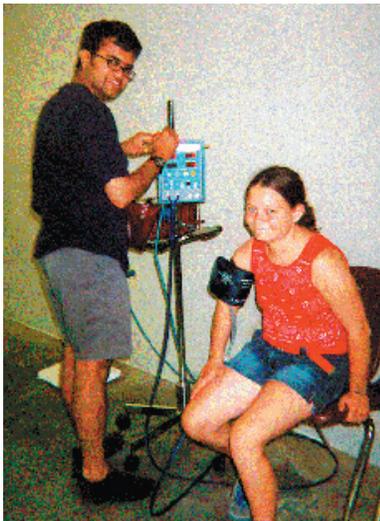


REDUCING THE BURDEN OF CHRONIC KIDNEY DISEASE IN MICHIGAN

*A Strategic Action Plan for the Prevention,
Early Detection, and Control of Chronic Kidney Disease*

2005-2010



RECOMMENDATIONS OF THE
*National Kidney Foundation of Michigan
Chronic Kidney Disease Task Force*

IN PARTNERSHIP WITH THE
Michigan Department of Community Health

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2005 – 2010

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MICHIGAN STRATEGIC ACTION PLAN: OVERVIEW

Chronic kidney disease (CKD) is a serious public health problem that is rapidly approaching epidemic proportions. Currently, one in nine Americans age 20 and over has CKD, but “most don’t know it.” The two leading causes of CKD are diabetes (44%) and hypertension (26%). Left untreated, CKD can lead to total kidney failure requiring dialysis or a kidney transplant to maintain life. Kidney failure is expected to double in the United States from 2000 to 2010.

The annual rate of new cases being diagnosed in Michigan is higher than the national rate. It is possible to reduce the burden of CKD in Michigan because much of it can be prevented or delayed. Since kidney disease can be prevented or significantly delayed, the Michigan Department of Community Health (MDCH) joined with the National Kidney Foundation of Michigan (NKFMI) to develop a plan for intervention. In 1996 NKFMI began receiving state funding to implement State Kidney Plan programs. This updated strategic action plan (2005) is the “map” for the early prevention, detection and management of kidney disease.

People at highest risk for CKD are those with diabetes and/or hypertension, family history of kidney disease, seniors, and minorities. Recently another group of high risk individuals has appeared: children who are being diagnosed with Type 2 diabetes because of obesity and inactivity. According to the Centers for Disease Control (CDC), one in three U.S. children born in 2000 will be diagnosed with diabetes unless they start eating healthy foods and increasing physical activity. Children who develop Type 2 diabetes are at high risk for developing CKD at young ages (in their 20’s and 30’s). CKD can be prevented in many of those at high risk and progression can be slowed in those who already have the disease.

The Michigan Strategic Action Plan recommendations outline interventions within the health care setting and the community that will prevent or slow progression of CKD in adults and children.

- **HEALTH CARE SETTING INITIATIVES – ADULTS**
Utilize the managed care system to develop chronic kidney disease prevention interventions and assist medical laboratories in providing a “calculated glomerular filtration rate (GFR),” an early kidney disease indicator, on a routine basis to health care providers.
- **HEALTH CARE SETTING INITIATIVES – CHILDREN**
Educate general pediatricians, nurse practitioners, physician assistants, and family physicians about signs and symptoms of kidney disease in children.
- **COMMUNITY BASED INITIATIVES – ADULTS**
Expand education outreach efforts to high risk populations in Michigan, using the lay health advisor model.
- **COMMUNITY BASED INITIATIVES - CHILDREN**
Establish a demonstration project in one Michigan community targeting obesity, diabetes and hypertension in children.

Michigan *can* do more to slow the epidemic of CKD. The NKFMI, in partnership with the MDCH will lead this campaign. CKD can be prevented or delayed in cases caused by diabetes and high blood pressure. This updated Strategic Action Plan is a unique document and all of the recommendations need to be implemented.

INTRODUCTION

The kidneys can be envisioned as two sophisticated reprocessing machines that are constantly at work, helping to maintain the body's health. Every day, these fist-sized organs perform a range of functions that are critical not only to health, but to life itself. In a healthy person, the kidneys filter vast quantities of blood on a daily basis (nearly 200 quarts). As they filter, the kidneys separate out the body's waste products and excess fluid and process them into urine. This begins the sequence that will enable the body to eventually rid itself of these unnecessary toxic materials by excreting them during urination.

The kidneys also isolate minerals — sodium, phosphorus, calcium, and potassium — that the body needs, separating out the excess amounts and returning measured quantities of these minerals to the bloodstream. In this way, the kidneys act to regulate the levels of these minerals that, while necessary for survival, can actually be toxic in excess quantities.

In addition, the kidneys release three important hormones that are key to the body's proper functioning. Individually, these hormones help to:

1. Stimulate production of red blood cells;
2. Regulate blood pressure; and
3. Maintain calcium for bone growth and normal chemical balance.

What Is Chronic Kidney Disease?

Chronic kidney disease (CKD) is a progressive, permanent condition in which the kidneys are damaged and gradually begin to lose their effectiveness.

Although kidney damage can happen quickly as the result of an injury or another type of trauma, most kidney problems progress slowly as a result of disease. In fact, many individuals may have declining kidney function for years before they even become aware that they have CKD.

CKD typically causes no “alarming” symptoms until it is well advanced, in some cases, when kidney function is less than 20 percent of normal. This lack of symptoms and the corresponding delay of diagnosis have earned CKD the moniker “silent killer,” and the lack of treatment and control that can result is one of the disease's most dangerous aspects.

However, early warning signs of declining kidney function do exist, and simple tests can be done to diagnose the disease in its initial stages. If chronic kidney disease is caught early enough, health care providers can treat, delay, or even prevent progression to the associated complicating factors. These factors most often

Early Warning Signs of Possible Kidney Disease

- High blood pressure
- Blood and/or protein in the urine
- Blood urea nitrogen (BUN) and serum creatinine blood tests outside the normal range
- Low glomerular filtration rate (GFR)
- Frequent urination, especially at night, or difficult or painful urination
- Puffiness around the eyes or swelling of the hands and/or feet

result in cardiovascular conditions and for those who endure, chronic kidney failure (CKF).

CKF, also known as end stage renal disease or ESRD, is the final stage of CKD.

Although CKD can strike anyone, some people are at a greater risk than others. Those individuals who are at increased risk of developing CKD include:

- Persons with diabetes or with a family history of diabetes;
- Individuals with high blood pressure or a family history of high blood pressure;
- Persons with a family history of CKD;
- Persons who are older; and
- African Americans, Native Americans, Hispanic Americans, and Asian Americans.

Because they are more apt to develop CKD, these individuals should receive the following routine screening tests on a regular basis:

- Blood pressure check;
- Test for protein or blood in the urine; and
- Blood draw to test for the level of serum creatinine (waste build-up in the bloodstream)
- Glomerular filtration rate (GFR) calculation to determine level of kidney functioning.

The importance of early screening and detection and timely, optimal treatment interventions cannot be stressed enough. If left untreated, CKD will continue to progress, causing more extensive damage to the internal structure of the kidneys and ultimately lead to CKF.

Once CKF occurs — meaning the kidneys have lost 85 to 90 percent of their function — treatment becomes necessary in order to maintain life. When that point is reached, individuals must choose between two options for survival: 1) undergo kidney transplant or 2) begin dialysis, needed lifelong or until successful kidney transplant. The choice is not always an easy one; although both these treatments have obvious value, they also can carry serious risks and consequences. However, without either ongoing dialysis or successful kidney transplantation, individuals with kidney failure will experience multiple and severe health complications, followed by death.

What Causes Chronic Kidney Disease?

Diabetes and high blood pressure are the two leading causes of CKD in the United States. Extensive data exists on people with CKF (final stage of CKD), which illustrates the leading causes of this disease. Diabetes is the overall leading cause, accounting for more than 45 percent of the new cases each year and nearly 36 percent of all cases in the United States.

Uncontrolled or poorly controlled high blood

Who Is More Apt to Develop CKD?

- Persons with a family history of kidney disease
- Persons with diabetes or with a family history of diabetes
- Persons with high blood pressure or a family history of hypertension
- Persons who are older
- Persons with African American, Hispanic, Asian American, or Native American ancestry

Leading Causes of Chronic Kidney Disease in the U.S.

1. Diabetes
2. High blood pressure
3. Glomerulonephritis
4. Cystic kidney diseases

pressure is the second leading cause, accounting for approximately 27 percent of the new cases each year, and about 24 percent of the U.S. cases overall.¹ Diabetes and high blood pressure often co-exist, increasing an individual's risk. Glomerulonephritis — an inflammatory disease that damages the filtering units of the kidneys — is the third leading cause of CKF in the United States and is responsible for nearly 8 percent of the country's new cases each year.

Cystic kidney diseases — acquired diseases in which multiple cysts (abnormal sacs containing gas, fluid or a semi-solid material) form in or around the kidneys — are the fourth leading cause of CKF in the United States and account for more than 2 percent of the country's new cases each year.²

The Burden of Chronic Kidney Disease

CKD is a serious, worldwide public health problem that is rapidly approaching epidemic proportions. In fact, CKD is the ninth leading cause of death in the United States.³ The National Institutes of Health, in recognition of CKD as a major health problem, has made the reduction of new cases of CKD, along with its complications, disability, death, and economic costs, a primary focus of the *Healthy People 2010* objectives.⁴

The National Kidney Foundation estimates that more than 20 million Americans — *one in nine adults age 20 and older* — have CKD and that another 20 million are at increased risk for developing the disease but are unaware.⁵ Countless individuals receiving a diagnosis of CKD did not know that they had the disease before the diagnosis was made.

Each year, more than 98,000 Americans are diagnosed with CKF; in 2002, more than 456,010 Americans were living with the complications of kidney failure that required dialysis and/or kidney transplantation as treatment.⁶ Research indicates that there is a steady, alarming growth in the incidence of CKF which is doubling every 10 years in the United States.⁷

Michigan's incidence rate of 352 persons with CKF per one million residents is higher than the nation's rate.⁸ Approximately 769,000 Michigan residents (one in nine adults ages 21 and older) have CKD, and 15,000 have CKF.⁹

The CKD Epidemic

- 1 in 9 adults ages 20+ have CKD
- An estimated 769,000 Michigan adults have CKD.
- 15,000 Michigan residents have CKF.
- 9th leading cause of death in the U.S.

Source: National Kidney Foundation. Kidney Disease Outcomes Quality Initiative.

Racial and Ethnic Differences: CKD, CKF, and related disability, premature death, and economic costs are growing public health problems that disproportionately affect racial and ethnic minority populations in the United States. African Americans, American Indians, Hispanics, and Asians are respectively 4.5, 3.6, 2, and 1.6 times more likely to develop CKF than are caucasians. The ongoing epidemics of CKD and CKF are due mainly to increased prevalence of type 2 diabetes, poor control of diabetes and hypertension, and delayed detection and treatment of the early stages of CKD. It is important to note that in Michigan, African Americans comprise approximately 14 percent of the total population, yet they account for an alarming 46 percent of the dialysis population.^{10,11}

New cases of CKF are increasing by 6 percent a year for Caucasians. However, new CKF cases are increasing by 7 percent a year for African Americans, 10 percent a year for Native Americans, and 11 percent a year for Asian Americans.¹²

Human Costs: Kidney disease generates a major toll on our residents. In fact:

- More than 20 million American adults age 20 and older have CKD.¹³
- In Michigan, 769,000 adults age 20 and older have CKD. Another 1.3 million Michigan residents have diabetes and/or hypertension, putting them at increased risk of developing CKD and its related complications.^{14,15,16}
- New cases of CKF are rising at a rate of 6 percent annually in the United States and in Michigan. Researchers estimate that, by 2010, 661,000 Americans (24,000 of them in Michigan) will be living with CKF and will require dialysis or kidney transplantation to stay alive.¹⁷
- In 2002, 308,910 Americans (10,140 of them in Michigan)

Risk of Kidney Failure is Not Uniform

Compared to Caucasians:

- African Americans are 4.5 times more likely to develop kidney failure
- Native Americans are 3.6 times more likely to develop kidney failure
- Latino/Hispanics are 2.0 times more likely to develop kidney failure
- Asians are 1.6 times more likely to develop kidney failure

Source: National Kidney Disease Education Program, March 2004.

Kidney Failure: A Growing Problem in Michigan

- New cases of CKF are increasing at a rate of 6 percent per year in the United States and Michigan.
- An estimated 3,500 Michigan residents will develop kidney failure this year and will require dialysis and/or kidney transplantation to survive.
- An estimated 2,600 Michigan residents will die this year on dialysis.
- 46 percent of people with CKD die of cardiac related conditions and never progress to CKF.

Sources: U.S. Renal Data System; Renal Network of the Upper Midwest, Inc./End Stage Renal Disease Network 11; Keith D, et al, ASN Meeting; Nov 3, 2002.

were on dialysis. That same year, 15,712 Americans (502 of whom were Michigan residents) received kidney transplants, and another 50,000 U.S. residents (1,700 of them in Michigan) were awaiting transplants.^{18,19,20,21}

- In 2003 in Michigan, 3,559 residents received a diagnosis of CKF and either began dialysis or the kidney transplant process. That same year, 563 residents received kidney transplants, 10,592 were on chronic maintenance dialysis, and 2,574 Michigan residents who were being treated with dialysis died.²²
- As of January 2005, 64,742 U.S. residents are awaiting kidney transplants but, because there is a shortage of suitable organ donors, only about 15,000 of them (roughly 23 percent) will receive transplants. In Michigan, 2,179 patients are awaiting organ transplants, but only 500 of them (23 percent) are likely to receive one.^{23,24}
- It is important to note that 46 percent of people with CKD die of cardiac related conditions and never progress to CKF.²⁵

Financial Costs: Kidney diseases are a major cause of days of work lost, doctor visits, and hospitalizations in the United States.

The direct and indirect costs of CKF are affected by the fact that 63 percent of the cases will occur in working-aged adults between the ages of 20 and 64; another 20 percent of the cases will occur before the age of 75.²⁶

In 2002, the most recent year for which such data is available, average health care costs for Michigan residents with CKF were \$63,000 per person per year, 20 times higher than the average of \$2,560 per person per year in health care costs for Michigan residents without kidney failure.²⁷

In 2002, Medicare medical expenses alone were more than \$17 billion for CKF care. Inpatient treatment cost was \$6.9 billion, outpatient treatment cost another \$6.8 billion, and an additional \$3 billion was spent for physician care and/or supplier services.²⁸ In 2002, nearly \$24.8 billion was spent to treat U.S. residents with CKF; \$800 million of that was spent to treat Michigan patients.

In the United States, Medicare spending for CKF treatment has been increasing 10 percent each year, primarily due to the rising number of patients with CKF.

Although CKF patients represent less than 1 percent of the Medicare population, they require approximately 6-7 percent of the expenditures.²⁹

Although these costs are truly staggering, it is important to note that they do not take into account residents' significant out-of-pocket payments for health insurance deductibles and co-payments, medications, transportation, or other non-covered health care charges. They also do not include the value of lost wages and opportunity costs for CKF patients and their family members and/or other caregivers.

The High Cost of Chronic Kidney Failure in Michigan

- In 2002, approximately \$800 million was spent in Michigan to treat CKF-related illness.
- That same year, health care costs for Michigan residents with CKF were \$63,000 per patient per year, compared with \$2,500 per patient per year for Michigan residents without kidney failure.

Sources: U.S. Renal Data System; National Kidney Foundation of Michigan; Michigan Department of Community Health.

How This Plan Was Developed

In 2002, National Kidney Foundation of Michigan (NKFM) and Michigan Department of Community Health (MDCH) agreed upon the need for a strategic plan that would address the increasing numbers of Michigan residents developing CKD and its associated complications.

The NKFM and MDCH partnership convened an expert task force comprised of the following: adult and pediatric nephrologists, endocrinologists, primary care providers, public and private insurers, nutritionists, educators, state public health officials, representatives of various professional and voluntary health organizations and pharmaceutical companies, and other interested stakeholders. NKFM then divided the Task Force into four subcommittees to make recommendations specific to the community and the health care system.

1. *The Health Care System Initiatives for Adults Subcommittee* composed health care system recommendations to identify and treat adults with CKD in order to prevent or delay progression of the disease. Of particular interest was the development of recommendations that would help educate primary care providers and other health care professionals with regard to CKD and, therefore, lead to recognition and early treatment intervention of CKD by primary care physicians. Early intervention would also result in earlier referrals of people with CKD to nephrologists to ensure optimal care prior to dialysis.
2. *The Health Care System Initiatives for Children Subcommittee* undertook to identify health care system recommendations that could prevent or delay progression of CKD in children and youth. The subcommittee focused on the need for education of primary care providers and other health care professionals with regard to kidney disease. Early detection and appropriate referrals to a specialist can prevent or delay progression of kidney disease in children.
3. *The Community-Based Initiatives for Adults Subcommittee* was charged with making consumer-focused program recommendations that would target individuals who have diabetes and/or hypertension and are first-degree relatives of persons with CKF. Particular attention was given to strategies that could address the fact that minority populations are disproportionately affected by CKD. Recommendations that utilized consumer education and advocacy strategies, such as the lay health advisor model, to encourage consumers to “take charge” of their own health care and seek answers from their health care providers were given priority.
4. *The Community-Based Initiatives for Children Subcommittee* sought to identify consumer-focused program recommendations that would address the need to prevent CKD by: raising awareness of CKD and its risk factors among children and youth and their families; encouraging positive health behaviors among children and youth, such as nutrition and exercise, that will help prevent CKD; and partnering with groups that have access to children and youth who are considered to be at high risk of CKD because of their obesity, diabetes, hypertension, or family history of CKD.

With the assistance of NKFM and MDCH staff, members of each subcommittee conducted a thorough review of the current literature regarding the epidemiology, prevention, screening, early detection, diagnosis, treatment, and quality of life associated with kidney disease, as well as the related economic issues and considerations. They then worked to collaboratively build a set of recommendations within their subcommittee’s area of emphasis that they expected

could have the greatest impact on reducing the morbidity (illness) and mortality (death) associated with CKD. Once they had completed their group recommendations, subcommittee members chose the top two to three recommendations in terms of target audience, efficacy, cost-efficiency, and expected outcome measurability.

The co-chairs of each subcommittee then presented their group's primary recommendations to the Task Force Executive Committee, which was comprised of the subcommittee co-chairs, as well as representatives of NKFM and MDCH and the NKFM Scientific Advisory Board. The Executive Committee, in turn, worked to rank the recommendations according to priority and then select the top three recommendations that would be most apt to lead to positive changes in personal behavior, clinical practice, and the environment within the next three to five years.

It should be noted that although the current state of the economy and reduced resources were part of the Executive Committee's decision-making process, those factors were not given undue weight. Instead, Executive Committee members concentrated on identifying the top recommendations that would have an identifiable positive impact on the targeted communities, were most apt to show results in a timely fashion, and had well-defined, measurable outcomes.

In addition, Executive Committee members also approved the remaining recommendations that had been forwarded by each of the four subcommittees, noting that these additional recommendations should be considered part of Michigan's long-range plan to reduce the burden of kidney disease.

MICHIGAN STRATEGIC ACTION PLAN: RECOMMENDATIONS

Following are the four major steps that expert members of the Michigan Chronic Kidney Disease (CKD) Task Force subcommittees recommend to reduce the human, economic and social costs of CKD in Michigan. Each of these recommendations is discussed in detail in the following section of this plan.

1. HEALTH CARE SYSTEM INITIATIVES - ADULTS

Convene new strategic plan implementation teams of health care and public health experts to develop chronic kidney disease prevention interventions utilizing the managed care system. The task force would also focus on assisting medical laboratories in providing a calculated GFR on a routine basis to health care providers. Ultimately, when funding is available, a Michigan initiative (targeting CKD, diabetes, and hypertension) would provide physician and patient education throughout the state. *(Note: The Michigan Chronic Kidney Disease Task Force and the NKFM Scientific Advisory Board consider this recommendation to be a top priority for implementation.)*

2. HEALTH CARE SYSTEM INITIATIVES - CHILDREN

Distribute educational materials to general pediatricians, nurse practitioners, physician assistants and family practitioners in Michigan to improve their understanding of the signs and symptoms of kidney disease in children.

3. COMMUNITY-BASED INITIATIVES - ADULTS

Expand educational outreach efforts to high risk populations in Michigan, using the lay health advisor model. Lay health advisors will promote healthy lifestyle change and provide education on diabetes, hypertension and chronic kidney disease prevention. The lay health advisors will also increase early detection and positively impact access to the health care system. *(Note: The Michigan Chronic Kidney Disease Task Force and the NKFM Scientific Advisory Board consider this recommendation to be a top priority for implementation.)*

4. COMMUNITY-BASED INITIATIVES - CHILDREN

Establish a demonstration project in one Michigan community targeting obesity, diabetes and hypertension in children. Work with the stakeholders within that community to implement multiple priorities that focus on policy and environmental, as well as behavioral, changes that will combine to reduce the risk for chronic kidney disease. Priorities include influencing at-risk children and their families to adopt more healthy lifestyles specific to physical activity and nutrition and influencing public officials to adopt policy changes to achieve desired goals. *(Note: The Michigan Chronic Kidney Disease Task Force and the NKFM Scientific Advisory Board consider this recommendation to be a top priority for implementation.)*

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HEALTH CARE SETTING INITIATIVES - ADULTS

Chronic kidney disease (CKD) is a common, progressive health problem. It is the ninth leading cause of death in Michigan and is considered a growing epidemic in the United States.¹ Chronic kidney failure (CKF) impacts more than 15,000 Michigan residents each year, requiring dialysis and/or transplantation to survive.²

Both the human and economic costs of CKD are staggering. In 2002, Medicare paid more than \$17 billion for CKF care, \$6.9 billion for inpatient treatment, and \$6.8 billion for outpatient care. Another \$3.0 billion was spent for physician care and/or supplier services.³ These figures do not account for the costs associated with CKD patients' reduced productivity or related morbidity and premature mortality.

The good news is that CKD can be prevented in many populations that are at risk, and CKD's progression can be slowed in those individuals who already have the disease.

Healthy People 2010 presents specific objectives to prevent and delay CKD. Reduction of hypertension, high cholesterol, and diabetes are all major modifiable factors in individuals who are at risk or who already have CKD. (At least 65 percent of all diabetic patients have elevated blood pressure; 70% of all CKD cases have hypertension.) Fortunately, control of blood sugar and blood pressure can help prevent complications such as diabetes and CKF. When control of blood sugar and blood pressure are coupled with early identification, timely referral and treatment, CKD progression can be slowed, decline in kidney function can be delayed, and the incidence of CKF and death can be reduced.⁴

Despite the advances in treatment and prevention, evidence suggests that only a small fraction of people at serious risk (individuals with diabetes, hypertension, family history of kidney disease, minority groups, and the elderly) or with established CKD are receiving proper screening and treatment within the health care system. Patients are unaware of their risk for diabetes, hypertension and CKD and the need for early identification and treatment.⁵

Identification of CKD is a first step. The Kidney Disease Outcomes Quality Initiative (KDOQI) is a science based study which classifies five stages of kidney function using the glomerular filtration rate (GFR), which indicates the ability of the kidneys to filter, as a measure of kidney function. The guidelines stress that patients and physicians "know their number" to understand their level of risk and extent of disease. GFR is often estimated based on a person's serum creatinine level. Serum creatinine is a crude estimate of renal function that can be refined by adjusting for characteristics. The National Institutes of Diabetes & Digestive & Kidney Diseases, National Kidney Foundation and American Society of Nephrology recommend estimating GFR from serum creatinine using the Modification of Diet in Renal Disease (MDRD) study equation. This equation uses serum creatinine in combination with age, sex and race to estimate GFR and therefore improves upon several of the limitations with the use of serum creatinine. The MDRD Study equation has been rigorously developed and validated, is more accurate than measured creatinine clearance. The equation is:

$$\text{GFR} = 186 \times (\text{P}_{\text{cr}})^{-1.154} \times (\text{age})^{-0.203} \times (0.742 \text{ if female}) \times (1.210 \text{ if black})$$

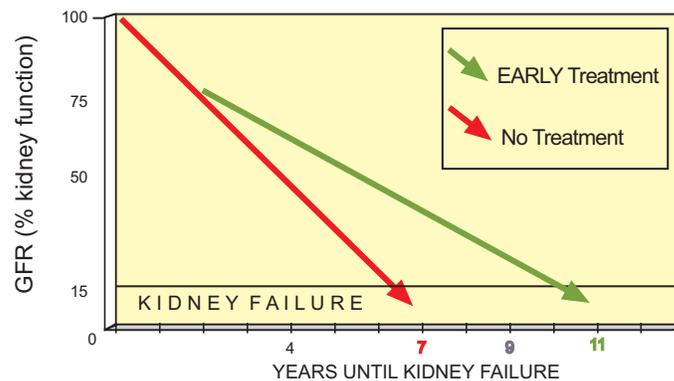
The calculated GFR has proven to be the most accurate measure of kidney function to date.⁶

The KDOQI guidelines recommend patients at risk receive a calculated GFR test so that physicians can identify early CKD. This requires that labs "calculate" the GFR for the primary

care physician. Currently, 15-20% of laboratories in Michigan provide the calculated GFR to physicians. Most patients have not heard of GFR and would not know to request it from their physician. Physicians also need training about GFR.⁷ It is also recommended that individuals with diabetes receive an annual microalbuminuria screen (a urine test) to detect early CKD.

While early identification through a calculated GFR, among other screening protocol, is key, patient behavior is also critical. Patients can reduce risk of CKD by controlling glucose, cholesterol, diet and by taking anti-hypertensive medications as prescribed. In addition, other medications may be needed such as Angiotension Converting Enzyme (ACE) Inhibitors or Angiotension Receptor Blockers (ARBs) which have been shown to reduce the progression of CKD. Finally, there is a direct connection between anemia, cardiovascular disease and CKD. By identifying and treating anemia, the risks of cardiovascular disease can be reduced which further lowers the risk for CKD.⁸

It is apparent that early screening guidelines and preventative treatment are essential to reduce the burden CKD places on Michigan's residents.



Source: Adapted from Brenner et. al, 2001. Courtesy of National Kidney Disease Education Program

Education for primary care physicians, health care providers, private agencies, insurance companies and patients is also vital. Primary care physicians need to be knowledgeable about the calculated GFR and, when CKD is diagnosed, the physician or health care provider should implement the appropriate treatment necessary to slow progression of the CKD.

It is essential to develop and implement a screening protocol and to initiate risk reduction management/treatment for at-risk individuals. Close collaboration with patients, health agencies, and other community stakeholders will result in the identification of resources that will give the at-risk population access to early detection, education, and treatment for diabetes, hypertension and CKD.

The task force determined that the environment for health care professional and patient knowledge/behavior change, specific to CKD, was the managed care system. Health plans currently have access to lab, pharmacy and patient data which can be utilized to evaluate treatment and determine different intervention strategies. While the health plans only serve 25% of the state's population, the physicians who provide services to patients within the health plans reach the majority of the insured Michigan population. (Physician groups and their staff serve patients with multiple insurance plans.) Utilizing the health plans as a springboard for preventing CKD is considered the most efficient and effective method for change. The recommendations of the original task force are stated below:

Recommendation #1:

Convene a new State Kidney Strategic Plan Implementation Team of health care and public health experts to develop CKD prevention interventions utilizing the managed care system. The task force would also focus on assisting medical laboratories in providing a calculated GFR on a routine basis to health care providers. The Task Force will collaborate with managed care organizations to develop prevention methods targeting patient and physician education. When funding is available, a Michigan initiative (targeting CKD, diabetes, and hypertension) would provide physician and patient education throughout the state.

The State Kidney Plan Implementation Team will address the daunting barriers to providing early identification and treatment to patients within the health care system. Currently, the gap between the prevention knowledge (KDOQI) and clinical measures based on scientific advances in CKD is expansive. The literature illustrates that clinicians indicate time, competing demands, uncertainty about conflicting recommendations, and lack of training in prevention as barriers to providing clinical preventative services. There is, however, increasing evidence that barriers can be overcome through a formal system for delivering clinical preventative services. Finding a “working system” will be central to success in CKD prevention. Technology will also be key to help medical practices deliver preventative services. (Computer systems can alert physicians and office staff when patients are due for tests such as a calculated GFR, microalbuminuria screening and indicate preferred medical regimens.) Traditional continuing medical education courses are unlikely to motivate physicians to use office systems for prevention. It has been determined that individualized and on site training can make a difference in the implementation of a formal system.⁹ The managed care initiative will focus on finding recommended ways to help physicians and patients within the health care system to identify and treat CKD. The education for physicians and health care professionals will include knowledge concerning GFR, early testing and screening, and optimum treatment. Additionally, the implementation team members will work closely with the labs on calculating the GFR for physicians.

The task force will collaborate with managed care organizations interested in addressing the problem of CKD. It is hoped that several Michigan initiatives with managed care plans will occur. A broader solution may be a state-wide initiative regarding CKD, diabetes, and hypertension implemented through the National Kidney Foundation of Michigan (NKFM) and the Michigan Association of Health Plans. The state-wide initiative would provide core measures that are in concert with “clinical guidelines” for hypertension and CKD to be used by physicians and health care providers.

By bringing together selected groups, accurate and consistent information can be established to educate physicians, health professionals, and patients about CKD. Among the suggested members of the NKFM State Kidney Plan Implementation Task Force would be representatives of: public health; managed care organizations; hospitals; pharmaceutical companies; laboratories; the Michigan Osteopathic Association; the Michigan State Medical Society; the Michigan Health and Hospital Association; the Michigan Association of Health Plans; Michigan Quality Improvement Consortium; Michigan Primary Care Association; the Academy of Family Physicians; and the American College of Physicians.

Anticipated Impact of Recommendation #1: This managed care initiative will be designed to (1) educate health care providers to establish optimal care prevention strategies; (2) increase patients' knowledge concerning risk factors and; (3) provide assistance to laboratories to establish a calculated GFR on patients. The initiative will increase identification, early referral and treatment of CKD; thus, delaying the progression to CKF in Michigan residents.

Recommendation #1a:

Complete a Michigan Public Health Study, using Medicaid data, to determine current cost and level of care for individuals at risk for CKD.

Prevention programs targeting chronic diseases such as diabetes, hypertension or CKD have often been perceived by public officials, health care administrators and other decision makers as costly. CKF, however, is extremely expensive. Patients with CKF are less than 1% of the Medicare population but require approximately 6% of the expenditures.¹⁰ It is projected that by the year 2010, the number of CKF patients will double. If CKD can be prevented or progression can be delayed, a cost saving will result. *The evidenced-based literature illustrates that early referral can prevent or delay progression of CKF and limit hospitalizations; thus, actually cutting health systems' expenses.*¹¹ An analysis of Michigan's Medicaid data would be quite helpful in us showing this to be true. By determining the current cost of care (for CKF patients) in Michigan using Medicaid data, a baseline cost can be determined. This baseline will assist the State Kidney Plan Implementation Team to measure outcomes of the managed care initiative. Finally, these data are needed to educate public policy officials about current expenditures and how funding CKD prevention programs can be more cost efficient over time.

Anticipated Impact of Recommendation #1a: A review of the Medicaid cost data, concerning CKF and CKD prevention, will establish both current expenditures and a baseline. This baseline is important to evaluate cost and treatment as CKD prevention initiatives are implemented.

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STAGES OF CHRONIC KIDNEY DISEASE

STAGE	DESCRIPTION	GFR (ml/min/1.73 m ²)	CLINICAL ACTION*	PREVALENCE (adults ages 20 and older)
AT INCREASED RISK	Individuals with diabetes, high blood pressure, or a family history of kidney disease; older adults; African-Americans, American Indians, Hispanics, Asians and Pacific Islanders	≥90	Screening CKD risk reduction	> 20 million (>12%)
1	Kidney damage with normal or ↑ GFR	≥90	Diagnosis and treatment; treatment of comorbid conditions; slowing progression CVD risk reduction	5.9 million (3.3%)
2	Kidney damage with mild ↓ GFR	60–89	Estimating progression	5.3 million (3%)
3	Moderate ↓ GFR	30–59	Evaluating and treating complications	7.6 million (4.3%)
4	Severe ↓ GFR	15–29	Preparation for kidney replacement therapy	400,000 (0.2%)
5	Kidney failure	<15 or dialysis	Replacement (if uremia present)	300,000 (0.1%)

Abbreviations: **GFR** (glomerular filtration rate); **CKD** (chronic kidney disease); **CVD** (cardiovascular disease).

*Includes actions from preceding stages



HEALTH CARE SETTING INITIATIVES - CHILDREN

Prevention of chronic kidney disease in children and young adults begins with early identification and referral of children at risk for chronic kidney disease. Progressive kidney disease can occur at all ages. In children, a variety of conditions that can cause progressive kidney disease are effectively cared for by pediatric nephrologists and urologists.

Although diabetic nephropathy does not generally result in kidney failure in childhood, most people with diabetes and chronic kidney failure (CKF) in their 20s and 30s have had longstanding diabetes since childhood. The dramatic increase in incidence of Type 2 diabetes in children is therefore particularly concerning, since it can lead to CKF in young adulthood.¹

Intervention strategies aimed at slowing progression of chronic kidney disease (CKD) include early detection and referral of children with kidney disease to a pediatric nephrologist or urologist, diet modification, aggressive treatment of any identified hypertension, and for diabetic patients, strict control of blood sugars. To accomplish this, early identification of children with either established or incipient kidney disease is critical. Unfortunately, due to a frequent lack of symptoms, preschool urine screening for renal abnormalities has not been effective in detecting urinary tract abnormalities in the first 1 or 2 years of life when treatment may have the greatest impact.¹ In contrast, prenatal ultrasounds can easily identify fetuses with renal and/or urologic abnormalities. Ultrasounds have proven to effectively identify both mild and severe abnormalities requiring the attention of a pediatric nephrologist or urologist. In addition, screening for microalbuminuria, most commonly used to detect early diabetic nephropathy in adults, may also prove to be a useful indicator of kidney damage in reflux nephropathy and hypertension.¹ Although some young children still progress to kidney failure despite early identification and treatment of their renal disease, early detection and treatment has the potential to prevent or delay the progression of kidney disease in the vast majority of pediatric kidney diseases.

Although early referral of identified pediatric patients with kidney disease to a pediatric nephrologist or urologist is essential to ensure optimal care, unfortunately, all too frequently these referrals either do not occur or are delayed. Physicians, patients, and health care providers need to become better educated concerning the signs and symptoms of kidney disease in children. Children are at risk for CKD if they have the following clinical findings: small kidneys on renal ultrasound (renal dysplasia), dilated kidneys on renal ultrasound (urinary tract obstruction), blood pressure greater than the 95th percentile for age (hypertension), elevated fasting serum cholesterol and lipids (hyperlipidemia), current or past urinary tract infection, kidney injury (trauma), weight greater than the 95th percentile for age (overweight or obesity), and history of diabetes.¹ In these situations, it is important for pediatricians to be able to identify and refer these patients as early as possible following diagnosis. Without treatment and follow-up, these problems can lead to CKF.

Recommendation #1:

Distribute educational materials to general pediatricians, nurse practitioners, and family practitioners in Michigan to improve their understanding of the signs and symptoms of kidney disease in children.

The Community-Based Initiatives for Children Subcommittee of the Michigan CKD Task Force has identified a list of the key signs and symptoms for pre-conditions in children at risk for CKD. A new implementation task force will be convened to further determine strategies for improving understanding of the following signs and symptoms:

1. Occurrence of a documented urinary tract infection by culture.
2. Drinking large volumes of water during the night with a history of Polydypsia (increased fluid intake because of excessive thirst) and Polyuria (kidney disorder characterized by producing large volumes of dilute urine).
3. Persistent daytime wetting after 5-6 years of age, or lack of bladder control six months after bowel control has been achieved.
4. Failure to thrive (defined by a plateau in linear growth for more than three months in children under one year, or more than six months in children under 10 years of age).
5. Evidence of rickets, including bone pain, bowing or difficulty walking.
6. Persistent hypertension (defined as blood pressure greater than the 95 percentile, for three consecutive measurements; at least one hour apart or when child is at rest).
7. Gross hematuria or “cola-colored” urine (caused by blood in the urine).
8. Presence of edema (i.e., retention of water in the tissues).
9. Persistent systemic illness beyond two weeks.
10. Prenatal ultrasound identifying renal or urologic abnormalities.
11. Children with a diagnosis of diabetes mellitus, especially if they develop persistent microalbuminuria.
12. Siblings of children with vesicoureteral reflux (i.e., the abnormal flow of urine from the bladder back into the ureters)
13. Obesity with a family history of Type 2 diabetes and/or early cardiac death (should be screened for diabetes and hypertension)

If children present with any of these 13 key signs and symptoms, health care providers should conduct appropriate testing. If any test is abnormal, the child should receive an immediate referral to a pediatric urologist or nephrologist.

Anticipated Impact of Recommendation #1: Better education of pediatric health care professionals, family, and patients regarding key signs and symptoms of kidney disease in children will facilitate earlier testing and more timely referrals of children at risk for CKF. To meet this need, the National Kidney Foundation of Michigan (NKFM) will develop an educational program to be distributed to all Michigan health care professionals engaged in the care of children. The NKFM will work with the Michigan Chapter of the American Academy of Pediatrics, the Michigan Chapter of the National Association of Nurse Practitioners and other appropriate health care associations to improve awareness and early referral when signs and symptoms of pediatric kidney disease are present.

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EDUCATION AND PREVENTION: A LESSON LEARNED



Sally Joy

Born in Boston, raised in the Detroit metropolitan area, Sally Joy was diagnosed at the age of 16 with Type 1 diabetes; her body had stopped producing insulin. Sally remembers that prior to the diagnosis she had all the classic symptoms (unlike Type 2 diabetes which often has few symptoms).

In 1966, when Sally was diagnosed, education and technology for diabetes were very limited. Little information was provided about a healthy diet or insulin management. “Control” mainly depended on urine testing, because home blood sugar testing hadn’t been invented yet. During her years as a teenager, college student and young adult, Sally reports that she was basically “flying blind.” She gave herself one shot, of the same amount of insulin, every day and was pretty casual about what she ate. Information was not provided by physicians and other health-care professionals about multiple injections per day, or how to regulate insulin doses to cover food intake.

Compliance can be difficult for diabetic patients even when provided with the right tools and accurate information. Sally believes, however, that if the tools and education about diabetes management had been available and utilized in her youth, her kidney failure could have been prevented, or at least delayed.

Unfortunately, but standard until approximately 1980, little education was provided about the complications of diabetes, which include chronic kidney disease. In 1981, Sally discovered, using the newly available home blood sugar tests, that her blood sugars were

extremely high. She was in the 300-400 blood sugar range on a regular basis. Sally says the testing was a “wake up” call, and she took immediate action to lower the blood sugar levels, but this information arrived too late. The damage, caused by diabetes, had already left its mark. In 1985, Sally experienced kidney failure, six months of dialysis, and then, a kidney transplant in 1986. She had also been treated for other complications of diabetes including retinopathy (eye disease) and neuropathy (nerve damage) and foot ulcers.

Sally, for all her quality of life issues, continued to work as an interior landscaper and dental technician until 1985. From 1981-1994, she also served as a facilitator for the Diabetes Support Group in Ann Arbor. To quote Sally: “I took a break from employment in 1986 because of kidney failure.” However, after the transplant, from 1987-1992 she acted as a Peer Mentor for the kidney patients associated with the University of Michigan Health Systems. Currently, Sally is the Public Policy Consultant for the National Kidney Foundation of Michigan.

PREVENTION is Sally’s cause. Too many diabetes patients, even today, are not receiving accurate information concerning diet, testing, treatment and control of diabetes in order to prevent complications such as chronic kidney failure. Compliance with physicians and other health-care professionals’ instructions presents another problem. Sally advocates: 1) consumer empowerment, 2) health care self-management, and 3) education for physicians and health-care professionals so they can provide timely and accurate information to their patients with diabetes or hypertension.

COMMUNITY-BASED INITIATIVES - ADULTS

Chronic kidney disease (CKD) is serious, common and costly. One in nine individuals, age 20 or over, has CKD.¹ Left untreated, CKD, in most cases, will lead to total kidney failure. If CKD is managed appropriately, most cases of chronic kidney failure (CKF) can be prevented or delayed.

CKF will double by 2010.² Aggressive education and early detection for those at risk (individuals with hypertension, diabetes, kidney disease in the family, African Americans, Hispanic Americans, Native Americans, and the elderly) can result in the reduction of severe complications and death.

The two leading causes of CKD, diabetes and hypertension, account for over 70% percent of all Michigan kidney failure cases. If signs and symptoms remain undiagnosed and/or untreated, an estimated two-thirds of individuals with diabetes and hypertension will develop CKD, which can ultimately progress to CKF.

Diabetes affects approximately 18 million people in the United States³; an increase of 25 percent over the last 20 years.⁴ Approximately one-third of the population is unaware that they are at risk for, or already have, diabetes. Direct and indirect medical costs amount to, at least, \$98 billion per year.⁵

The major cause of Type 2 diabetes is overweight and obesity. Obesity has a medical cost of \$732 per person, per year, over an individual of normal weight. Medical spending, attributable to extra weight, totaled \$93 billion in 2003.⁶ The Centers for Disease Control (CDC) estimates that 59% of adults in the United States can be considered overweight. Michigan has an even higher rate of obese adults at 61-63% of the population.⁷ An obese individual's life can be decreased by as much as six to seven years; statistics comparable to smoking.⁸

Hypertension is second only to diabetes as the leading cause of CKF. Unfortunately, most people do not have any symptoms of hypertension. In 2003, approximately 32 percent of the 50 million individuals with hypertension had not been diagnosed with the disease. Fifteen percent of those with hypertension have not received any treatment, and 27 percent are not receiving adequate treatment to control their blood pressure. Blood pressure is also strongly correlated to weight. Approximately 30 percent of hypertension cases may be attributed to obesity, and in men under 45 years old, the figure may be as high as 60 percent.⁹ In 2004, the American Heart Association reported that approximately 65 million adults have hypertension (up from 50 million), a 30% increase in the last decade.¹⁰

Not surprisingly, the number of Americans with diabetes and hypertension is expected to increase significantly. In the future, diabetes cases will triple while hypertension has been steadily increasing. Medical costs are expected to reach \$1 trillion annually; with Type 2 diabetes patients accounting for much of this cost.¹¹

Education for the health care community and the population potentially at risk for CKD is vitally important. The lifestyle changes (i.e., healthy eating, physical activity, weight reduction) necessary to prevent diabetes and hypertension or to manage treatment to reduce the complications, such as CKD, saves lives and money. For each \$1 spent on diabetes outpatient education, \$2-\$3 inpatient hospitalization costs are saved.¹² For individuals who need increased physical activity and a more healthy diet, the following details successful interventions: 1) use an empowerment approach to enhance personal control, 2) encourage active participation of community leaders, 3) use mass media to increase awareness and enhance motivation, and 4) intervene in worksites,

community environments and food suppliers/providers.¹³

The literature supports lay health advisors and educators as an effective public health intervention tool.¹⁴⁻²⁸ Flax and Earp indicate that lay health advisors (also termed community health workers, peer educators and lay health workers) influenced the individuals they counseled because the women knew the advisors well, felt comfortable talking about private issues, and considered advisors to be credible sources of information.²⁹ Lay health advisors can work as agents of change by providing a variety of services including: outreach to underserved and hard to reach populations; health promotion/disease prevention educational instruction; patient tracking, needs assessment and provision of follow-up services; and patient advocacy.³⁰ One study determined lay health advisors decreased the complications of obesity and diabetes and reduced mortality.³¹

These findings demonstrate that lay health workers were effective in increasing health-related knowledge and facilitated behavior change by providing encouragement and serving as role models. They were also effective in decreasing high risk behaviors and improved follow up care. In addition, lay health advisors had a high value placed on their services by administrators, program staff and clients. There is, however, the need for more scientific evidence to directly link lay health advisors' impact on health outcomes.³²

Currently, the National Kidney Foundation of Michigan (NKFM) lay health advisor program, Healthy Hair starts with a Healthy Body™, trains African American hair stylists to promote healthy behaviors with their clients through a “health chat”. The stylists also hand out risk assessment information to their clients regarding diabetes, hypertension and CKD. The data on 11,300 participants reveals that



sixty percent have sought physician assistance and/or made a healthy behavior change as a result of the program.

Another lay health advisor program at the NKFM is the Peer Mentor program. This program focuses on training people with CKF, who have “been there”, to talk to new patients. Peer mentors, selected by social workers in the dialysis units, have positively adjusted to CKF. Peer mentors can often bridge the gap between the health professional team and the new patient. They receive training from the NKFM in listening and empathy skills, conflict resolution, problem solving, sexuality, referrals and resources and end of life planning. The peer mentor, who is a role model, provides a new level of hope to patients through effective listening, understanding and support. Peer mentors help people reach their dreams or create new ones, decrease fear, encourage independence, advance rehabilitation and promote positive medical outcomes. In addition, peer mentors foster communication and teamwork within a facility. The evaluation data demonstrates that peer intervention enhances the lives of patients. The Michigan peer mentors have expressed an interest in playing a larger role in kidney disease prevention in terms of both community education and public policy. Peer mentors would be ideal lay health advisors within their community.

Recommendation 1:

Expand educational outreach efforts to high risk populations in Michigan, using the lay health advisor model. Lay health advisors will promote healthy lifestyle change and provide education on diabetes, hypertension and CKD prevention. The lay health advisors will also increase early detection and impact access to the health care system.

Specifically, it is recommended that stakeholders:

- Expand the NKFM Healthy Hair Program to other community-based environments (e.g., faith-based organizations, Head Start, Day Care, barber shops) across the state.
- Train people with kidney disease in Michigan, who are already serving as peer mentors in dialysis units, to provide information and support to members of targeted populations at risk for CKD.
- Recruit people with CKD in Michigan and/or their significant others to become special lay health workers within their communities; and
- Develop a new Adults and Community-Based Initiatives Task Force of experts in public health, nephrology, cardiovascular disease, diabetes, physical activity and nutrition that will focus on development of interventions and materials for community-based interventions in Michigan that target those at-risk. The task force will also make suggestions on potential pilot sites and funding opportunities for the programs.

Once trained, the lay health care workers could:

- **Act as liaisons between the community and the health care system.**
Lay health advisors can be used by health care providers to increase support for goals specific to healthy lifestyle changes and treatment adherence.
- **Identify and educate at-risk adults in community settings.**
The lay health advisors could provide written materials to community members, initiate a structured “health chat” to trusted individuals and encourage individuals to consider taking a healthy prevention behavior step. Additionally, the lay health workers would support at risk individuals to seek physician assistance to ensure identification of chronic disease and, if determined to have diabetes, hypertension or CKD, to follow the physician’s treatment recommendations.
- **Coordinate and track community-based activities to ensure that the impact and outcomes of the activities are realized.**
All interventions will have an evaluation component to track knowledge, attitudes and behavioral change outcomes. Lay health advisors providing CKD prevention programs would play a significant role in the evaluation and data collection. The advisors would distribute and collect the surveys for the evaluation component.

Anticipated Impact of Recommendation #1: The expansion of lay health advisor programs in Michigan will promote, among those at greatest risk, increased awareness of diabetes, hypertension and CKD, as well as stress the importance of healthy lifestyle changes. The NKFM will educate legislators and public policy decision-makers about the problems of these chronic diseases and the outcome-focused programs which provide creative solutions.

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SAVING LIVES: HOW ONE HAIR STYLIST IS MAKING A DIFFERENCE IN HER COMMUNITY



Deborah Ivory

“Blood Pressure 220 over 180. You are at stroke level!” Surprise would be an understatement to what Deborah Ivory felt when she heard those numbers. Looking back, Deborah remembers that her mother experienced heart problems as a result of high blood pressure. Deborah never connected that she also might have high blood pressure. For the most part she never experienced any symptoms except an occasional headache.

Deborah owns and operates a hair salon in Detroit serving a large African American clientele. Most of Deborah’s clients have gone to her to get their hair done for many years. They are much more to Deborah than just clients. Deborah is a friend, a confidant, and in hard times, a shoulder to lean on. The walls in Deborah’s salon are bright and colorful. The waiting room is filled with plants and flowers. There is a large window in the front that lets in the sun. There is always coffee, refreshments, and snacks waiting for you. Those who sit in Deborah’s chair share about their families, friends and learn about the latest on goings in the community, all the while they are getting their hair styled. This often takes three to four hours, sometimes longer.

Deborah heard about the National Kidney Foundation of Michigan’s Healthy Hair Starts with a Healthy Body™ program from one of

her clients. She decided to attend the two-day workshop in which she would learn how to discuss health promotion messages about the importance of exercise and eating right to help her clients, who are also her friends, as they get their hair done.

On “day two” of the workshop Deborah attended, a nurse took the blood pressure of all of the stylists who were participating in the training. “I was shocked when the nurse told me my blood pressure was 220 over 180.” exclaimed Deborah. “The nurse told me to go to the doctor as soon as possible.”

When Deborah saw the doctor the next morning, she was immediately hospitalized to stabilize her blood pressure. Indeed it was a scary experience for her and her family. Deborah began to eat more fruits and vegetables, started walking with her husband after work, and consistently took her medication. She has been able to sustain a normal blood pressure ever since.

Deborah shares her own story with her clients as she delivers the health promotion message each day in her salon. Deborah is one of 600 stylists who have reached over 14,000 clients throughout Michigan. The stylists are a motivating force due to the strength of their relationship in their clients’ lives. African Americans are disproportionately affected by chronic diseases such as diabetes, hypertension, and kidney disease reinforcing the importance of the stylists work. Who would have thought that the “disparities in healthcare” issue could be addressed so significantly in a hair salon?

COMMUNITY-BASED INITIATIVES - CHILDREN

Twenty years ago, children would bike, play basketball, and leave the house to play, returning only when dinner was ready. Now, in many communities, open spaces have been filled with townhouses and condos. Playgrounds have been closed due to fear of the possibility of litigation, and the increasing threats to child safety have greatly reduced children's outside play. In the 21st Century, children eat more and exercise less. Computers, TV, and video games are kids' best friends.¹ The U.S. is a culture of cheap, high-caloric food and sedentary pleasures. Adolescents feel immortal and loathe doing anything their friends stigmatize (i.e., eating salads, attending exercise classes).²

Children ages six to eleven are nearly two and a half times as likely to be overweight and adolescents ages 12 to 19 are three times as likely, compared to twenty years ago.³ Approximately 22 million children under five years of age are overweight.⁴ Overweight and obesity can be sociologically significant and physically deadly. Sociologically and emotionally, obese children rate their quality of life lower than normal weight children. Teasing at school, lack of ability to play sports, and fatigue were contributing factors to the low scoring.⁵ Physically, obese children experience the same risk factors associated with heart disease in adults: high cholesterol, hypertension, and Type 2 diabetes. Epidemiological evidence has demonstrated that Type 2 diabetes, in children, parallels an increasing prevalence of obesity.⁶ Twenty six to forty one percent of overweight preschool children will become overweight adults.⁷ Overweight adolescents have a 70 percent chance of becoming overweight or obese adults. This increases to 80 percent if one or both parents are overweight or obese.^{8,9,10} Years ago, most children ages 10-19 diagnosed with diabetes were classified as Type 1, or insulin dependent diabetes (previously called "juvenile diabetes"). Today, an astounding one-third of all new cases of diabetes in children are classified as Type 2, where their bodies do not produce enough insulin or do not use it correctly. Type 2 diabetes is a diagnosis formally found mainly in adults and the increase of this diagnosis in children can be linked to inactivity and overweight.¹¹

Epidemiological data shows childhood obesity resulting in hypertension and Type 2 diabetes to be at epidemic levels. If this epidemic cannot be averted, the full public health effect will be felt as affected children become adults, and the long-term complications develop.

Recommendation #1:

Establish a demonstration project in one Michigan community and work with stakeholders within that community to establish a comprehensive program that focuses on policy, environmental and behavioral changes that reduce the number of community members at risk for chronic kidney disease. The ultimate goal is to influence at-risk individuals to adopt more healthy lifestyles one community at a time.

Organizers of this community-based demonstration project should strive to accomplish the following objectives:

- Link physical activity and healthy eating to academic achievement.
- Target the school environment to influence healthy choices by children.
- Focus on pregnant women, young mothers, and young children to encourage and influence healthy eating habits and physical activity.
- Consider all possible income sources to pay for interventions within the community to include private and public foundations, state government, and federal agencies.
- Ensure that all interventions have an evaluation component to measure outcomes, to track programs, and to change interventions as needed.

Link physical activity and healthy eating to academic achievement: Numerous studies highlight that poor nutrition and lack of physical activity leads to lower academic achievement.¹²⁻¹⁸ With regard to nutrition, for example, school breakfast programs are especially effective in increasing child nutrition and enhancing academic performance. Morning fasting has a negative effect on cognitive performance, even among healthy, well nourished children.¹⁹

Children within U.S. society have also become increasingly sedentary.^{20,21,22} Lack of physical activity is strongly associated with the development of obesity, Type 2 diabetes, and cardiovascular morbidity and mortality. Despite information on the importance of exercise, only 25 percent of high school students participate in daily physical education classes.²³ Recommendations for increasing physical activity should include at least 30 minutes of exercise daily.²⁴

Unfortunately, due to financial and safety considerations, physical education programs have been reduced or eliminated in many schools; and even recess has been a victim. Only 25 percent of U.S. schools require students to take physical education classes. It becomes even more important that health care providers, schools, and parents assess physical activity levels for children as early as pre-schoolers.²⁵

Target the school environment to influence healthy choices by children: Nutrition services must be provided to all pre-school children, as well as to all children in kindergarten through 12th grade. A coordinated nutrition and comprehensive school health program should be implemented to include: 1) nutrition education; 2) healthy meals; 3) models for healthy food choices; 4) family input and education (to ensure that information and skills learned at school are reinforced at home); and 5) community and health care services partnerships to promote and support positive health outcomes.

In the classroom, children could be taught about good nutrition and healthy food choices; while modeling by teachers and school administrators could include removing vending machines, which offer “junk food,” from lunchrooms. Reducing children’s access to unhealthy food containing sugar, fat and caffeine can decrease negative emotional and behavioral problems



and increase academic focus and performance. The school environment is a logical focal point for the education of children, since they spend approximately one-third of their day in this setting. Also, children, especially when young, tend to be influenced by adults they respect, such as teachers.^{26,27}

Stakeholders should take action across Michigan within school environments to:

- promote and support Team Nutrition education efforts;
- assist schools with accessing their current school environment and policies related to nutrition and physical activity by utilizing the Healthy School Action Tool (HSAT);
- decrease serving sizes and unhealthy food choices;
- establish minimum requirements for physical education;
- support recess and after-school activities;
- work with school boards to influence policy and to implement healthy activities;
- work with Michigan Action for Healthy Kids (MAFHK).

Focus on pregnant women, young mothers, and young children to encourage and influence healthy eating habits and physical activity: WIC, Head Start, Lamaze, and Day Care environments offer excellent environments for program implementation. Hypertension and diabetes are potential risks for pregnant women, young mothers, and young children.

High blood pressure can cause a decrease in blood and oxygen supplies available to both mother and baby. This can lead to kidney problems in the mother and birth defects in the baby. Approximately 10 percent of pregnant women will develop hypertension during pregnancy. Women are at higher risk if: 1) they have poor diets during pregnancy; 2) they are overweight or obese; or 3) they have other health problems such as chronic kidney disease (CKD) and/or diabetes.²⁸

There is some evidence to suggest that breastfeeding may protect against childhood obesity. While breastfeeding may provide some protective factors against childhood obesity, it is also evident that parental weight, eating practices, and physical activity largely impact childhood obesity.²⁹

Research also indicates that young children's reactions to their mothers' child-feeding practices outweigh all other influences on the child's total fat mass. A recent study concluded that highly controlling feeding strategies may interfere with children's abilities to self-regulate their food intake.³⁰

Since overweight and obesity in children has been directly linked to Type 2 diabetes and can lead to chronic kidney disease (CKD), it is essential that children, adolescents, and families receive education and counseling on at-risk behaviors, beginning with pregnancy.³¹

Consider all possible income sources to pay for interventions within the community to include private and public foundations, state government, and federal agencies:

Resources are needed to fund creative programs that address this issue at a community level. Research demonstrates that the ability to nourish healthy children and adolescents requires the support, involvement, and cooperation of multiple youth-serving sectors. One sector alone (i.e. school or family) cannot provide all the ingredients necessary for positive youth developments.³² Partnerships with businesses and coalitions (private, public, state) and organizations (PTAs, health agencies, Michigan Action for Healthy Kids (MAFHK), Michigan Nutrition Network, churches) should be formed.

Ensure that all interventions have an evaluation component to measure outcomes, to track programs, and to change interventions as needed: Successful interventions for school-aged children have: 1) used behaviorally-focused interventions; 2) devoted adequate time and intensity to nutrition education (i.e. at least 50 hours of education); 3) involved families if working with young children; 4) intervened in the school environment and the larger community; 5) intervened

in the food environment of schools (i.e. vending machines, lunchrooms); and 6) used mass media to increase awareness and enhance motivation.³³ All programs developed will have a strong evaluation component, with a research design intended to gauge the effectiveness of the intervention(s). An advisory committee will be developed to oversight the program evaluation to insure appropriate changes are implemented based on data analysis (and current literature).

Anticipated Impact of Recommendation #1: A successful Michigan demonstration project in one community with stated outcomes from a behavioral, environmental and policy perspective would positively impact healthy lifestyle changes in the lives of children at-risk.

Recommendation #1a:

Provide Michigan public officials with education and advocacy information concerning youth at risk for CKD and the currently available (and proposed) programs that are designed to reduce or eliminate the risks of obesity, diabetes, and CKD in children.

The plan would then be to adapt the project to other communities.

Among the suggested action steps for this recommendation:

- **Establish an advisory coalition.** Include leaders in health and education, community stakeholders, representatives of professional associations, employers, state experts, etc.
- **Use grassroots advocacy techniques to invest legislators and other leaders in community-based interventions for children.**
- **Work with the MAFHK Coalition to:** 1) ensure that healthy snacks and foods are provided in vending machines, school stores, and other venues controlled by schools, and 2) provide all children, kindergarten through grade 12, with daily, quality physical education.

Anticipated Impact of Recommendation #1a: Public officials will become knowledgeable about the role that physical activity and nutrition plays specific to prevention of diabetes, hypertension and CKD. A successful community project will demonstrate to officials how early intervention programs and resources are necessary for the health and well-being of Michigan's children and their parents.

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INTERNET RESOURCES

1. Michigan Team Nutrition: www.tn.fcs.msue.msu.edu
2. National Team Nutrition: www.fns.usda.gov/tn
3. Healthy School Assessment Tool: www.mihealthtools.org/schools
4. Michigan Action for Healthy Kids: www.actionforhealthykids.org, then select Michigan

AN INSPIRATION TO MICHIGAN'S CHILDREN

State Senator Buzz Thomas District 4 / Detroit

State Senator Buzz Thomas and his family are long-time Detroiters. The senator and many of his relatives are well known as pioneers in African American leadership in the Detroit area. Senator Thomas went to school in Detroit and finished his education at the



University of Pennsylvania in 1991. After graduation he spent time working in Washington DC. He returned to Detroit in 1994 and joined his father's real estate business. He was elected State Representative from Detroit in 1996 and today serves as a State Senator. As a family, the Thomases represent the ideal in achievement. They also represent a growing problem in the African American community and the population as a whole: obesity.

Senator Thomas's whole family struggles with obesity. He weighed nearly 400 pounds in his late 20's, his grandfather was obese and had diabetes, his cousin died of complications related to obesity, and his father is obese. Unfortunately, because of obesity, diabetes and hypertension are no strangers to this family.

Weight issues had a major affect during the "growing up" years. He acted shy and introverted because of his size. He avoided going out and disliked clothes shopping. He played sports, but not up to his potential. He didn't feel comfortable asking a girl out on a date. Luckily, his immediate and extended family provided him with a close knit circle of people who cared about him and accepted him unconditionally.

Finally in his early 30's he decided to change his lifestyle and tackle the weight problem. He was determined to lead a more normal life and not die of health problems

related to obesity. He knew that obesity was in his genes but admits he was also an "emotional eater" and probably suffered from depression. After counseling and bariatric surgery, he was well on his way to a new life. The senator points out, however,

that surgery alone does not fix everything. Diet and exercise are key in maintaining his new life. He now monitors his diet very carefully and exercises regularly.

What has changed since his weight loss? "I have a new wardrobe. I can shop anywhere and buy off the rack. I sleep better. I can be more active. I can walk, instead of ride, in parades I'm invited to. I look younger and often get "carded" at restaurants to prove I'm over 21. My career has been helped. I feel better!"

His success is the envy of his family and has made them want to change their lifestyles. His mother is health conscious and tries to stay physically active. Senator Thomas is still working on his father! Other family members are inspired to make changes, but Senator Thomas points out they will only do it "when they are ready." He hopes his success will spur them on.

Senator Thomas is concerned about a health crisis "by our own doing." He believes obesity is something we each need to take responsibility for and take action to correct if we are overweight. Because of the epidemic of Type 2 diabetes, often caused by obesity, it is becoming increasingly important for people to take charge of their weight. Personal responsibility: it's something almost anyone can achieve. Senator Thomas affirms the results are well worth it!

APPENDIX OF ABBREVIATIONS

1. ACE Inhibitors - Angiotension Converting Enzyme Inhibitor
2. ARBs - Angiotension Receptor Blockers
3. CDC - Centers for Disease Control
4. CKD - Chronic kidney disease
5. CKF - Chronic kidney failure (the final stage of CKD; also know as ESRD)
6. ESRD - End stage renal disease
7. GFR - Glomerular filtration rate
8. HSAT - Healthy School Assesment Tool
9. KDOQI - Kidney Disease Outcomes Quality Initiative
10. MAFHK - Michigan Action for Helathy Kids
11. MDRD - Modification of Diet and Renal Disease
12. MDCH - Michigan Department of Community Health
13. NKFM - National Kidney Foundation of Michigan

