasing immunization rates. These protocol avenues include inservices, using the VACS system and the vaccines for children programs.

Incorporated into the protocol is the systems theory. The provider, patient, and community are all incorporated together, and the feedback is what keeps the system moving

in a positive direction. There are many forces that can alter this feedback mechanism. A more open system will allow more feedback in and out of the system to enable it to changes. Although this protocol may seem overwhelming, the changes that develop will make the immunization process more effective. Adaptability is the key factor for the success of this protocol.

The protocol includes a section on how to evaluate itself. The APN plays a vital role in this evaluation process. Implications for nursing practice, research, and education are also included. These include ways to further nursing practice for the advanced practice nurse and other nurses using this protocol, along with topics for additional research. The APN is a facilitator and an educator in order for this protocol to be used in other health care facilities. The implementation of this protocol is just the beginning. The protocol establishes the first link in the chain that bonds the patient, the family and the provider in the development a quality immunization clinic. One should expect that there maybe some areas that will need to be modified. As the health center responds to the public's needs , the protocol will reflect this change and also reflect changes that occur within the research field. The role of the APN in the health care cycle is becoming increasingly important and dynamic.

LIST OF REFERENCES

LIST OF REFERENCES

Adhoc working group (1993). Standards for pediatric immunization practices. Journal of Medical Association 269(14), 1817-1822.

Altkinson, B. (1997). General information about immunization. Clinical Q & A. Available URL: http://www.cdc.gov/nip/clinica2.htm.

Aronson, S. (1993). Don't wait; vaccinate: Ask Dr. Sue. Child Care Information Exchange(89), 47-49.

Becvar, R.J. & Becvar, D.S. (1982). Systems theory and family therapy: A primer. Lanham, M.D.: University Press of America.

Bigbee, J.L. & Jansa, N. (1991). Strategies for promoting health protection. Nursing Clinics of North America, 26(4), 895-913.

Burman, M.E., (1996). Childhood primary care services in Wyoming. Journal of the American Academy of Nurse Practitioners, 8(2), 61-67.

Bushy, A. (1993). Defining rural before tackling access issues. The American Nurse, 25(8), 20.

Centers for Disease Control (1997a). NIP's role in immunization registry development. (Online) Available URL: http://www.cdc.gov/nip/registry/vision.html.

Centers for Disease Control (1997b). Six common misconceptions about vaccination and how to respond to them. (Online) Available URL: http://www.cdc.gov./nip/6mishome.htm

Center for Disease Control (1996). Childhood immunizations facts. Washington D.C.: U.S. Department of Health Care and Human Services.

Day, D. Gilbert, K., Settles, B., & Burr, W. (1995). Research and theory in family science. Pacific Grove, Ca: Brooks/Cole Publishing Co.

Department of Health and Human Services (1995). Immunization action news. Center for Disease Control and Prevention, 2(12), 1-4.

Department of Health and Human Services (1993). Child Health U.S.A. Washington D.C.: U.S. Government Printing Office.

Department of Health and Human Services (1992). Vaccines for children: Questions and answers. Centers for Disease Control and Public Health Service. Washington D.C.: U.S. Government Printing Office.

Department of Health and Human Services (1991). Program expectations for community and migrant health centers. Washington D.C. : U.S. Government Printing Office.

Doty, R. (1996). Alternative theoretical perspectives: Essential knowledge for the advanced practice nurse in the promotion of rural family health. Clinical Nurse Specialist, 110(5), 217-9.

Fawcett, J. (1984). Analysis and evaluation of conceptual models of nursing. Philadelphia: F.A. Davis Company.

Frame, P.S. (1992). Health maintenance in clinical practice: Strategies and barriers. American Family Physician, 45, 1192-1200.

Frank, R.G. Dewa, C.S., Holt, E., Hughart, N., Strobino, A., & Guyer, B. (1995). The demand for childhood immunizations: Results from the Baltimore immunization study. Inquiry, 3, 164-173.

Gawlinski, A. (1995). Practice protocols, development and use. Critical Care Nursing Clinics of North America, 7(1), 17-23.

Griffith, H.M. & Diguiseppi , C. (1994). Guidelines for clinical preventative services: Essential for nurse practitioners in practice, education and research. Nurse Practitioner, 19(9), 25, 27-28, 31, 35, 38.

Griffith, H.M. & Rahman, M.I. (1994). Implementing the put prevention into practice program. Nurse Practitioner, 19(10), 12, 15-16, 18-19.

Hahn, D. & Berger, M. (1990). Implantation of a systematic health maintenance protocol in a private practice. The Journal of Family Practice, 31(5), 492-504.

Hamric, A., & Spross, J. (1993). The clinical nurse specialist in theory and practice. Philadelphia: W.B. Saunders Company.

Harris R. & Leininger, L. (1993). Preventative care in rural primary care practice. Cancer Supplement(3), 1113-1117.

Hezel, L. & Russell, J. (1994). Role analysis of the advanced practice nurse using the Neuman health care systems model as a framework. Clinical Nurse Specialist, 8(4), 215-220.

Jost, K. (1993). Childhood immunizations: Why haven't millions of youngsters gotten all their shots? The CQ Researcher, 3(23), 549-551.

Michigan Department of Public Health (1995). Michigan Immunization Update, 2(3), 1-5.

Michigan League for Human Services (1996). Michigan Kids Count Data Book. Washington D.C.: U.S. Government Printing Office.

Mustin, H.D., Holt, V.L., & Connell, F.A. (1994). Adequacy of well child care and immunizations in U.S. infants born in 1988. Journal of American Medical Association, 272(14), 1111-1115.

Osguthorpe, N.C. & Morgan, E.P. (1995). An immunization update for primary health care providers. Nurse Practitioner, 20(6), 52, 54, 60-5.

Primary Health Care Profile of Michigan (1996). Building a Healthy Michigan 1996. East Lansing, MI: Michigan Primary Care Association.

Roberts, J. (1994). Monitoring childhood immunizations: A Canadian approach. American Journal of Public Health, 84, 1666-1668.

Schaffner, J.W., Ludwig-Beymer, P. & Wiggins, J. (1995). Utilization of advanced practice nurses in health care systems and multispecialty group practice. JONA, 25(12), 37-43.

Schor, E. (1995). The influence of families on child health. Family Focused Pediatrics, 42(1), 80-102.

Shalala, D. (1993). Giving pediatric immunizations the priority they deserve. Journal of American Medical Association, 269(14), 1844-1845.

Sharp, N. (1996). Primary care is a relationship. Nurse Practitioner, 21, 134, 139-140.

von Bertalonoffy, L. (1980). General systems theory: Foundations, development, applications. New York: George Brazillar.

von Bertalonoffy, L. (1968). General systems theory. New York: George Brazillar.

Wakefield, M.K. (1990). Health care in rural America: A view from the nations capital. Nursing Economics, 8(2), 83-89.

Wood, D., Halfon, N., Pereya, M., Hamlin, J. & Grabowsky, M. (1996). Knowledge of the childhood immunization schedule and of contraindications to vaccinate by private and public providers in Los Angeles. The Pediatric Infectious Disease Journal, 15(2), 140-145.

Zimmerman, R.K. & Giebink, G.S. (1992). Childhood immunizations: A practical approach for clinicians. American Family Physician, 45(4), 1759-1772.

APPENDIX A

Appendix A

Standards from Adhoc Committee

1. immunization services are readily available
2. there are no barriers or unnecessary prerequisites to the receipt of vaccines
3. immunization services are available for free or minimal fee
4. providers utilize all clinical encounters to screen for needed vaccines and when indicated, immunize children
5. educate parents and guardians about immunizations in general terms
6. question parents or guardians about contraindications and before immunizing a child inform them in specific terms about risks/benefits of immunizations the child is to receive
7. follow only true contraindications
8. administer simultaneously all vaccine doses for which the child is eligible at the time of each visit
9. use accurate and complete recording procedures
10. coschedule immunization appointments in conjunction with appointments for other child health services
11. providers report adverse events following immunization promptly, accurately, and completely
12. operate a tracking system
13. adhere to appropriate procedures for vaccine management
14. conduct semiannual audits to assess immunization coverage levels
15. maintain up to date easily retrievable medical protocols
16. practice patient oriented and community based approaches
17. vaccinations are administered by properly trained individuals
18. providers receive ongoing education and training on current immunization recommendations

APPENDIX B

Appendix B

CLINIC: ALPENA COUNTY: ALPENA TODAY'S DATE: 11/17/1998

NAME: SMITH, JO
PARENTS:
ADDRESS:

MI,
PHONE: (517)

BIRTH DATE: 10/02/1998
SEX:
AGE: 1 m
MEDICAID:
SSN:

COMMENTS:

As of 11/17/1998 the recommended minimum interval would permit the following doses to be given on the dates shown.

The recommended childhood immunization schedule may indicate one or more doses are due at a later time.

IMMUNIZATION STATUS	SUGGESTED DUE DATE
NEED A DOSE OF DTP	11/17/1998
NEED A DOSE OF POLIO	11/17/1998
PROV FOR MMR	10/02/1999
NEED A DOSE OF HIB	11/17/1998
NEED A DOSE OF HBV	11/17/1998
PROV FOR VARICELLA	10/02/1999

APPENDIX C

Appendix C

COUNTY:

CLINIC: ZIPCODE: ALL ZIP CODES

CURRENT PROFILE CLIENTS NOT MEETING REQUIREMENTS
WITH FOLLOWING CRITERIA SPECIFIED ON: DATE

INCLUDES ACTIVES AND INACTIVES
AGE BETWEEN 19 AND 36 MONTHS
DTP DOSES
OPV DOSES
HIB DOSES
MMR DOSES
HEP-B DOSES

NAME BIRTHDATE PHONE

DATE COUNTY:

CURRENT INFORMATION PROFILE
INCLUDES ALL CLIENTS

CLINIC: ZIPCODE: ALL ZIP CODES

IMMUNIZATION SCHEDULE SPECIFIED FOR CLIENTS
AT LEAST 19 MONTHS OF AGE BUT NOT YET 36 MONTHS OF AGE

MINIMUM DOSES OF DTP/DT/TD:
MINIMUM DOSES OF OPV/IPV:
MINIMUM DOSES OF HIB:
MINIMUM DOSES OF MMR:
MINIMUM DOSES OF HEP-B:

	NUMBER	PERCENT
CLIENTS THAT MEET ABOVE CRITERIA:		
CLIENTS NOT MEETING ABOVE CRITERIA:		

TOTAL NUMBER OF CLIENTS EVALUATED:

APPENDIX D

Appendix D

DATE **COUNTY:**

RECALL LISTING
LISTING OF CLIENTS WITH REASON FOR RECALL

			RECALL REASON					
NAME	**BIRTHDAY**	**PHONE**	**DTP**	**OPV**	**MMR**	**HIB**	**HEP**	**RECALLS**

APPENDIX E

Appendix E

Name _____ D.O.B. _____

B.W. ____ lb. ____ oz. ♦ DISCHARGE WEIGHT ____ lb. ____ oz. ♦ EDC _____ ♦ APGARS ____ 1 Min. _____ 5 Min. _____

PROBLEM LIST (Including prenatal problems, neonatal problems, genetic risks, surgeries, major ills, chronic ills, recurrent acute problems)

PROBLEM	ONSET	RESOLVED	DISPOSITION

ALLERGIES	DATE	DESCRIBE REACTION

SIGNIFICANT FAMILY HISTORY

IMMUNIZATIONS

TYPE	DATE	REACTION	LOT#	BY
DPT #1				
DPT #2				
DPT #3				
DPT #4				
DPT #5				
DPT-Booster				
OPV #1				
OPV #2				
OPV #3				
OPV #4				
Varicella				
Hep A				

TYPE	DATE	REACTION	LOT#	BY
HIB #1				
HIB #2				
HIB #3				
HIB #4				
MMR #1				
MMR #2				
HBV #1				
HBV #2				
HBV #3				
	DATE	RESULTS		INIT.
PPD				
Hct.				
Lead				

Rev. 1/96

PEDIATRIC HISTORY & IMMUNIZATIONS