Statement of Dr. Deborah A. Frank

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Distinguished members of the committee, I am honored to come before you as one of many pediatric clinicians who daily treat malnourished American children. I am also one of the Principal Investigators with other pediatric researchers of the Children's Sentinel Nutrition Assessment Program (C-SNAP) initially funded by grant from the W.K. Kellogg Foundation and other private donors. Since 1998 we have monitored the impact of current public policies and economic conditions on the nutritional and health status of low income children less than 3 years old in six medical institutions serving Baltimore, Boston, Little Rock, Los Angeles, Minneapolis and Washington DC. C-SNAP provides some of the most current information available about the status of food security and health among America's youngest children. I will share with you some of our newest data comparing July 1 2002-May 30 2003 to similar data collected by C-SNAP from June 1998- until July 1, 1999 when child nutrition programs were last re-authorized. But first I would like to give you a "crash course," compacting into a few paragraphs a month or two of medical school to explain why pediatricians are so deeply concerned about the nutrition of mothers and children. From the pediatricians' perspective, re-authorizing and enhancing national investment in child nutrition programs is a life or death matter, or I would not be here on a Wednesday, but would be back where I belong, on the fifth floor of Boston Medical Center, doctoring a dozen or more malnourished children in a single day in our outpatient clinic. It is not only health professionals who are concerned, but all who work in public-private partnerships to serve poor and near poor children and their families. I would request to insert in the record this National Call to Congress signed by multiple organizations in all 50 states attesting to the crucial need for strengthening these programs which protect America's children from conception to high school graduation including WIC, Child and Adult Care Food program, school meals, and summer and after school feeding programs, and feeding programs for children tragically residing in homeless and domestic violence shelters.

As clinicians and as scientists we know that food insecurity (defined by the Life Science Research Office of the Federation of Associations and Societies for Experimental Biology as limited or uncertain availability of nutritionally adequate safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways) is not a political or a sentimental issue but a major health problem.

Food insecurity threatens human health at all stages of life, but particularly in prenatal life and early childhood when critical growth occurs. Hunger threatens the well being of the next generation even in the womb. Even after considering all other important factors influencing pregnancy outcome such as cigarette and other drug use, infections and other stressors, the nutritional status of a woman as she enters pregnancy and the amount of weight she gains during

pregnancy are critical predictors of infant birth. Low birth weight is the most important contributor to infant mortality. The majority of low birth weight infants survive in this country, but the lower the birth weight the more likely that the child will suffer from lasting impairments, including blindness, deafness, cerebral palsy and school failure. Even more subtle variations of birth weight not sufficient to require neonatal intensive care appear to have lasting implications for adult health. Data have emerged from around the world showing that there is a continuous inverse relationship between birth weight and the likelihood the adult will suffer from cardiovascular disease and its associated disorders, including hypertension and non-insulin dependent diabetes and its precursors. In other words the lower an adult's birthweight, the greater the likelihood that adult will suffer from cardiovascular disease. In addition, there is evidence that severe maternal malnutrition in pregnancy is associated with increased likelihood of both schizophrenia and major affective disorder developing in her children when they reach adulthood. Even micronutrient deficiency in the presence of adequate maternal weight gain in pregnancy can have devastating consequences. There is a well established relationship between inadequate maternal folate intake at the time of conception and the risk of neural tube defects (spina bifida) in children. This is a particular concern since food insecure women have been shown to have seriously inadequate intake of folate, along with other critical micronutrients. WIC, as you know, has been repeatedly shown to decrease the risk of low birth weight and thus of all its lifelong consequences.

After birth, even subtle deficits in nutrition continue to exert major influences on health and development. As my distinguished colleague the Surgeon General would confirm from his career as a trauma surgeon, malnutrition impairs the body's ability to heal. At all ages, malnutrition decreases immune function leading to the infection/malnutrition cycle. With any acute illness all children lose weight. However, in food secure homes once the acute illness is resolved, children are able spontaneously to increase their dietary intake to restore normal growth and body composition. For the many low-income food-insecure families, where food supplies are marginal even for feeding well children, once a nutritional deficit has been established by even a normal childhood illness there is no additional food for repletion. The child is then left malnourished and more susceptible to the next infection, which is likely to be more prolonged and severe, and followed by even greater weight loss. It is this infection/malnutrition cycle, which in settings without adequate medical care leads to the death of malnourished children. In this country the cycle often manifests in preventable recurrent illness and a need for costly therapeutic health resources.

Here too we have found WIC works. When in C-SNAP we evaluated 5,923 WIC eligible infants less than 12 months of age between August 1998-December 2001, we found after taking into account numerous other family characteristics that those who did not receive WIC due to access problems had statistically significantly higher rates of food insecurity (28%) than WIC participants (23%), $p = .001$. This food insecurity was manifested in hard evidence of inadequate nutrition measured on the bodies of the infants. Income eligible infants who did not receive WIC were significantly more likely to be underweight or short, and nearly twice as likely as infants who did receive WIC to be perceived as having only fair or poor health. In contrast, rates of overweight did not differ significantly among groups.

This relationship between food insecurity and illness persists beyond infancy in findings of our research and that of many other investigators. When we looked at data from the larger C-SNAP sample of 11,539 children ages 36 months and younger collected over the period 1998-2001 at inner-city hospitals and clinics in six states, we found 21% of these little children lived in food insecure households. Children in food insecure households were 25% more likely to have been hospitalized since birth than those whose households were food secure.

WIC supplies only 40% of the calories needed for children older than a year of age. Day care attendance increases the risk of infectious illness in young children of all social classes. Thus, in addition to WIC, the Child Care feeding programs are also crucial to child health, reaching preschoolers in family and center based child care centers whose mothers work long hours and to do not necessarily have either the time or the financial resources to prepare adequate meals.

Even though, with refeeding and medical care, a malnourished child can be brought eventually into the normal range for immunocompetence, malnutrition can inflict concurrent and lasting deficits in cognitive development with grave implications for the malnourished child's future ability to participate in the knowledge economy. The last two prenatal trimesters and the first years of life constitute a critical period of brain growth, a time when the brain has biosynthetic ability to generate new brain that it will never have again. Different regions of the brain undergo their critical development at different developmental periods. The cerebellum, which is involved in later reading ability, for example, completes much of its development in the first year of life. Lack of nutritional building blocks during a critical period will lead to actual distortions and deficits in the part of the brain under development. Initially, the greatest concern about the developmental effects of malnutrition were expressed about those children who had actual lasting deficits in brain size reflected by small head circumference. However, as knowledge of the importance of nutrition as substrate for neurotransmitters has evolved, awareness has grown that although brain size and structure can be most affected by malnutrition in early life, brain function can be seriously affected at all ages.

Even in the absence of measurable deficits in body size, food insecure or malnourished children may miss many opportunities for learning. The first physiologic strategy for maintaining growth and body heat in the face of inadequate nutrient intake is for a child to decrease their "discretionary activity," particularly their voluntary exploration of their environment and interactions with other people. Such discretionary activity is essential experience for children's learning about the inanimate and social worlds. By the time a child has actually developed a deficit in weight or height, this compensatory mechanism has already failed repeatedly. By the time a health professional detects physiological signs and symptoms of malnutrition in a child, there have already been many opportunities of missed learning that were not detected. Although certain aspects of brain structure and function can recover with refeeding, others appear to be permanently altered, such that the previously malnourished organism can function under baseline conditions, but has more difficulty than the previously well nourished organism in functioning under conditions of stress and challenge. Both early and concurrent malnutrition are two critical and entirely preventable causes of school failure from impairments of cognition, attention, and behavior. As you know, participation in school breakfast programs has been repeatedly shown to decrease absenteeism, raise children's academic test scores, and decrease behavioral difficulties in elementary school. No amount of standardized testing will alleviate the impact of hunger on

children's ability to learn – to educate children first you must feed them, and you must feed their mothers so that from conception through high school tomorrow's future work force will be sufficiently well-nourished to participate fully in an information economy. As children age out of WIC and into the school age, school meals, after school and summer feeding become crucial.

C-SNAP research shows food insecure children are more likely to be iron deficient and anemic and thus more susceptible to lead toxicity, which together further jeopardizes their cognitive development.

Preliminary C- SNAP data from Minnesota and Boston suggest that the need for child nutrition programs has become even more urgent in the post 9/11 economy than it was even 5 years ago, when these programs were last re-authorized. In a sample of more than 3000 infants and toddlers under 3 (average age 12 months) we saw no significant change from 1998-1999 to 2002-2003 in rates of parents' employment (about 40% both years) or receipt of WIC (about 80%). However, we did find decreased rates of receipt of welfare and food stamp benefits and a 29% increase in risk for families of young children to be food insecure and an astounding 83% increase in risk that children would require hospitalization at the time of emergency room visits to the Boston site. These figures make me concerned that America's poor children may be getting both more food insecure and sicker. There is ample physiologic evidence to support that the first problem is probably playing a causal role in the second.

I am aware that some commentators without medical credentials have suggested that child nutrition programs contribute to the childhood obesity. Although obesity among American children is indeed increasing, I know of no medical data which supports this claim. There is, however, a preliminary but growing body of empirical work which shows that in certain sub-populations such as impoverished African-American and Hispanic/Latino adolescent girls food insecurity is associated with obesity, This might be expected from what we know of the physiology of weight cycling related to alternating under and over consumption that is found not only in dieting and eating disorders, but among those who if they are able to eat on one day do not know if they will be able to eat on the next. Child nutrition programs are crucial to assure children and their families that they can eat every day so they can eat wisely and not in fear of tomorrow's hunger.

I do not wish to over-simplify the complex phenomenon of the obesity epidemic, which, as physicians say, is over-determined by multiple factors so that no one can offer the full explanation. These factors include not only by food insecurity in poor families, but in all families increased intake of sweetened beverages lack of opportunity for healthy exercise, over dependence on "supersized" fast food meals (which again cannot be purchased with any federal feeding money) and the millions of ads that our children see each year encouraging poor food choices. However, none of these determinants of childhood obesity have been shown in the peer reviewed scientific literature to be caused by, or even associated with, participation in WIC, school meals, summer or childcare feeding. That does not mean that perhaps in certain cases the menus of some of these useful programs could not be improved to make them more consistent with the most recent nutritional knowledge. Just as the optimal treatment of pneumonia is different now from ten years ago, so too is the most current thinking about the healthiest dietary choices, thinking which may not yet be fully reflected in standards set in earlier eras. However, I

would not let a baby's pneumonia go untreated if I did not yet have the most current antibiotic available and neither should you should decide not to fund child nutrition programs because there is still work in progress to update their content.

By now you may be feeling somewhat overloaded with facts and figures, but pediatric clinicians can never forget that cold statistics reflect the lives of real and suffering children and families. I wish that you could have sat with me in my office several weeks ago in the hungry time between the end of school in mid-June and the beginning of summer feeding programs after the fourth of July. A father came in with four children ranging in age from a baby in a stroller to a second or third-grader, who, he proudly told me, could "read chapter books." The children were so hungry, that they were trying to grab jars of baby food out of the scant supply on the shelves of my office. I tried to distract them while my assistant typed out a food pantry referral and then I went off on rounds. When I came back, my assistant said, "They were so hungry I just gave them spoons. You should see how much baby food they ate." I do not have to tell those of you who are parents and grandparents that when second or third-graders are eating baby food they are *really hungry*. Indeed my staff found another school age child eating dry dog food out of a plastic bag in order to stave off hunger pangs. I also wish you could have rounded with me a month or so ago on the wards of Boston Medical Center and seen the little eight-month-old son of two working parents born at normal birth weight who at six months weighed less than 14 pounds, which is the weight of a normal three-month-old. As you saw his pitiful ribs sucking in and out trying desperately to catch his breath from a viral infection that his weakened immune system could not resist, you would not have had any doubt about the importance of child nutrition programs. On a happier note, I wish you could have been with me in clinic at the end of last summer, when I talked to a formerly malnourished six-year-old for whom we had found a campership to the Salvation Army Day Camp. He had clearly had a good summer and gained nearly a pound. When I asked him what he did in day camp, expecting of course to hear about swimming and soft ball, he looked at me with his eyes glowing and said, "we sang songs about God and ate breakfast, lunch and *snack*!" None of these meals would have been available to this child without the summer feeding programs.

Distinguished members of the committee, I am here today to urge you to prescribe a miracle drug for America’s families, by expanding and enhancing child nutrition programs at all levels. This miracle drug which perhaps we should name foodamycin decreases premature birth, enhances immune function, and improves school achievement. Millions of American children are intermittently but repeatedly deprived of this drug both before and after birth. Any legislative provision that would serve fewer rather than more children would be a child health catastrophe. Only you can write the prescription to treat their deprivation and it is "stat" (urgent) that you do so.

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