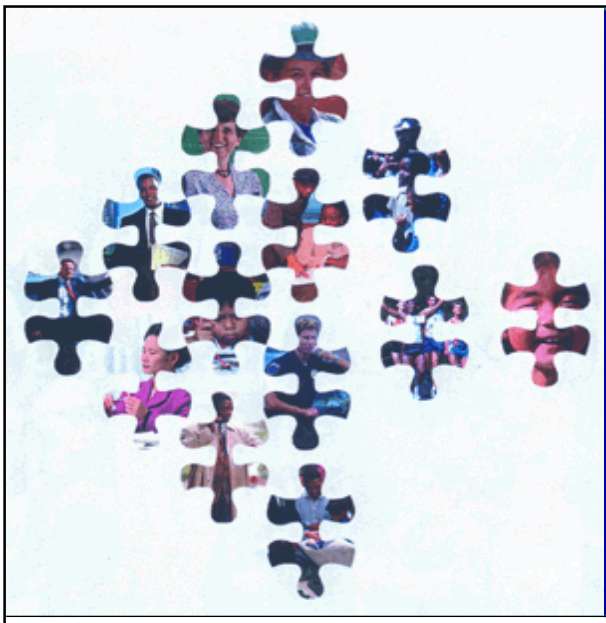

National Institute of Nursing Research

Making a Difference

Nursing Brings Life to Research and Research to Life

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Making a Difference

Early Discharge From the Hospital to Home-- Transitional Care Can Improve Patients' Health and Lower Costs to the Health Care System

A model of transitional care, supported by the National Institute of Nursing Research, has shown that when advanced practice nurses conduct a carefully planned hospital early discharge program with follow-up care in the home, the quality of patient care improves and health care costs are reduced significantly. This model, called the Quality-Cost Model of Nurse Specialist Transitional Care, has been tested in many patient populations with various health-related conditions, and findings are consistently positive. Dr. Dorothy Brooten, Dean of Case Western Reserve, led the team that developed and evaluated the model when she was at the University of Pennsylvania. Currently the Quality-Cost Model is attracting considerable interest in the health care field. Several Midwest health maintenance organizations are already assessing the model for implementation as part of their health care operations.

The availability of successful transitional care is particularly critical at this time, since over the last 15 years, cost-driven reductions in the length of hospital stays have resulted in the discharge of sicker patients, who require additional support systems to continue their recovery at home. Concurrently, improved therapeutics have made early hospital discharge possible, and for certain groups of patients, even desirable.

Care is provided by advanced practice nurse specialists with clinical knowledge and skills matched to their patient populations.

As this table indicates, the cost effectiveness of the Quality-Cost Model is evident for a variety of patient groups.

Service	Population	Savings
Initial hospitalizations	Very low birthweight babies	-11 days
	Cesarean births	-30 days
Average charges for hospitalization	Pregnant diabetic group	-40%
	Cesarean group	-30%
	Very low birthweight group	-27%
	Hysterectomy group	-6%
Number of readmissions to hospital	Elderly cardiac medical group (6 weeks post discharge)	-61%
Hospital charges for readmissions	Eldely cardiac medical group	-61%
Average cost for total health care services	Elderly cardiac medical group	-62%
Number of inpatient days for readmission	Elderly cardiac medical group	-70%

The model has demonstrated improvements in patient outcomes and decreases in costs of care across multiple, diverse patient populations, including very low birthweight infants, at-risk pregnant women, and older people with common cardiac conditions. An example of findings for one patient population—women at high risk for delivering low birthweight babies—illustrates the impact of the model. Dr. Brooten's study consisted of two groups of pregnant mothers. One received the usual prenatal care, which often involved a bus ride and a 3.5 hour wait, followed by a short time with a physician. The other group received transitional care provided by master's level perinatal nurses. The care included monitoring the women's physical and psychological well being, coping skills, and support systems, as well as monitoring

The Quality-Cost Model of Transitional Care improves patient health and decreases costs of care across diverse patient populations with a variety of health-related conditions.

the health of the fetus. Preliminary findings indicate that those receiving transitional care had fewer infant deaths and fewer preterm births. Several hundred days of hospitalization were saved, and reports from the mothers indicated significantly greater satisfaction with their care.

Dr. Brooten first developed the transitional care model in the mid-1980s. Although research had been conducted on various aspects of early discharge and the patient's transition from hospital to home, there was no systematic approach to developing and assessing protocols for transitional care that would provide common data across patient groups. Dr. Brooten's model fills this need and permits uniform research on patient outcomes and costs of care, as well as documentation of nursing interventions employed in the discharge planning and home follow-up programs.

The Quality-Cost Model has other unique features. Care is provided by advanced practice (master's prepared) nurse specialists with clinical knowledge and skills matched to their patient populations. Comprehensive discharge planning is developed for each patient group, and follow-up in the home includes visits and telephone contacts. Because patient care is extended across hospital and home settings by the same advanced practice nurse, with physician consultation and backup, continuity is maintained during the transition period.

Dr. Brooten is now refining the model to include patient groups that experience ongoing and repeated exacerbations of health problems, such as low birthweight infants in the first year of life, and older adults with heart failure. The model will continue to be extended to additional patient populations and geographic locations.

Making a Difference

High Blood Pressure Reduced in Young Urban African-American Men

A key risk factor for cardiovascular disease (CVD) is high blood pressure, often called the silent killer, because its impact may not be evident before heart failure, kidney failure, or stoke occurs. Cardiovascular disease is the greatest contributing factor in the higher mortality rate of African-Americans when compared to Caucasians. Young African-American men have the lowest rates of awareness, treatment, and control of this serious condition of any population group in the United States. Dr. Martha Hill of The Johns Hopkins University, supported by the National Institute of Nursing Research, is studying treatment of high blood pressure in this currently underserved population, using interventions tailored to their particular needs. Her model is showing how to reduce high blood pressure and keep this hard-to-reach population in the health care system over time.

Other at-risk populations with similar health problems are a worldwide issue, and Dr. Hill's research has captured international interest. Her high blood pressure research that specifically targets young men of African descent may be unique in the world. From Manchester, England, to Capetown, South Africa, Dr. Hill consults with colleagues on hypertension and other cardiovascular issues and on working with at-risk populations. An example closer to home is Dr. Hill's sharing of information about staff utilization and the recruitment and retention aspects of her research with investigators from the Jackson, Mississippi, longitudinal study of CVD and its risk factors in African Americans.

- *Death rates from cardiovascular disease are 49% higher for African-American males compared to Caucasian males.*
- *The death rate from high blood pressure for African-American males is 355% higher than for Caucasian males.*

In the initial phase of her research, Dr. Hill and her colleagues conducted a 12-month study of 204 young African-American men, a population difficult to attract to health research projects. The men are typically not found in health care clinics, for example, where recruitment for research participants usually takes place. Two factors made a difference in successful recruitment—following up on the men after their trips to the emergency room, and conducting outreach in the community using ethnic community members to spread the word. Of note was that 91% of the men remained with the research project for the entire 12 months.

The second stage of the project was a pilot study that used an aggressive approach to blood pressure reduction in this hard-to-reach group. What proved to be effective was a nurse practitioner, community health worker, and physician team providing free care and medication for young African-American men for 12 weeks. This intensive intervention effectively controlled high blood pressure in two-thirds of the men. The interdisciplinary team approach is now being evaluated in an expanded two-year study, also supported by NINR, involving 309 young underserved African-American men.

The team of investigators is identifying co-existing major health problems in these patients and finding ways to overcome them. Some of the men have heart disease and kidney problems. Smoking and alcohol and drug abuse are also prevalent. These barriers to good health present considerable prevention challenges, as well as opportunities for additional studies.

Advances in genetics show promise of being able to test for genetic variations in the angiotensin system, which regulates blood pressure. The choice among drug therapies can then be tailored to the individual needs of these young African-American men based on their genetic profiles.

- *African-Americans develop high blood pressure at an earlier age than Caucasians.*

Dr. Hill's research project is an excellent example of building a program of research that can have wide application for many disorders, settings, and at-risk populations. She began with a mission to improve health care and delivery of services, then expanded it to include a preventive health care emphasis. Her research now spans both clinical and basic sciences—ranging from community outreach to studies in molecular genetics. Her multidisciplinary team of investigators includes expertise in nursing, public health, and medicine at all faculty levels, and involves students from all educational levels, from high school through postdoctoral.

In looking to the future, Dr. Hill anticipates expanding the program's efforts in dealing with interrelated health issues, such as substance abuse, kidney problems, and the need to meet new blood pressure standards that set lower levels. She also intends to follow her patient population over time to determine their long-term blood pressure control.

Making a Difference

A Self-Help Program for Spanish-Speaking People with Arthritis

For many years, Hispanics with arthritis did not have many resources available to them about how to live with their condition and manage its symptoms. Recently, however, investigators supported by the National Institute of Nursing Research developed and evaluated an Arthritis Self Management Program in Spanish, which includes classes, a book *Como Convivir con su Artritis* (*How to Live With Your Arthritis*), and exercise and relaxation tapes. Headed by Dr. Kate Lorig and Virginia Gonzales from the Stanford Arthritis Center, this low-cost, community-based Spanish education program is generating substantial public interest in Latino communities. The course is currently offered in Northern and Southern California, and the National Arthritis Foundation has expressed an interest in expanding the program nationwide.

- *Hispanics account for 10 percent of the Nation's population.*
- *Over 20% of Hispanics report that they do not speak English very well.*
- *About 11% of Hispanics have arthritis or other rheumatic conditions.*

The evaluation component of the program contains health-outcome scales in Spanish to be completed by participants. The scales provide measures of the effectiveness of therapeutic regimens and are used to evaluate clinical trials and longitudinal studies. Most such scales have been available only in English, in effect excluding many non-English-speaking patients from health research. Dr. Lorig's adaptation and translation of these scales into Spanish has helped measure pain and other symptoms and has led to patient education programs that work for the Latino community. She has also determined that the translation is appropriate for a variety of Spanish speakers of different national origins and regions.

The self-management course is not meant to replace medical care, but rather to complement it by providing patients with detailed information about arthritis management. Patients learn how to communicate with health care professionals; how to deal with pain, fatigue and depression; how to exercise; and what types of exercise should be undertaken.

Patients are recruited into the program through personal contact, often via community presentations. Community leaders, such as priests, are enlisted to spread the word; there is advertising on local Spanish radio and television stations and in church bulletins; and key chains with toll-free numbers are distributed at strategic sites in Latino communities. Stanford also supplies physicians with posters and other materials about the course.

Patient classes are held at sites that include churches and senior centers. Leaders, some of whom have been former course participants, and lay persons with arthritis, many of whom speak only Spanish, are recruited from the Latino community and trained and certified by the Stanford Arthritis Center to teach the course.

In 1979, the Stanford Arthritis Center started a program of classes in English within the community to study, treat, and educate arthritis patients about their disease. Dr. Lorig participated in the development of this program. Public interest was the catalyst for her new project that targeted the area's Latino Community. She adapted *Como Convivir con su Artritis* from *The Arthritis Helpbook* used in the class in English, and included a bilingual English/Spanish preface and table of contents to help non-Spanish-speaking health professionals refer their patients to the course. Bull Publishing, which printed the book, is exploring distribution in Latin America.

Hispanic patients learn how to communicate with health care professionals; how to deal with pain, fatigue and depression; how to exercise; and what types of exercise should be undertaken.

When arthritis program participants indicated that the information helped them with other chronic conditions, such as heart and lung problems and emphysema, Dr. Lorig's group developed a similar program on how to live with chronic illness, including the book entitled *Living a Healthy Life With Chronic Conditions*. The Department of Veterans Affairs and a well-known health maintenance organization are interested in the program. She is now adapting this course for Hispanics.

Making a Difference

Research Produces a Successful School Health Promotion Program to Prevent Cardiovascular Disease -- and the Effects May Last a Lifetime

Prevention of risks for cardiovascular disease (CVD) has been called a pediatric problem. Interventions need to start early in childhood to have the best chance of success. A challenge for health promotion/disease prevention specialists is 1) how to promote healthy lifestyle habits during childhood and adolescent years, and 2) how to ensure that these habits continue throughout adulthood. Research supported by the National Institute of Nursing Research, led by Dr. Joanne Harrell of the University of North Carolina at Chapel Hill, is addressing this challenge by evaluating elementary and middle school-based programs to reduce risk factors for CVD.

Dr. Harrell's program is called Cardiovascular Health in Children and Youth (CHIC), and her findings show impressive results. In CHIC I, targeting elementary school children, the young people's total cholesterol levels and measurements of body fat were significantly reduced following the intervention, and their fitness, physical activity, and knowledge about CVD risk factors improved. Information from CHIC II, which includes an intervention for 6th through 8th grade students, is still being evaluated. The CHIC program is being discussed with the North Carolina school system to find ways to expand the intervention throughout the State educational system. Dr. Harrell is also sharing data with France and Japan, the latter of which plans to replicate parts of CHIC in elementary schools in the Kagamahari province.

- *Cardiovascular disease is the leading cause of death in the U.S.*
- *An estimated 57 million Americans have CVD.*
- *Americans have not improved their physical activity in the past 20 years, despite favorable publicity about the benefits.*
- *At least half of youth do not engage in sufficient physical activity for good health.*
- *Less than 36% of elementary and secondary schools offer daily physical education classes.*

CHIC I began in 1990 in North Carolina, which lies in the middle of the nation's heart disease and stroke belt. Dr. Harrell's team determined that for the 2,200 mostly eight- and nine-year old school children in the study, the number one leisure activity of boys was playing video games, while for girls it was doing homework. Caucasian boys were less physically active than African-American boys were. Girls got less exercise than boys did, and African-American girls were less active than Caucasian girls. Typical after-school pastimes involved watching television for boys and watching television and reading for girls. Thus physical inactivity, recognized by the American Heart Association as a major risk for heart disease, was clearly one of the lifestyle factors in need of changing.

CHIC I includes an intervention taught by regular classroom and physical education teachers and conveys information on heart healthy foods, the importance of regular physical exercise, the dangers of smoking, and ways to combat peer pressure to smoke. CHIC II continues to follow the students for another four years to determine the effects of the CHIC I intervention over time.
Dr. Harrell's team will document any development of CVD risk factors and assess aerobic capacity. Other questions under study are whether the knowledge or physical activity component was more effective, and whether puberty has an impact on risk factors. CHIC II also tests the intervention in 1,200 rural, ethnically diverse 6th through 8th graders. Investigators will then compare the relative merits of the elementary versus middle school interventions.

According to Dr. Harrell, based on her research in both CHIC I and II, there need to be policy changes in the school system to place new emphasis on health and physical activity curricula at the elementary and middle-school levels to reduce the incidence of CVD. She also stresses that parents, educators, and health care professionals must find ways to help children, particularly girls, increase physical activity in school and during non-school hours.

Making a Difference

A New Protocol for Endotracheal Suctioning is Testing and Implemented in a Hospital Setting

Mechanical ventilation—the use of a respirator to inflate the lungs with air—has prolonged the lives of many patients whose ability to breathe has been compromised by disease, injury, surgical procedures, and drugs. This technology, however, comes at a price that may include infection and cardiac and blood pressure abnormalities. Moreover, the artificial airway created to transport air to and from the lungs can become clogged with secretions that interfere with air flow. Removal of these secretions is critical and is achieved through a complex procedure called endotracheal suctioning. This procedure must be performed correctly to avoid serious problems, such as changes in blood pressure and heart rate, damaged tracheas, and even cardiac arrest and sudden death. Since there is a difference of opinion in how best to perform the procedure, Dr. Kathleen Stone and colleagues from the American Association of Critical Care Nursing's National Study Group, supported by the National Institute of Nursing Research, developed and tested a best practice protocol for endotracheal suctioning, which has been successfully implemented at a large Midwestern hospital. In addition to improving patient care, her work provides an excellent model for designing a research-based protocol and integrating it successfully into clinical practice settings.

The endotracheal suctioning procedure must be performed correctly to avoid serious problems. Yet opinions differ as to what the best-practice techniques are for this procedure.

Dr. Stone and her hospital colleagues encouraged the participation of hospital nurse specialists in protocol development, baseline data collection, and training of registered nurses and respiratory therapists. The study was conducted in two phases. Phase one—development of the endotracheal suctioning protocol—included an extensive lreview of studies of this procedure so that the best techniques could be incorporated. The team also documented current endotracheal suctioning practices in the hospital, which varied in the way the procedure was being performed.

In phase two—implementation of the protocol—intensive staff training was delivered through a 14-station interactive program. Each station focused on one aspect of the protocol. The stations addressed such issues as patient assessment before suctioning, and when to stop suctioning. The students also had the opportunity to perform the techniques. For example, at one station, students delivered a given amount of air to a test lung with a manual resuscitation bag to gain understanding of the use of this technology. At the thirteenth station, students viewed a videotaped presentation of the entire procedure, which included techniques for premature infants, children, and adult patients. At the last station, the students' performance of the protocol on a mannequin was evaluated by instructors. All registered nurses and respiratory therapists were required to complete the training. Training effectiveness was also assessed.

To reinforce learning after training was completed, copies of the videotape were made available to each critical care unit and the respiratory therapy department for use in staff meetings and for periodic review by individuals. The videotape has also been incorporated in orientation, and all new staff is required to perform the protocol on a mannequin.

The Division of Nursing at the hospital has a policy of incorporating scientifically-based procedures in its operations, which paved the way for implementation of Dr. Stone's endotracheal suctioning protocol.

Making a Difference

Studies Show Home Visits by Nurses Improve Health and Quality of Life of Low-income Mothers and Children

A key national issue is how to promote the health and well-being of young disadvantaged mothers and their children who are caught up in the cycle of poverty, neglect, domestic violence, substance abuse, and other health and social problems. Unless steps are taken to intervene, this cycle will continue. A team of investigators, led by Dr. David Olds at the University of Rochester in New York, has conducted a group of studies that involve nurses visiting the homes of disadvantaged young pregnant mothers, then continuing to provide these families with assistance during the early childhood period. The researchers found that for up to 15 years after childbirth, there are significant physical and mental health improvements among both mothers and children, child abuse and childhood injuries are reduced, and the mothers have fewer arrests and a decreased dependence on welfare. These findings have far-reaching implications for state and local health and welfare programs.

Dr. Olds' most recent research was funded by the National Institute of Nursing Research and involves a study in urban Memphis, Tennessee, using a population of over 1,000 low-income African-American women. Findings indicate that mothers receiving visits by nurses in their homes have significantly lower pregnancy-induced high blood pressure and better timing of subsequent pregnancies. Childhood injuries are also substantially reduced.

In the United States:

- *1 in 5 children lives in poverty.*
- *195,000 births each year are to young women aged 15 to 17.*
- *1 in 3 babies is born to an unmarried mother.*

The Memphis study is based on Dr. Olds' research in the early 1980s. Dr. Olds modified and tested a model consisting of a comprehensive home-visit program for a semi-rural population in Elmira, New York. This study, funded by the National Institute of Mental Health, focused on young, low-income, unmarried women who were pregnant for the first time. Home visits were administered by registered nurses and tailored to the individual needs of the family. The nurses offered parenting skills, enhanced the women's informal support systems, and linked parents to community services. These visits also allowed observation of the families' health-related behaviors in the context of their lives and surroundings.

The women who received home visits attended child birth classes more frequently, made greater improvements in their diets, and had fewer kidney infections. The incidence of preterm delivery among smokers was reduced by 75%. The women relied more heavily on formal and informal support systems and also reported that their babies' fathers showed a greater interest in their pregnancies. After the babies were born, there were fewer instances of verified child abuse and fewer emergency room visits.

The long-lasting benefits of the Elmira study were confirmed in a 15-year follow-up study completed in the mid-1990s. The results reveal fewer childhood injuries and episodes of documented child abuse, fewer arrests of the mothers, and decreased dependence on welfare.

The economic implications of the home-visit model are significant. A cost-benefit analysis of the Elmira study indicates an 82% reduction in Aid to Families with Dependent Children and Food Stamp payments. Thirty-two percent of the total savings among low-income families is attributable to fewer subsequent pregnancies.

Long-term results of home visits by nurses to disadvantaged young mothers reveal fewer childhood injuries and episodes of documented child abuse, fewer arrests of the mothers, and decreased dependence on welfare.

The home-visit-by-nurses model is beginning to move from the research realm to public use. Dr. Olds is currently advising the Oklahoma City Justice Department on a program, based on the model, for high crime neighborhoods.

The Memphis and Elmira studies were built on an earlier model developed in the late 1960s by Dr. Margaret Gutelius and her colleagues at George Washington University, with a grant from the National Institutes of Health. In the seminal Gutelius study, a group of nurses working from a mobile health unit in Washington, D.C., taught well-baby care in the homes of unmarried adolescent women who were expecting their first babies. They also taught techniques to stimulate infant thought, play, and language development. This project demonstrated that the intervention could raise the children's level of intellectual functioning and self-confidence, increase the number of mothers who returned to school, and reduce family dependence on the welfare system. Similarly, in both the Memphis and the Elmira study, the nurses counseled the young women on such issues as their health behaviors, child-rearing practices, family planning, education, and job skills.

Making a Difference

Gender Found to be an Important Factor in Pain Relief

Pain, often viewed as a secondary, fleeting consequence of illness or injury, potentially may become the consuming focus of a person's life. In fact, life itself can be endangered by severe pain. This common symptom is particularly difficult to study because it is highly subjective. Since pain can exert a powerful influence on recovery from illness and on quality of life, there has been an intensifying research focus on understanding its biological and psychological factors. Drs. Jon Levine and Chris Miaskowski of the University of California at San Francisco, funded by the National Institute of Nursing Research, have been interested in identifying an acute pain medication that is longer-acting than those currently available to reduce postoperative distress. Their research has centered on postoperative pain management following dental surgery.

In the course of their study, Drs. Levine and Miaskowski discovered that gender can play a significant role in pain relief. Specifically, they found that the women in the study obtained satisfactory relief from seldom used kappa-opioid drugs, while the men received little benefit from these drugs. The results were striking for several reasons—the degree of difference in pain relief between the genders, and the subsequent impact on future research of pain medications, where gender will be considered along with other significant factors. Publication of these findings in *Nature Medicine* has generated great interest in the scientific community and the media. Further findings in this area could have far-reaching effects for pain relief following a variety of post-surgical procedures, as well as for other types of acute, short-lasting pain.

- *Pain generates nearly 40 million visits a year to health care providers.*
- *The cost of pain to the nation is more than $100 billion annually in health care and lost productivity.*

At the outset, the researchers' examination of the literature on pain could not find a single study comparing the responses of men and women to any type of painkiller. They began to explore the gender/pain medicine relationship with a seldom-used category of drugs called kappa-opioids, such as nalbuphine and butorphanol. The investigators found these drugs to be more effective in women for treatment of intense, short-term pain than mu-opioid drugs, like morphine. Kappa-opioids also seem to have fewer negative side effects, such as nausea, confusion, and constipation, than mu-opioids, although general malaise has sometimes been reported.

The Levine/Miaskowski study included men and women in their early 20s who were having their wisdom teeth surgically removed. The participants were divided into two groups—one received a kappa-opioid compound and the other a placebo in combination with another analgesic. The female participants reported a significantly greater amount of pain relief than men when given the kappa-opioid compound, even though they had reported a higher intensity of pain immediately following surgery. Their relief also lasted for a longer time. The research team tested a total of three kappa-opioid drug combinations and found consistent results across all three compounds. These drugs were pentazocine, nalbuphine, and butorphanol.

Further studies will focus on the dose response curve and the way that hormonal levels affect pain management in female patients. If and to what extent kappa-opioid effectiveness is helped by estrogen or blocked by testosterone is another important question. Investigation also will focus on whether women have more kappa receptors on certain nerve cells than men.

Making a Difference

A Home-Monitoring Program to Enhance Survival for Lung Transplant Patients

Over the past ten years, survival rates for organ transplant recipients have increased significantly. During the first year following a transplant, however, patients are at their highest risk for infections and acute rejection of the transplant. With continual surveillance and prompt intervention before complications become severe, survival rates increase and health-care costs associated with hospitalization for organ failure are reduced.

Dr. Stanley Finkelstein of the University of Minnesota, supported by the National Institute of Nursing Research, has designed a home-monitoring program for lung transplant patients to detect early signs of infection and rejection during the period between health care visits. This enables patients to receive immediate attention at the first sign of suspicious change in their health status. The home-monitoring program is now being used regularly by more than 100 patients receiving care by the University of Minnesota health care team. The program is also applicable for other pulmonary conditions. A project at the University of Minnesota has used the home-monitoring program to follow patients with cystic fibrosis. Investigators at the University of Kentucky show promising preliminary data from a pilot study that uses the program for patients with chronic obstructive pulmonary disease. These patients live in rural areas with limited access to follow-up care. The program may also prove beneficial for patients with certain types of asthma.

- *In 1988, the one-year survival rate for lung transplant patients was 47%; in 1996, it was almost 76%.*

- *Home-monitoring combines psychological benefits of recovery within a comfortable home environment with the technological advantages of continuous observation of health status.*

Dr. Finkelstein and his team of investigators developed an electronic diary and spirometer-monitoring device for patients to use outside of the clinical setting. He had previously been able to confirm reliability and validity of measurements from the home spirometer, an instrument for measuring the air taken into and exhaled from the lungs. Next he wanted to know whether patients would be willing and able to use the device successfully. Patients were asked to record measurements of pulmonary function, vital signs, and symptoms each day at home and transmit them electronically once a week to the study data center via a modem built into the monitoring instrument.

Eighty-two percent of the patients transmitted records every week during their first year in the program, with an average of 4.5 records per week per patient. This adherence rate was very high in comparison to rates in similar studies. Moreover, 98% of the transmitted records contained all vital signs and symptom items; 100% of the spirometry data was present. Comparison of home and clinical data indicated that home measurements provided a reliable and valid representation of patient status.

The investigators are particularly encouraged that this new home-monitoring approach fostered good adherence over the first critical year following transplantation. The program also smoothed patients' transition from hospital to home settings and enabled them to play an important role in managing their own health.

Making a Difference

Urinary Incontinence In Women -- Control Is Possible

There is heartening news from studies conducted by Dr. Molly Dougherty, of the University of North Carolina, a grantee of the National Institute of Nursing Research. Dr. Dougherty has found that most urinary incontinence in women can be easily controlled through simple, straightforward behavioral treatments. In one study, she found a 61% improvement in controlling urinary incontinence among those receiving the study intervention, compared with a 64% increase in urinary incontinence for those who did not. This dramatic difference highlights the progressive nature of the condition if it is not successfully managed.

Dr. Dougherty's behavioral management techniques have been incorporated with other NINR-supported projects in a four-county pilot program called UI Teach, which is offered to people in residential care facilities. When the program is completed, the government of North Carolina may sponsor it throughout the State. Additionally, the Association of Women's Health, Obstetric, and Neonatal Nurses has selected continence for women, including Dr. Dougherty's findings and techniques, as its Research Utilization Project (RUP). The RUP is a dissemination program that focuses on research with demonstrated effectiveness in urinary incontinence treatment for application to nursing practice in ambulatory care settings.

- *Nearly 12 million Americans suffer from urinary incontinence.*
- *Twenty percent of women aged 25 - 64 years experience urinary incontinence.*
- *During perimenopause, 31% of women report that they experience an incontinent episode at least once a month.*

Urinary incontinence is surprisingly common and is not, as people often think, an inevitable part of aging. The condition can be embarrassing, and many women choose not to discuss it with a health care professional. They may not realize, however, that in addition to its discomfort, urinary incontinence is often a symptom of other medical conditions, such as infection, nerve damage from diabetes or stroke, heart disease, and depression, and therefore should be brought to the attention of a health care provider.

Dr. Dougherty has been studying urinary incontinence since the mid-1980s. Her most recent project evaluated the condition in women aged 55 years and older. One project was conducted in a clinical setting to understand the effects of exercise and biofeedback on urinary incontinence. In the beginning, she found that the women lost, on average, 13 grams of urine a day and had 2.6 episodes of loss of bladder control. After sixteen weeks of individualized monthly counseling and assessment sessions, audiotaped instructions, and daily muscle strengthening exercises, the women experienced a 57% decrease in urine loss and a 58% decrease in average daily episodes. When these participants were contacted 18 months later in a follow-up survey, Dr. Dougherty found that over 90% of the women had sustained improved bladder control, even though many indicated they were no longer performing daily muscle strengthening exercises.

Another project was carried out through home visits with elderly women in seven Northern Florida rural counties. This project involved a three-phased treatment plan that included self-monitoring, bladder training, and pelvic muscle training combined with biofeedback. Measurable goals for preventing urinary incontinence and individually tailored treatment plans were developed with the participants.

The first phase—self-monitoring—lasted about four weeks. The women were coached to limit their amount of caffeine intake to a maximum of two caffeine beverages a day and to drink more than 6 glasses of other fluids daily. This phase alone, on average, reduced the women's urine loss by 57%. Daily episodes of leakage were also reduced from an average of 2 episodes to 0.7 episodes.

Research finds that most urinary incontinence is easily controllable through simple, straight-forward behavioral methods.

The second phase—bladder training—required participants to relieve their bladders at regular timed intervals and lasted six weeks. Each participant began with restroom visits every half-hour to an hour. After a week, if the participant was successful in controlling her daily leakage episodes, she then increased the time between restroom visits. A majority of the participants were able to space the intervals to 2 - 2 1/2 hours by the end of this phase.

The third phase—pelvic muscle exercise with biofeedback—was designed for those who had not reached their goals during the previous two phases. The intervention, which lasted up to 12 weeks, employed surface sensors connected to a notebook computer with software to display a signal from voluntary contractions of the pelvic and abdominal muscles. This allowed participants to observe and modify the effectiveness of their pelvic muscle exercises. While there was overall improvement during this phase, most of the progress occurred during the first two simple, less expensive phases. By the end of phase three, Dr. Dougherty found that women in the experimental group had decreased their urinary leakage by 61% and had become more confident. Participants in the control group experienced a 64% increase in their total volume of leakage. This increase was due to the progressive nature of incontinence, which typically begins gradually and, if left untreated, becomes more frequent and increases in volume.

Dr. Dougherty stresses that the problem of incontinence will require greater attention as baby boomers age. Fortunately, she finds that simple, straightforward behavioral techniques are effective—and compare favorably with invasive and complex therapies.

Making a Difference

Research Reveals a Successful Intervention for Children with Conduct Problems

Moodiness, aggression, and a lack of respect for authority are usually no more than passing phases in a child's development. When these behaviors become severe and habitual, however, they can seriously disrupt the lives of the child and the family and interfere with education and social development. Furthermore, parents who are at their wit's end with the child's behavior may resort to excessive negative criticism and physical punishment. The child may be at risk for delinquency, school dropout, and drug abuse in later years. Fortunately, preventive measures initiated before the age of 9 can significantly reduce children's aggressive behaviors and their adverse consequences. Dr. Carolyn Webster-Stratton and her colleagues at the University of Washington have developed a videotape modeling program for these children, their parents, and their teachers that demonstrates effective social interactions, problem-solving techniques, and parenting skills. Her findings indicate that the intervention is highly successful in treating early-onset conduct disorders in young children from diverse social and cultural backgrounds.

Dr. Webster-Stratton's intervention has been used in a variety of settings, including several inner-city schools in Baltimore, Maryland, a Head Start program in Seattle, Washington, and a number of elementary schools in Delaware. It has also been used successfully in a population of Spanish-speaking migrant workers. Recently, Great Britain launched a study to evaluate the intervention for implementation in its school system.

- *Depending on the population surveyed, an estimated 7% to 25% of the children have serious conduct problems, and the number is rising.*
- *Conduct disorders early in life are associated with drug abuse, depression, rejection by peers, juvenile delinquency, and school dropout in the teen years.*

In conducting research on the videotape modeling program, Dr. Webster-Stratton evaluated several approaches to determine which were most effective and had a lasting impact on behavior—training parents alone, training children alone, and training parents and children together.

The program for parents went beyond effective parenting skills to include marital communication, problem solving, and conflict resolution. This comprehensive approach was designed to strengthen parents' interpersonal and coping skills and help them handle stress caused by their children's conduct. Parents learned to reinforce good behavior with rewards and to impose "time out" discipline when children were noncompliant or abusive. In the latter case, the children were sent to a quiet place to settle down and think about what had occurred. The parents and their children participated in group counseling sessions to discuss coping skills to deal with anger, depression, stress, and rejection.

The program for children (aged 3 to 8 years) used age-appropriate videotaped scenarios of "real life" conflict situations at home and at school, such as being teased and rejected by other children, and provided ways to respond to these situations. Life-sized puppets were also used to model appropriate behaviors. The children were encouraged to discuss their feelings and suggest alternative solutions to the problem situations. Through role-playing, videotape modeling, and practice, the children learned how to be friendly, listen and follow directions at school, manage their anger, and see things from others' perspectives.

In the third approach, both parents and their children received training through their respective videotape programs. Evaluation indicates that all

three approaches resulted in significant improvements in either parenting skills and/or in the children's ability to use effective problem-solving skills. These improvements persisted through a one-year follow-up, with the greatest improvement shown by children participating in the combined parent and child group.

- *People who exhibit aggressive behavior in childhood are at increased risk for interpersonal problems, marital disruption, antisocial personality, and criminal activity in adulthood.*

- *The video modeling program helps children with conduct problems learn how to be friendly, listen and follow directions at school, manage their anger, and take the perspective of others.*

In another study, Dr. Webster-Stratton looked at the interrelationship between gender of the children and gender of the parents and its impact on the parents' perceptions of conduct disorder in their children. She found that mothers and fathers differed in their perceptions of the behavior of their sons and daughters. Mothers reported significantly more overt behavior problems for boys than for girls. Fathers tended to believe that their daughters internalized their problems and suffered headaches, anxiety, worry, and self-doubt as a consequence. These findings suggest that gender of the parent or teacher may affect the way the actions of children are perceived and, in turn, the way training is delivered.

The study also indicated that the primary difference between boys and girls is that girls tend to be more noncompliant or verbally abusive, while boys tend to be more physically aggressive. Both girls and boys responded well to the videotape modeling program, and improvements remained stable at one- and two-year follow-ups.

In a current study, Dr. Webster-Stratton is evaluating any added effects of a video training program for teachers, to be administered in conjunction with parent and child programs. This program focuses on strategies in managing aggressive and hyperactive children in the classroom and how to work with parents to help these children learn appropriate social skills. As part of the program, the teachers develop individual behavior plans for each child with conduct problems. Preliminary results suggest that teacher training and the collaboration between teachers and parents are contributing to greater improvements in children's behavior in school and at home.

Making a Difference

A Program to Help Women with PMS

Premenstrual syndrome (PMS), experienced by many women, includes physical symptoms—cramping, headache, weight gain, and intestinal upset—and emotional symptoms—rapid mood swings, anxiety, and feeling out of control. While it is known that PMS is related to hormonal changes during the menstrual cycle, what is not known is the precise cause. When severe, PMS can disrupt women's lives at home and at work and affect their relationships with others.
Dr. Diana Taylor of the University of California, San Francisco, with support from the National Institute of Nursing Research, has conducted research on an intervention model that reduces the severity of PMS and promotes general health.

Dr. Taylor has found that the intervention reduced the severity of PMS symptoms of the participants by 75% and premenstrual depression and general distress by 30 to 54%. Self-esteem and a sense of well being were increased. This compares favorably with results of antidepressant drug therapy, which achieves a 40% to 52% reduction in PMS severity. According to Dr. Taylor, the model, which features professional counseling and peer support and emphasizes taking care of one's self, can be used for other complex health conditions, such as arthritis, chronic fatigue syndrome, fibromyalgia, lupus, and menopause. Her work has been featured in the popular press and prevention literature, and on the "Lifetime" cable channel.

It is estimated that:

- *Between 70% and 90% of all menstruating women have symptoms of PMS.*
- *For 2% to 15% of these women, the symptoms can be severe.*

The model has been designed to provide a supportive environment in which women learn specific strategies to cope with the physical and emotional problems that characterize severe PMS. They learn how to be aware of their own symptoms, stress, and health practices. They also learn ways to control stress, make changes in their diet and exercise habits, and manage their environment, including time management, interpersonal communications, and problem solving techniques.

The study participants attended group meetings lasting three hours once a week for four weeks. A nurse facilitator provided a formal presentation, followed by demonstration and practice sessions where participants tried out various therapies. The women were also given homework assignments. During the program, nurse specialists helped each woman develop a personal treatment plan tailored to her needs and lifestyle. After completion of the program, the plan could be modified over the telephone or during monthly "drop-by"sessions.

Follow-up data collection occurred at regular intervals until 18 months after the program was completed. Dr. Taylor found that the greatest improvement in PMS symptoms occurred in the first three months following the program. Improvement was also maintained or enhanced in those who attended monthly follow-up sessions for 12 to 18 months. Twenty-five percent of the women showed limited improvement – many of them had depression and were using the intervention as complementary treatment to psychiatric therapy. As their PMS symptoms abated, some of the participants were able to identify other issues in need of attention, such as career goals and marital relationships.

Dr. Taylor's intervention serves as an excellent model for improving general health in women. It is appropriate for primary care settings and for helping people take care of their own health conditions as they go about their daily lives.

Making a Difference

A Technique that Brings Premature Infants in Intensive Care Units and Their Parents Together Sooner -- To Their Mutual Benefit

Babies born too early or too small often require incubators, respirators, and electronic monitors to regulate body temperature and breathing. They are separated from their parents at a time when they should be bonding with them physically and emotionally for normal development. Frequently they must stay in the hospital long after babies of normal weight go home. Dr. Susan Ludington, currently at the University of Maryland in Baltimore, was supported by the National Institute of Nursing Research when she was at UCLA to study a technique called Kangaroo Mother Care (KMC). She found significant benefits with this technique for both infants and parents. KMC consists of infants, while in the ICU, being placed skin-to-skin, chest-to-chest on their mother or father. Dr. Ludington found that the infants calm down, are less agitated, and experience quiet sleep, which temporarily removes them consciously from the busy atmosphere of the ICU. They warm up while on their parent's chest and attain better thermoregulation than when in the incubator. They also gain weight faster and leave the hospital sooner. The parent, usually the mother, experiences less stress and her milk production increases.

KMC is practiced routinely in third world countries and in other parts of the world, such as Germany, where doctors and nurses serve as substitutes if parents are not available. KMC research began in Bogota in 1977, where 80% of the neonatal care units had no heat or baby formulas. Positive results were noted, and the technique was tested in other countries. Dr. Ludington has been actively involved in worldwide KMC research efforts. She was the first to test KMC in the U.S., and she has been named director of one of two WHO centers for coordination of KMC in this country.

- *Two-thirds of newborn deaths in the U.S. each year are attributable to low birthweight*
- *Low birthweight babies are at increased risk for childhood illnesses, cerebral palsy, seizures, learning disorders, and behavioral problems*

Dr. Ludington and her team of investigators, in assessing KMC, compared the vital signs of infants, such as heart and respiratory rates, oxygen levels, skin and core temperatures, and levels of awareness, when they were in their incubators or cribs and when they were participating in KMC sessions. The benefits of KMC became immediately apparent.

Although the infants were clothed only in diapers during KMC, their body temperatures remained at comfortable levels while being held. The chest temperatures of the parents rose as the body temperature of the infants fell or dropped when the infants became too warm. Furthermore, the babies were less agitated and slept more deeply and for longer periods of time during KMC, which helped promote brain development and reduce the need for oxygen—an important advantage for low birthweight infants, who have low oxygen and energy levels. Episodes of apnea (cessation of breathing), common in premature infants, decreased fourfold. KMC also did not interfere with the care of smaller, sicker infants who required mechanical ventilation and electric light therapy. Babies maintained in incubators and who participated in KMC could be transferred to open-air cribs sooner than those who did not. Some who received KMC could be sent home within 24 to 48 hours of birth.

Dr. Ludington's current research is focusing on the sleeping behaviors of babies receiving KMC as she carries out her work with WHO, helping to spread the word in the U.S. about the advantages of KMC for premature and low birth weight babies and their parents.

- *More than $5.4 billion are spent for additional services, such as health care, education, and child care, required by children who were low birthweight babies*

In February, the World Health Organization issued a statement encouraging all institutions to permit KMC for premature infants 28 weeks post conceptional age, regardless of how old they were when they were born. The implications of KMC for better health of premature infants and for cost savings to the health care system may enhance adoption of the technique in this country.