

## Short-term Outcomes of the Special Diabetes Program for Indians

The IHS National Diabetes Program was able to measure many short-term outcomes in its evaluation of the Special Diabetes Program for Indians.

**W**hat are short-term outcomes? Short-term outcomes describe programs and activities implemented to prevent and treat diabetes, such as system changes, clinical activities, availability of services and therapies, education services, nutrition and healthy eating programs, and physical activity and community awareness programs. Many of these programs and activities include a special emphasis on children and youth.

The IHS National Diabetes Program was able to measure many short-term outcomes in its evaluation of the Special Diabetes Program for Indians.

This section includes data on the following categories of **short-term outcomes**:

- Systems and diabetes program development
- Basic clinical care for people with diabetes
- Diabetes education, activities, and programs
- Community diabetes awareness and activities
- Focus on children and youth for diabetes prevention

Slides in this section:

Availability of **basic clinical exams increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Screening of children and youth for risk factors of developing diabetes occurred** with implementation of the Special Diabetes Program for Indians.

Availability of **newer medications and therapies for diabetes treatment increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Screening for diabetes occurred in a variety of locations** with implementation of the Special Diabetes Program for Indians.

Availability of **laboratory tests to assess diabetes control and complications increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

Use of **key elements of quality diabetes care increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Screening for diabetes increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Multidisciplinary diabetes team staffing increased** with implementation of the Special Diabetes Program for Indians.

**Adults and elders were screened** for a variety of risk factors for diabetes with implementation of the Special Diabetes Program for Indians.

Conduct of **community diabetes needs assessments increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

Availability of **nutrition education and counseling services by registered dietitians and public health nutritionists increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Partnership of tribal leaders and tribal members to develop diabetes-related activities increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Local community partnerships increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Partnerships with outside organizations increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Policies addressing diabetes prevention and care have increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Availability of organized diabetes education programs and support services in clinics and communities increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Availability of culturally appropriate diabetes education increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**A variety of methods for diabetes education** were provided with implementation of the Special Diabetes Program for Indians.

**Availability of continuing education opportunities for health care providers increased** with implementation of the Special Diabetes Program for Indians.

**A variety of traditional approaches** were implemented with the Special Diabetes Program for Indians.

**Many diabetes primary prevention activities were established** with implementation of the Special Diabetes Program for Indians.

**Community physical fitness activities increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Availability of community nutrition services increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Programs collaborated with the U.S. Department of Agriculture to improve nutrition** in AI/AN communities with implementation of the Special Diabetes Program for Indians.

**Diabetes awareness activities increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Diabetes primary prevention programs for children and youth increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Community-based healthy eating programs for children, youth and families increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2001

**Screening and management of overweight and obesity among children and youth increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Nutrition education services for children and youth increased** with implementation of the Special Diabetes Program for Indians. Comparison: Before 1998 vs 2002

**Physical activity programs for children and youth increased** significantly with implementation of the Special Diabetes Program for Indians. Comparison: 1998 vs 2002

**Breastfeeding promotion increased** with implementation of the Special Diabetes Program for Indians.

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## Availability of *basic clinical exams* increased with implementation of the *Special Diabetes Program for Indians*.

Comparison: Before 1998 vs 2002

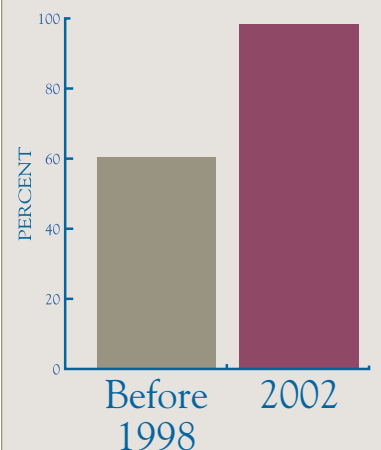
### Why is this important?

Quality care for people with diabetes includes yearly examination of the eyes, feet, and teeth to prevent complications.

- Comprehensive foot care programs can reduce amputations by 45–85%.<sup>1</sup>
- Detecting and treating diabetic eye disease with laser therapy can reduce severe vision loss by 50–60%.<sup>2</sup>
- Detecting and treating severe periodontal (gum) disease can prevent loss of teeth in up to 33% of people with diabetes.<sup>3</sup>

Regular foot examinations reduce the risk of chronic ulcerative lesions and amputations. Diabetes grant programs used funding to make foot examinations available to people with diabetes. In 2002, 96% of the diabetes grant programs reported availability of foot exams by a podiatrist or other foot specialist as compared with 60% before the SDPI.

### Availability of Foot Exams by Foot Specialist



Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002

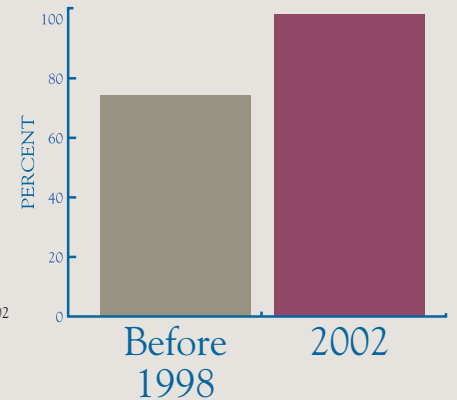


The Sonoma County Health Clinic in Santa Rosa, California is one of many tribal health facilities that dramatically reduced the number of amputations due to diabetes.

Regular eye examinations reduce the risk of retinopathy that can lead to blindness. Diabetes grant programs used funding to make eye examinations available to people with diabetes. In 2002, 97% of the diabetes grant programs reported availability of yearly eye exams by an eye specialist as compared with 75% before the SDPI.

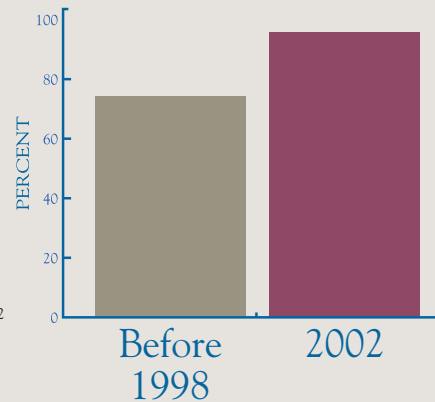
### Availability of Eye Exams by an Eye Specialist

Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



### Availability of Dental Exams by a Dentist

Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Regular dental examinations reduce the risk of severe periodontal disease and ultimately tooth loss. In 2002, 91% of the diabetes grant programs reported availability of yearly dental exams as compared with 74% before the SDPI.

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More people were able to get yearly examinations of their eyes, feet, and teeth to prevent complications.



## Availability of newer medications and therapies for diabetes treatment increased with implementation of the Special Diabetes Program for Indians.

Comparison: Before 1998 vs 2002

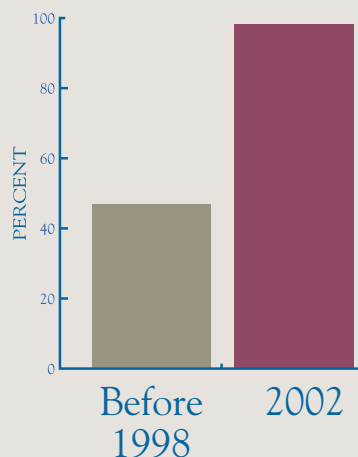


Phoebe Joe receives diabetes medicine at the Isleta Pueblo Clinic.

### Why is this important?

Medications that lower blood glucose, blood pressure, and blood lipids play an important role in diabetes management. A person with diabetes takes an average of 8–10 medications at any given time. The United Kingdom Prospective Diabetes Study and the Diabetes Control and Complications Study demonstrated that control achieved with medication can significantly reduce the risk of complications.<sup>4</sup> In addition, Medical Nutrition Therapy for people with diabetes has been shown to improve clinical outcomes and possibly decrease the cost of managing diabetes.<sup>5</sup> The Special Diabetes Program for Indians provided funding for programs to purchase newer medications that have been shown to be more effective.

### Availability of Newer Medications for Diabetes Treatment

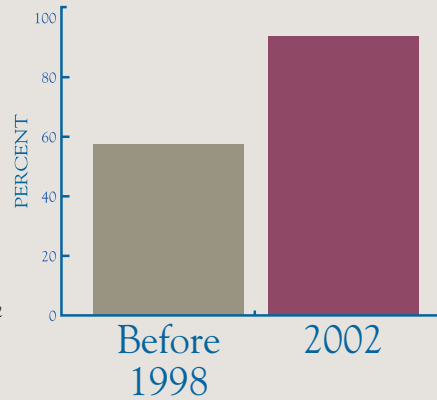


Before 1998 vs 2002,  $p < 0.05$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002

Newer medications improve glycemic control, thereby reducing the risk of the complications of diabetes. Diabetes grant programs used funding to make newer medications available to people with diabetes. In 2002, 96% of the diabetes grant programs reported increased availability of newer diabetes medications as compared with 48% before the SDPI.

### Availability of Newer Lipid Lowering Medications

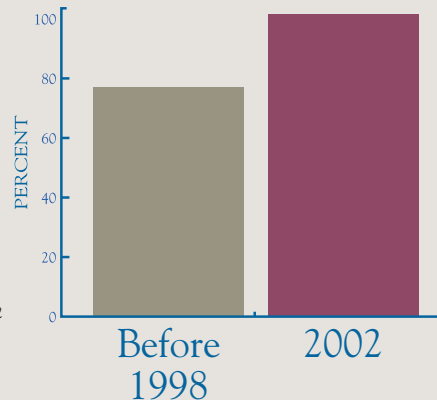
Before 1998 vs 2002,  $p=0.019$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Newer lipid lowering medications help decrease the risk of complications associated with cardiovascular disease by improving cholesterol and lipid levels. Diabetes grant programs used funding to make newer lipid lowering medications available to people with diabetes. In 2002, 96% of the diabetes grant programs reported availability of newer lipid lowering medications as compared with 58% before SDPI.

### Availability of Ace Inhibitors

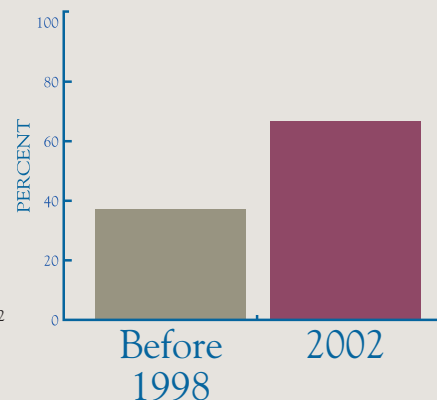
Before 1998 vs 2002,  $p=0.056$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



ACE inhibitors are medications used to control blood pressure and help prevent or delay progression to diabetic kidney disease. Diabetes grant programs used funding to make ACE inhibitors available for treatment of people with diabetes. In 2002, 97% of the diabetes grant programs reported increased availability of ACE inhibitors as compared with 76% before the SDPI.

### Availability of Medical Nutrition Therapy Services

Before 1998 vs 2002,  $p<0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Medical Nutrition Therapy improves clinical outcomes and likely decreases the cost of managing diabetes. Diabetes grant programs used funding to make Medical Nutrition Therapy services available to people with diabetes. In 2002, 68% of the diabetes grant programs reported increased availability of Medical Nutrition Therapy services as compared with 36% before the SDPI.

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## *Availability of laboratory tests to assess diabetes control and complications increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

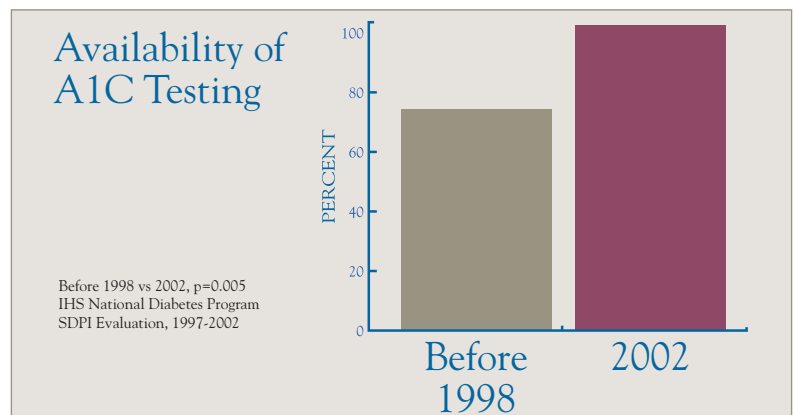


The diabetes grant programs increased the number of people who received regular blood screening, including checks of A1C.

### *Why is this important?*

Performing regular laboratory testing on people with diabetes is an important part of quality diabetes care. Recommended laboratory tests include:

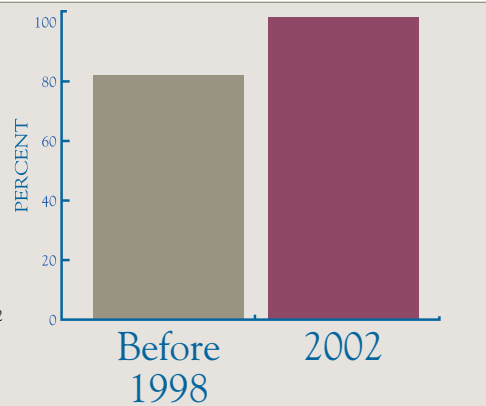
- A1C test – In general, for every 1% drop in the absolute value of A1C, the risk of microvascular complications is reduced by 40%.<sup>6</sup>
- Cholesterol and blood lipids – Improved control reduces cardiovascular complications by 20–50%.<sup>7</sup>
- Urinalysis/microalbumin – Detecting and treating early diabetic kidney disease can reduce the development of kidney failure by 30–70%.<sup>8</sup>



A1C measures glycemic control over the past 2–3 months. Diabetes grant programs used funding to increase the availability of A1C testing. In 2002, 99% of the diabetes grant programs reported availability of A1C testing as compared with 72% before the SDPI.

## Availability of Lipid Testing

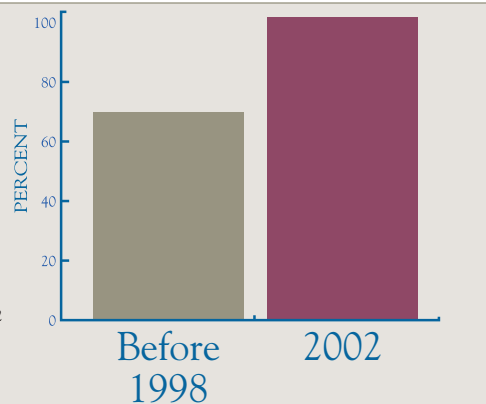
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Tests for lipids, such as cholesterol, triglycerides, and LDL, are an important part of the risk assessment for cardiovascular disease. Diabetes grant programs used funding to increase the availability of lipid testing. In 2002, 99% of the diabetes grant programs reported availability of lipid testing as compared with 83% before the SDPI.

## Availability of Microalbumin Testing

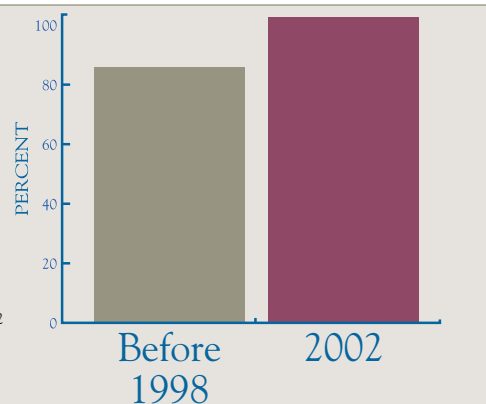
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



A microalbumin test measures very small amounts of protein in the urine. It is an important way to check for early, potentially reversible, kidney disease. Diabetes grant programs used funding to increase the availability of microalbumin testing. In 2002, 98% of the diabetes grant programs reported availability of microalbumin testing as compared with 70% before the SDPI.

## Availability of Urinalysis Testing

Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Urinalysis is an important screening test to assess urine protein level and the risk of renal disease. Diabetes grant programs used funding to increase the availability of urinalysis testing. In 2002, 99% of the diabetes grant programs reported availability of urinalysis testing as compared with 86% before the SDPI.

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## Screening for diabetes increased with implementation of the Special Diabetes Program for Indians.

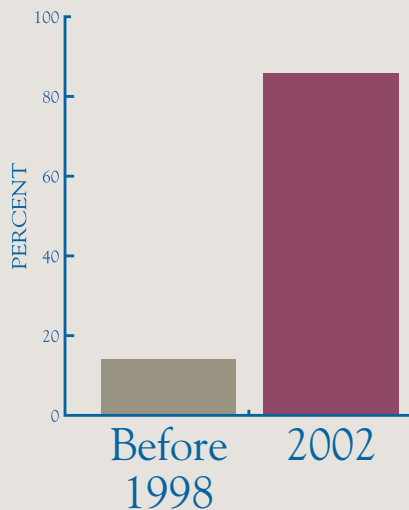
Comparison: Before 1998 vs 2002

### Why is this important?

Screening programs to identify people who have diabetes or are at-risk for developing diabetes is an important step in preventing and treating diabetes.

- Screening provides an opportunity to encourage individuals to make lifestyle changes that can prevent or delay the onset of diabetes, as demonstrated in the Diabetes Prevention Program.<sup>9</sup>
- Screening provides an opportunity to link people with diabetes to effective treatment programs.
- Over one-third of people with diabetes do not know that they have the disease; screening provides an opportunity to diagnose diabetes as early as possible to treat and prevent or delay complications.<sup>10</sup>

### Screening for Diabetes and Pre-diabetes Increased



Before 1998 vs 2002,  $p < 0.001$

IHS National Diabetes Program SDPI Evaluation, 1997-2002

Increased screening for diabetes and pre-diabetes in AI/AN communities occurred with implementation of the SDPI. In 2002, 86% of the diabetes grant programs reported that general screening for diabetes and pre-diabetes was available as compared with 14% before the SDPI.

### Prevention of Diabetes Now a Reality

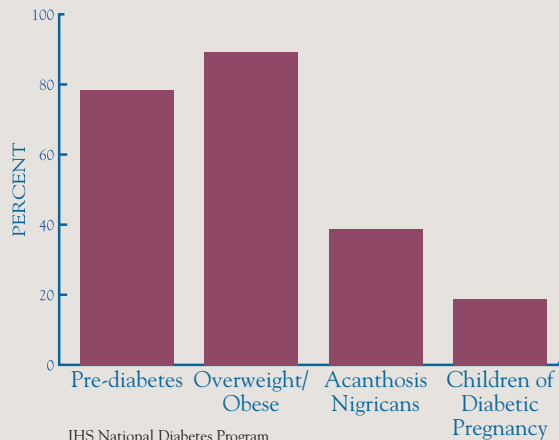
The Diabetes Prevention Program, a large clinical study published in the NEJM in February 2002, demonstrated that the onset of diabetes can be prevented or delayed through lifestyle changes or the use of medication. The goal of the study was to determine if diabetes could be prevented in people who are at high-risk for developing diabetes (i.e., individuals with impaired

glucose tolerance or pre-diabetes). Participants who made lifestyle changes (eating fewer calories and walking 30 minutes 5 times a week) reduced their risk of getting type 2 diabetes by 58%. Those on metformin, a medicine used to treat diabetes, reduced their risk of getting type 2 diabetes by 31%.<sup>11</sup> Other large studies have shown similar results.<sup>12</sup>

These positive results provide hope to AI/AN communities that the epidemic of diabetes can be stopped. To prevent diabetes by implementing the results of these studies, communities must first find those individuals who are at highest risk. This is accomplished through widespread screening efforts.

*Adults and elders were screened for a variety of risk factors for diabetes with implementation of the Special Diabetes Program for Indians.*

### Screening Adults (26-54 years) at High Risk for Diabetes



### Why is this important?

Screening for the risks of diabetes in adults and elders identifies people at an earlier stage, which allows for intervention to prevent complications.<sup>13</sup> Some of the risk factors for diabetes in adults and elders are different than in children and youth.

In 2002, the diabetes grant programs reported that they screened adults (aged 26–54 years) for the following major risk factors:

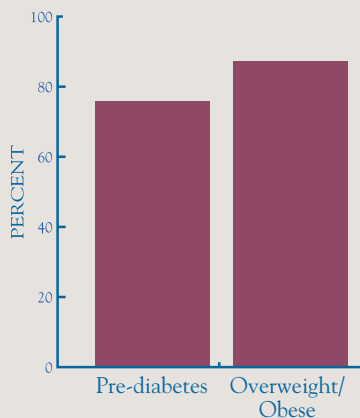
- 78% screened for pre-diabetes
- 91% screened for overweight and obesity
- 39% screened for acanthosis nigricans
- 18% screened for offspring of a diabetic pregnancy

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### Screening Elders (55+ Years) at High Risk for Diabetes



Elders have higher rates of diabetes. In 2002, the diabetes grant programs reported that they screened elders (aged 55 years and older) for the following major risk factors:

- 76% screened for pre-diabetes
- 88% screened for overweight and obesity

Screenings took place at many locations, and included people of all age groups.



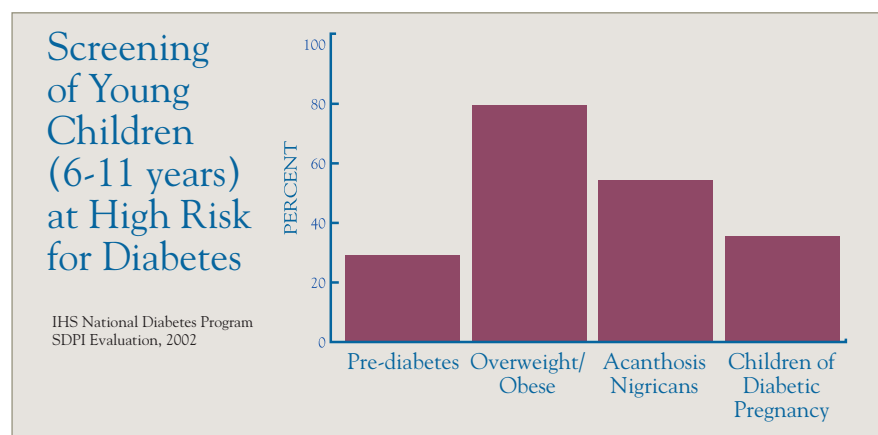
*Screening of children and youth for risk factors for developing diabetes occurred with implementation of the Special Diabetes Program for Indians.*



The “Cherokee Choices” program at the Eastern Band of Cherokee Tribe screens youth for diabetes and teaches them how to prevent it.

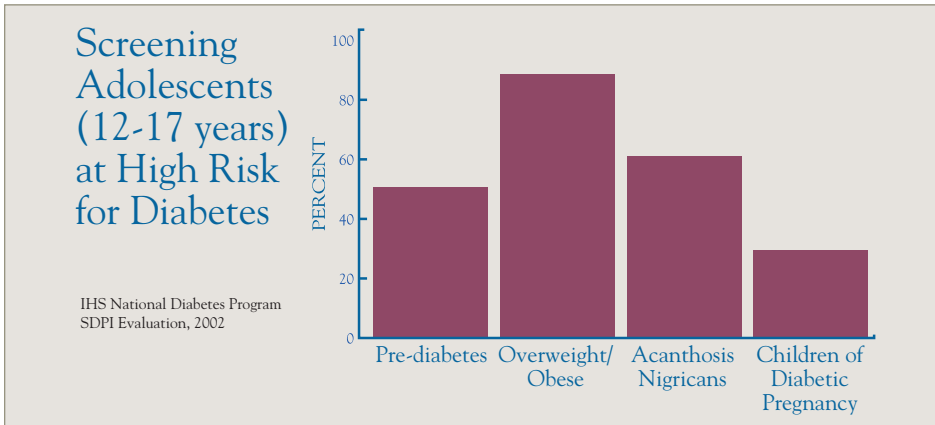
*Why is this important?*

Screening for the risks of diabetes in children and youth identifies problems early on and allows for prevention and intervention. Some of the risk factors for diabetes in children and youth are different than in the adult population.<sup>14</sup>



In 2002, the diabetes grant programs reported that they now screen young children (aged 6–11 years) for the following major risk factors:

- 29% screened for pre-diabetes
- 80% screened for overweight and obesity
- 54% screened for acanthosis nigricans
- 36% screened for offspring of a diabetic pregnancy



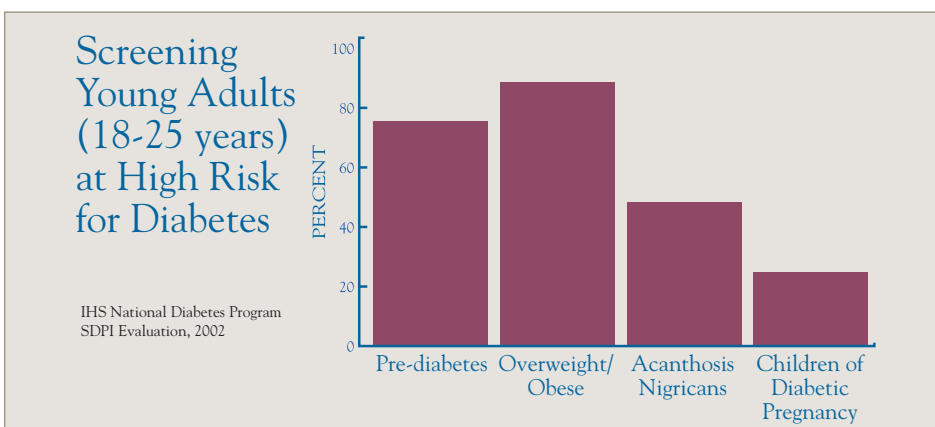
In 2002, the diabetes grant programs reported that they screened adolescents (aged 12–17 years) for the following major risk factors:

- 51% screened for pre-diabetes
- 88% screened for overweight and obesity
- 61% screened for acanthosis nigricans
- 32% screened for offspring of a diabetic pregnancy

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In 2002, the diabetes grant programs reported that they screened young adults (aged 18–25 years) for the following major risk factors:

- 75% screened for pre-diabetes
- 88% screened for overweight and obesity
- 47% screened for acanthosis nigricans
- 24% screened for offspring of a diabetic pregnancy

## Screening for diabetes occurred in a variety of locations with implementation of the Special Diabetes Program for Indians.

Diabetes teams were established including this one at the Sioux Sanatorium Hospital in Rapid City, South Dakota.

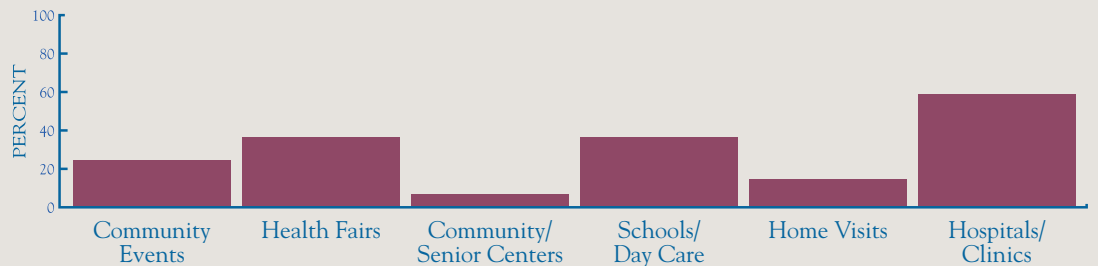


### Why is this important?

Screening should be done in an efficient and convenient way. Because many AI/ANs do not access medical clinics on a regular basis, it is important to provide screening for diabetes in other community settings. It is also important to focus screening locations based on age group as community members of different ages frequent different settings in AI/AN communities.

### Where Screening for Diabetes Occurs in Young Children (6-11 years)

IHS National Diabetes Program SDPI Evaluation, 2002

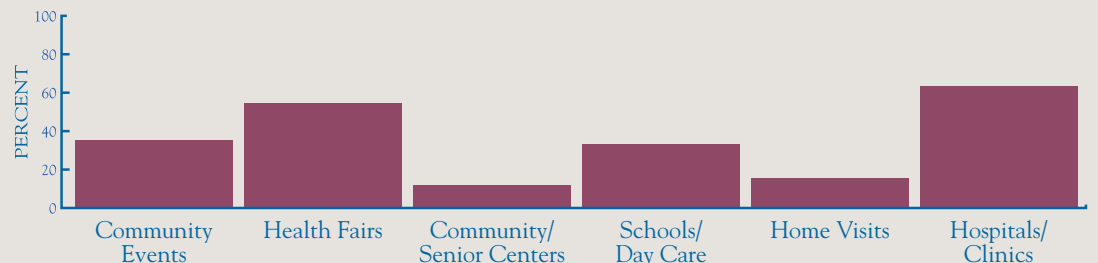


**Locations for screening young children:** In 2002, the diabetes grant programs reported that they screened young children (aged 6–11 years) for diabetes at the following locations:

- 22% screened young children at community events
- 37% screened at health fairs
- 7% screened at community and senior centers
- 37% screened at schools and day cares
- 13% screened at home visits
- 59% screened at hospitals and clinics

### Where Screening for Diabetes Occurs in Adolescents (12-17 years)

IHS National Diabetes Program SDPI Evaluation, 2002

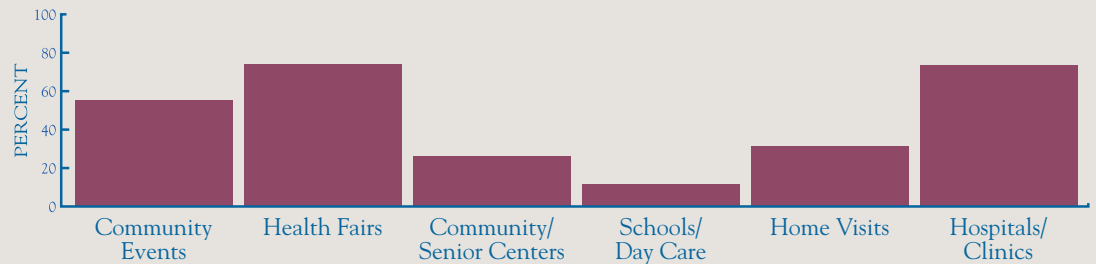


**Locations for screening adolescents:** In 2002, the diabetes grant programs reported that they screened adolescents (aged 12–17 years) for diabetes at the following locations:

- 36% screened adolescents at community events
- 55% screened at health fairs
- 12% screened at community and senior centers
- 33% screened at schools and day cares
- 15% screened at home visits
- 62% screened at hospitals and clinics

## Where Screening for Diabetes Occurs in Young Adults (18-25 years)

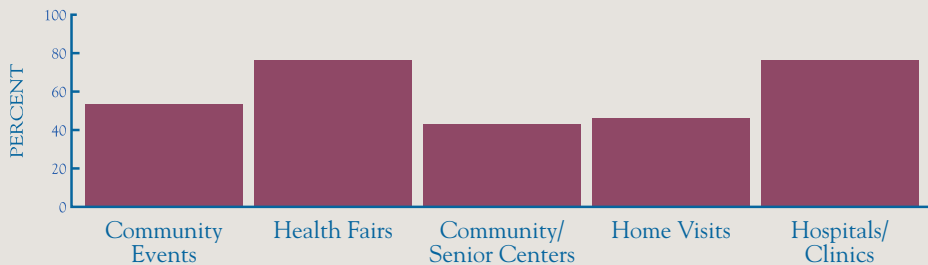
IHS National Diabetes Program SDPI Evaluation, 2002



**Locations for screening young adults:** In 2002, the diabetes grant programs reported that they screened young adults (aged 18–25 years) for diabetes at the following locations:

- 56% screened young adults at community events
- 75% screened at health fairs
- 25% screened at community and senior centers
- 12% screened at schools and day cares
- 31% screened at home visits
- 73% screened at hospitals and clinics

## Where Screening for Diabetes Occurs in Adults (26-54 years)



IHS National Diabetes Program SDPI Evaluation, 2002

**Locations for screening adults:** In 2002, the diabetes grant programs reported that they screened adults (aged 26-54 years) for diabetes at the following locations:

- 56% screened adults at community events
- 76% screened at health fairs
- 41% screened at community and senior centers
- 46% screened at home visits
- 76% screened at hospitals and clinics

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## Where Screening for Diabetes Occurs in Elders (55+ years)



IHS National Diabetes Program SDPI Evaluation, 2002

**Locations for screening elders:** In 2002, the diabetes grant programs reported that they screened elders (aged 55 years and older) for diabetes at the following locations:

- 55% screened elders at community events
- 74% screened at health fairs
- 65% screened at community and senior centers
- 59% screened at home visits
- 75% screened at hospitals and clinics

## *Use of key elements of quality diabetes care increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

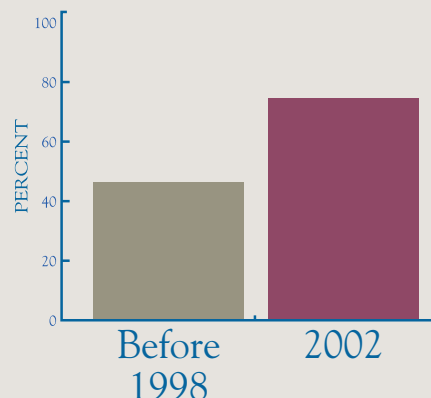
A systems approach to caring for people with diabetes results in better outcomes. A systems approach includes certain key elements:

- Diabetes registry
- Diabetes team
- Diabetes clinic
- Use of a diabetes flowsheet<sup>15</sup>

A recent independent review of the Special Diabetes Program for Indians using the Chronic Care Model Assessment of Chronic Illness Care (Version 3.5) revealed that the IHS National Diabetes Program and the SDPI scored in the highest level for most of the model's components.<sup>16</sup>

### Use of Diabetes Flow Sheet

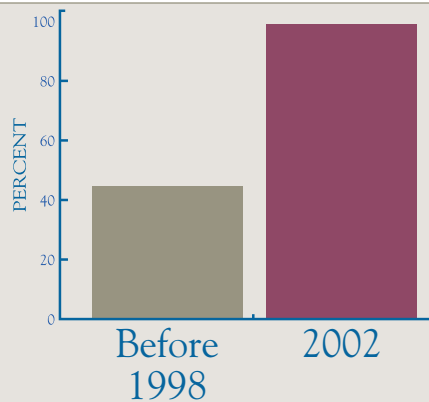
Before 1998 vs 2002,  $p < 0.05$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



Use of diabetes flowsheets improves clinic efficiency and accuracy by organizing complex information in the medical record so that it is accessible to multiple providers. Diabetes grant programs used funding to implement use of diabetes flowsheets. In 2002, 77% of the diabetes grant programs reported using diabetes flowsheets as compared with 46% before the SDPI.

### Use of a Diabetes Registry to Count and Track People with Diabetes

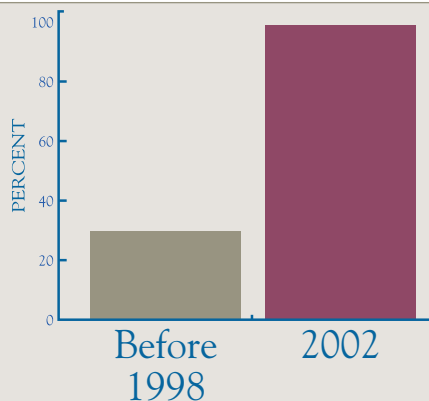
Before 1998 vs 2002,  $p < 0.02$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Use of diabetes registries is an important way to track people with diabetes in a community and determine whether these individuals have received recommended diabetes services. Diabetes grant programs used funding to establish diabetes registries. In 2002, 98% of the diabetes grant programs reported using a diabetes registry as compared with 44% before the SDPI.

### Diabetes Team to Provide Organized Clinical Care

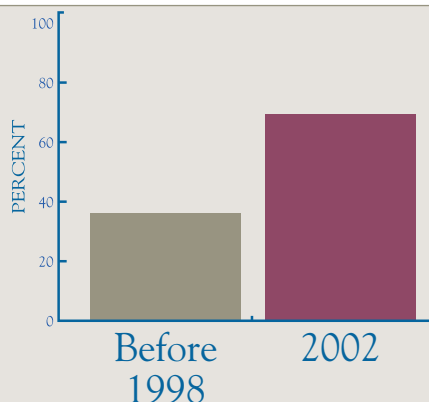
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



A diabetes team improves care by providing a multidisciplinary, comprehensive approach. Diabetes grant programs used funding to establish diabetes teams. In 2002, 94% of the diabetes grant programs reported having a diabetes team as compared with 29% before the SDPI.

### Diabetes Clinic to Provide Organized Clinical Care

Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Diabetes clinics enhance diabetes care by improving efficiency and convenience for the patient. Diabetes grant programs used funding to establish diabetes clinics. In 2002, 69% of the diabetes grant programs reported having a diabetes clinic as compared with 37% before the SDPI.



## *Multidisciplinary diabetes team staffing increased with implementation of the Special Diabetes Program for Indians.*

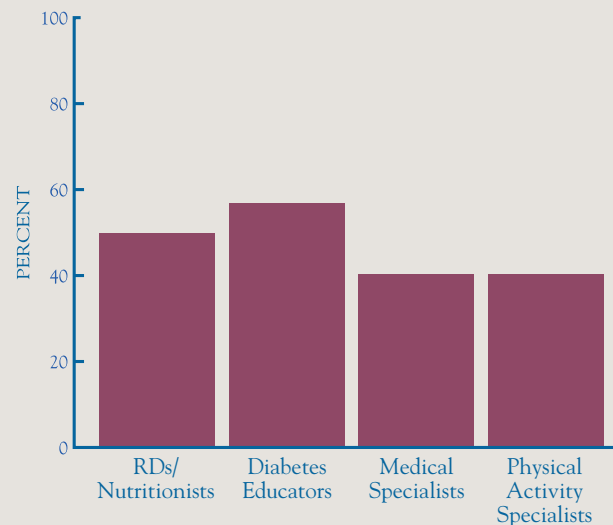
### *Why is this important?*

Because diabetes is a chronic condition, it requires ongoing medical care and patient self-management education to prevent acute and long-term complications. Diabetes medical care and self-management education is most effective when delivered by a multidisciplinary health care team. This health care team should include, but is not limited to, physicians, nurses, dietitians, and mental health specialists with expertise and a special interest in diabetes.<sup>17</sup>

In 2002, the diabetes grant programs reported that they were able to enhance their multidisciplinary diabetes teams by adding one or more key staff:

- 49% of the diabetes grant programs hired Registered Dietitians or Public Health Nutritionists
- 58% hired diabetes educators
- 40% hired medical specialists (e.g., podiatrists)
- 40% hired physical activity specialists

### Programs Adding New Positions to Diabetes Teams by Type



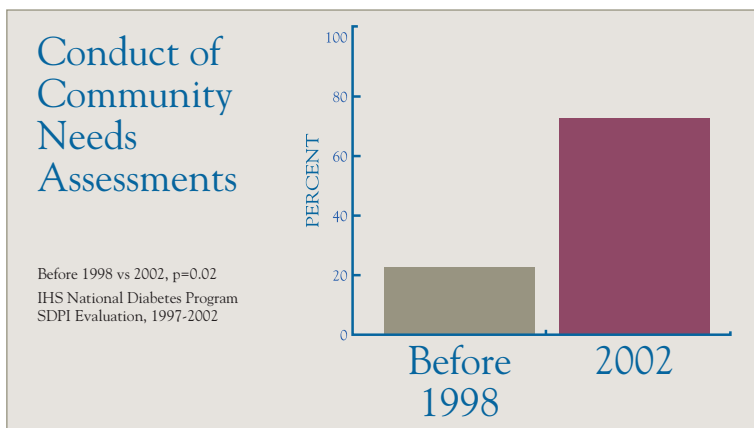
## Conduct of community diabetes needs assessments increased with implementation of the Special Diabetes Program for Indians.

Comparison: Before 1998 vs 2002

### Why is this important?

Assessment is the first step in program planning.<sup>18</sup> An assessment tool was included in the Special Diabetes Program for Indians Request for Grant Application (RFA) beginning with the FY 2001 RFA. This community assessment tool included questions on key activities known to be indicators of successful diabetes programs. The purpose of the tool was to help communities

identify diabetes-related needs so that they could plan for how to best use their grant funds.



Diabetes grant programs used funding to conduct community diabetes needs assessments. In 2002, 73% of the diabetes grant programs reported conducting a community diabetes needs assessment as compared with 23% before the SDPI.

### Community diabetes needs assessments can be used to:

- Identify the groups of people most affected by diabetes in AI/AN communities
- Identify the strengths of current diabetes programs and gaps in services
- Discover unmet community needs
- Determine the highest priority or the most important needs of diabetes grant programs and local communities
- Aid decision-making on the use of diabetes grant funding to meet community needs, such as plans to support clinical services

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More health programs collaborated with other tribal programs to reach more people.

## *Availability of nutrition education and counseling services by registered dietitians and public health nutritionists increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Randomized clinical trials, such as the Diabetes Control and Complications Trial and the United Kingdom Prospective Diabetes Study, have demonstrated two key points related to nutrition:

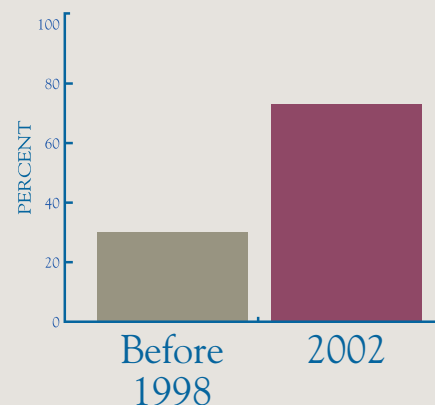
- Medical Nutrition Therapy (MNT) is an essential part of successful diabetes management
- Registered Dietitians, along with the patient, family, and other clinical providers, play a key role in clinical decision-making for quality diabetes care<sup>19</sup>



Tony Grant of the Salish Kootenai Tribe says he used to be a “meat and potatoes man.” After learning about good nutrition, he started eating more fresh vegetables and fruits, and lost 70 pounds.

### Registered Dietitian or Public Health Nutritionist on Diabetes Team

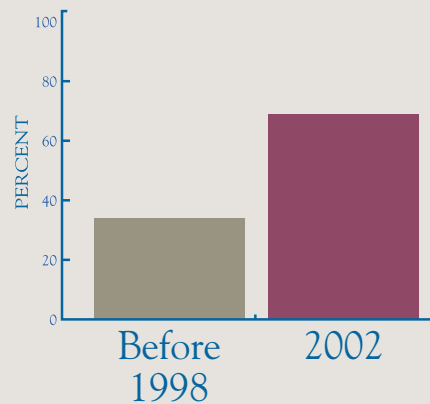
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



Diabetes grant programs used funding to increase the numbers of Registered Dietitians (RDs) and Public Health Nutritionists (PHNs) on their diabetes teams. In 2002, 72% of the diabetes grant programs reported the addition of RDs or PHNs to their diabetes teams as compared with 30% before the SDPI.

### Availability of Medical Nutrition Therapy Services for Persons with Diabetes and/or at Risk for Diabetes

Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Diabetes grant programs used funding to increase Medical Nutrition Therapy (MNT) services for people with diabetes or at-risk for diabetes. In 2002, 68% of the diabetes grant programs reported the availability of MNT services for people with diabetes or at-risk for diabetes as compared with 36% before the SDPI.

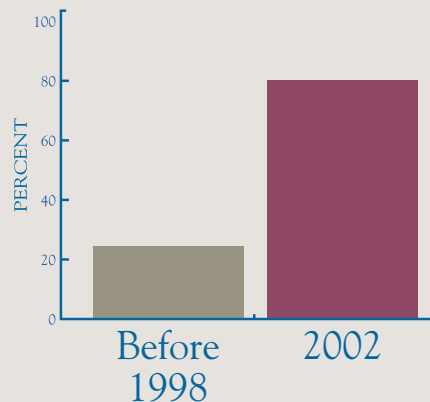
## CHAPTER FOUR

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### Availability of Nutrition Activities/Classes for Family Members of People with Diabetes

Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Diabetes grant programs used funding to increase the availability of nutrition activities and classes for family members of people with diabetes. In 2002, 80% of the diabetes grant programs reported that they had developed nutrition activities or classes for family members of people with diabetes as compared with 24% before the SDPI.

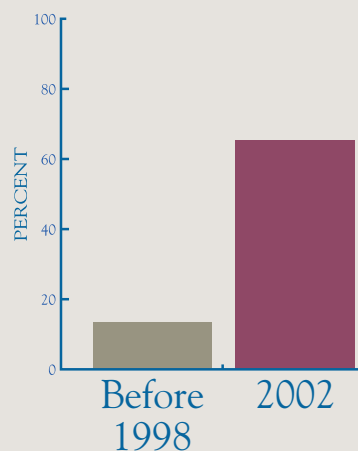
*Tribal leaders and tribal members partnership to develop diabetes-related activities increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

*Why is this important?*

Tribes play a unique role in the delivery of health services in AI/AN communities. Health care systems that incorporate input from all tribal members—including tribal leaders, community members, and health care workers—are often the best suited for addressing the unique needs of AI/AN communities.<sup>20</sup> In addition, health care systems designed with input from the local tribal community build community capacity, have a strong participant base, and incorporate tribal involvement in defining and resolving needs.<sup>21</sup>

Partnership of Tribal Leaders and Tribal Members to Develop Diabetes-Related Activities



Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002

Involvement of tribal leaders and tribal health directors in diabetes-related issues ensures that local tribal priorities are incorporated into diabetes planning. In 2002, 65% of the diabetes grant programs reported increased participation of tribal leaders and tribal health directors in the planning and implementation of diabetes activities through community advisory boards, tribal councils, and tribal forums as compared with 14% before the SDPI.

## Local community partnerships increased with implementation of the Special Diabetes Program for Indians.

Comparison: Before 1998 vs 2002

### Why is this important?

Partnerships and collaborations strengthen the public health infrastructure for addressing diabetes in AI/AN communities. Through the Special Diabetes Program for Indians, AI/AN communities have enhanced the already extensive Indian health system diabetes network by collaborating with local community organizations, such as tribal programs, social service programs, and cultural and religious organizations.

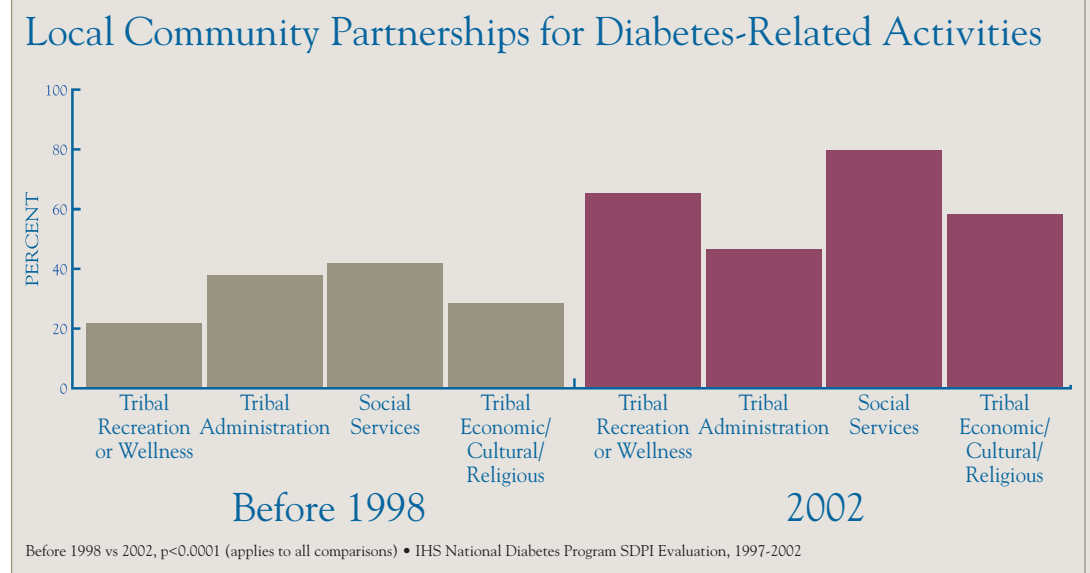
Collaboration with local community partners has strengthened the local public health infrastructure to ensure the success of the SDPI. For example, in 2002:

- 66% of the diabetes grant programs collaborated with local tribal recreation or wellness programs as compared with 24% before the SDPI.
- 49% of the diabetes grant communities worked with local tribal health boards, tribal councils, and other tribal administrative entities on diabetes-related activities as compared with 38% before the SDPI.
- 80% of the diabetes grant programs worked with social services programs, such as drug and alcohol programs, elder outreach, and child care services, as compared with 45% before the SDPI.
- 59% of the diabetes grant programs worked with tribal economic, cultural, and religious programs and organizations as compared with 29% before the SDPI.

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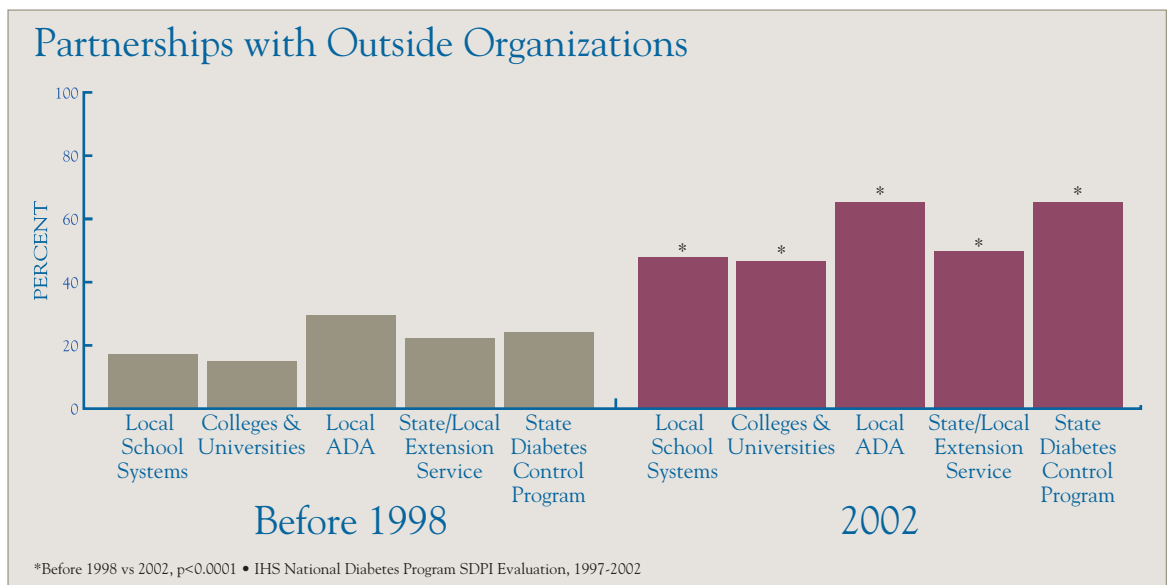


## *Partnerships with outside organizations increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Partnerships and collaborations strengthen the public health infrastructure for addressing diabetes in AI/AN communities. Through collaboration with outside partner organizations such as state diabetes programs, colleges and universities, and advocacy organizations like the American Diabetes Association and Juvenile Diabetes Research Foundation, AI/AN communities have enhanced the already extensive Indian health system diabetes network.



Collaboration and partnerships have strengthened the public health infrastructure to ensure the success of the SDPI. For example, in 2002:

- 49% of the diabetes grant programs collaborated with local school systems on diabetes-related activities as compared with 17% before the SDPI.
- 48% of the diabetes grant programs worked with colleges or universities as compared with 16% before the SDPI.
- 66% of the diabetes grant programs collaborated with local American Diabetes Association affiliates as compared with 29% before the SDPI.
- 52% of the diabetes grant programs worked with state and local cooperative extensions as compared with 22% before the SDPI.
- 66% of the diabetes grant programs worked with state diabetes programs as compared with 23% before the SDPI.

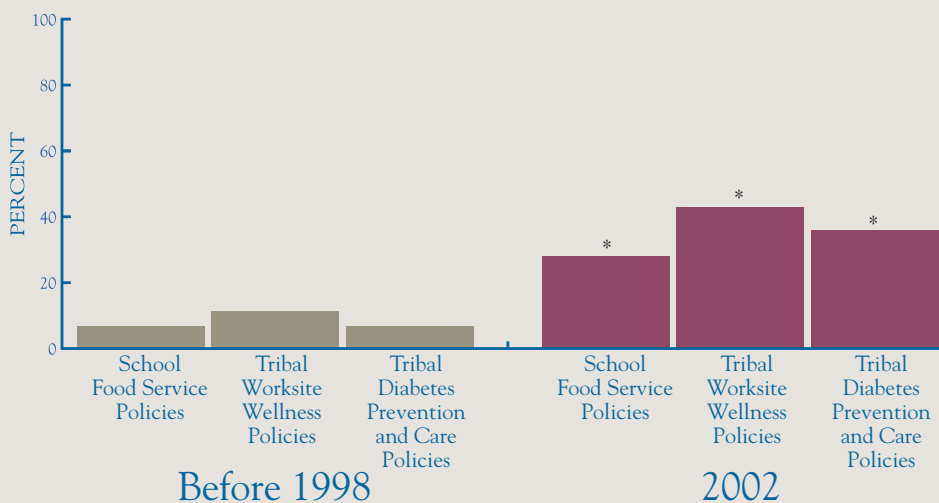
## *Policies addressing diabetes prevention and care have increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Funding from the Special Diabetes Program for Indians provided AI/AN communities with the opportunity to design diabetes prevention and treatment efforts and health care systems that best meet their needs. The diabetes grant programs have developed plans with community input to promote primary prevention of diabetes and optimal diabetes care. This is an important principle found in the health promotion literature.<sup>22</sup>

### Policy and Organizational Changes in SDPI Communities Related to Diabetes



\* Before 1998 vs 2002,  $p < 0.0001$  • IHS National Diabetes Program SDPI Evaluation, 1997-2002

**POLICY AND ORGANIZATIONS CHANGES:** New policies related to school food service, tribal worksite wellness, and tribal administrative diabetes prevention and care policies have increased with the implementation of the SDPI. In 2002:

- 32% of the diabetes grant programs reported changes in policies related to school food services, including guidance on healthy food choices in vending machines and cafeteria services, as compared with 6% before the SDPI.
- 43% of the diabetes grant programs reported changes in worksite wellness policies related to tribal staff, such as a policies encouraging physical activity during the work day, as compared with 13% before the SDPI.
- 35% of the diabetes grant programs reported changes in tribal administrative policies on diabetes prevention and care activities as compared with 6% before the SDPI.

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The Port Gamble S'Klallam Tribe is one of many to implement a policy allowing paid breaks for physical, mental, and spiritual health.



## *Availability of organized diabetes education programs and support services in clinics and communities increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

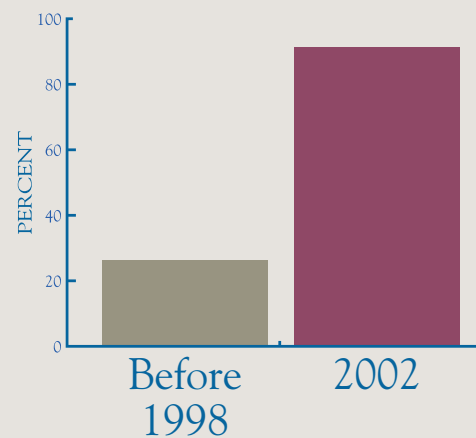
Diabetes self-management education is a cornerstone of effective diabetes care. The availability of individual and group diabetes education classes, especially those that employ support groups and behavioral interventions, provides an opportunity for people with diabetes and their families to access diabetes self-management education.<sup>23</sup>



Yvonne Stovall (Pima, Maricopa, Ute) and Janelle Blaine (Pima/Tohono O'odham) say support from clinic staff helped them keep attending diabetes prevention meetings. "The staff always tried to find ways to motivate me, but were never pushy," says Yvonne. "The staff were always there. They always listened. They made me feel like I was not alone," says Janelle.

### Availability of an Organized Diabetes Education Program

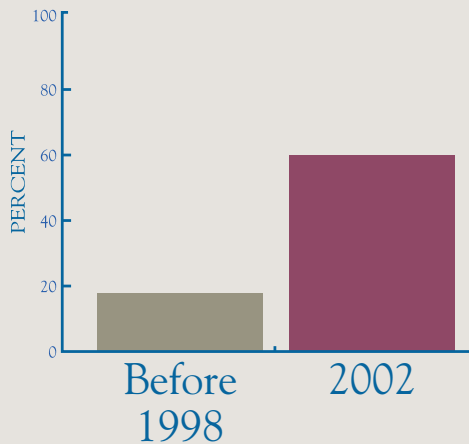
Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



In 2002, 90% of the diabetes grant programs reported having an organized diabetes education program in a clinic or community setting as compared with 27% before the SDPI.

## Availability of a Diabetes Support Group

Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002

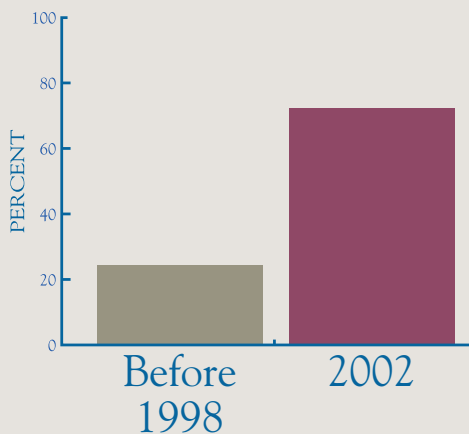


Support groups encourage people with diabetes to improve self-care through mutual sharing and encouragement, modeling and positive reinforcement, and setting personal goals. In 2002, 60% of the diabetes grant programs reported that diabetes support groups were available in their communities as compared with 17% before the SDPI.

### Short-Term Outcomes

## Availability of Community Behavioral Health Program Services to People with Diabetes

Before 1998 vs 2002,  $p < 0.0001$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



The availability of behavioral interventions, such as classes or individual counseling on stress management, coping skills, biofeedback, and self-esteem, contributes to diabetes care. In 2002, 72% of the diabetes grant programs reported that community behavior health programs were available in their communities as compared with 24% before the SDPI.

## *Availability of culturally appropriate diabetes education increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Culture is a key determinant of behavior that cannot be separated from health and that may have a profound effect on the way an individual defines and experiences health and disease. Because culture and health are intertwined and inseparable concepts, it is important to integrate culture and health messages in order to have interventions that may be more acceptable, better understood, and more effective. Most interventions have been developed for the general population and are often not culturally suitable for minority populations.

Content and style of the interventions must incorporate:

- Videos, pictures, and artwork that include faces of AI/AN individuals to reflect both culture and community needs.<sup>24</sup>
- Traditional AI/AN storytelling that conveys information about diabetes, traditional foods and physical activities.
- Videos featuring AI/AN individuals engaging in healthy behaviors, making interactive materials culturally relevant with values pertinent to AI/AN communities.<sup>25</sup>

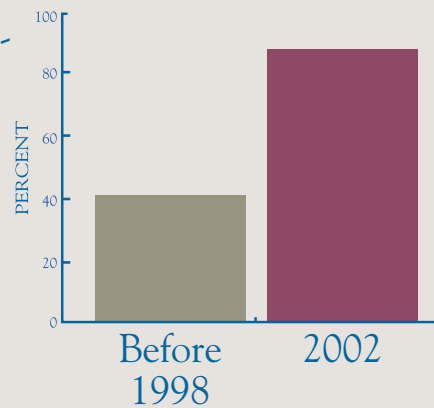
**“Dancing my Native dance keeps me physically and spiritually healthy. There is diabetes in my family. I think being physically fit and being at peace is the key to preventing diabetes.”**

Florentino Barril, (Tlingit)



### Availability of Culturally-Appropriate Diabetes Educational Materials

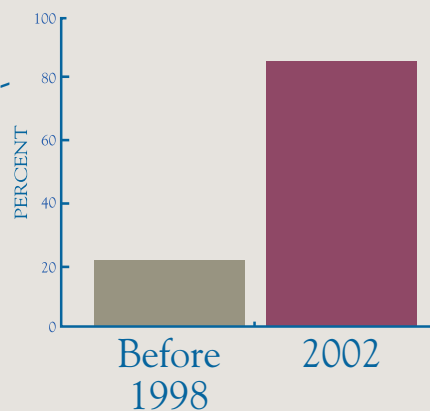
Before 1998 vs 2002,  $p < 0.03$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



In 2002, 85% of the diabetes grant programs reported having access to culturally appropriate diabetes education materials as compared with 43% before the SDPI.

### Availability of a Budget for Purchasing Culturally-Appropriate Diabetes Educational Materials

Before 1998 vs 2002,  $p < 0.03$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002



Access to culturally appropriate diabetes educational materials is important. In 2002, 87% of the diabetes grant programs reported having a budget to purchase culturally appropriate education materials as compared with 22% before the SDPI.

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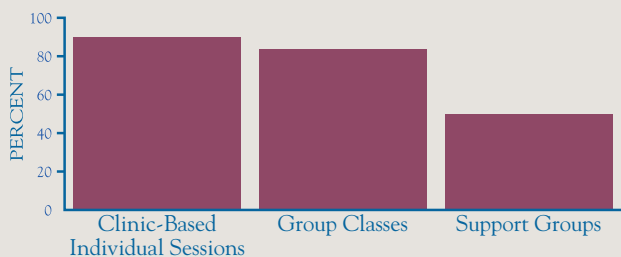
#### Short-Term Outcomes

*A variety of methods for diabetes education were provided with implementation of the Special Diabetes Program for Indians.*

*Why is this important?*

Individuals have preferred styles of learning, such as reading, listening, or participating in discussions. The availability of different styles of learning and individual education and literacy levels affect an individual's willingness to participate in and learn from an education program.

### Settings Used for Diabetes Education

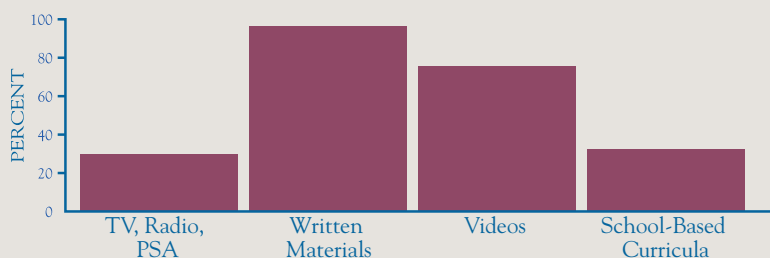


IHS National Diabetes Program SDPI Evaluation, 2002

In 2002, the diabetes grant programs reported that they provided:

- Clinic-based individual sessions (90%).
- Group classes (84%).
- Support groups (50%).

### Types of Diabetes Education Materials Used



IHS National Diabetes Program SDPI Evaluation, 2002

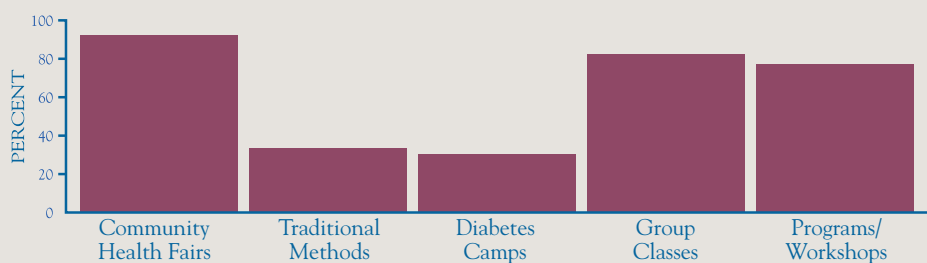
In 2002, the diabetes grant programs reported that they provided diabetes education through the use of:

- TV, radio, and public service announcements (29%).
- Written materials (96%).
- Videos (77%).
- School-based curricula (35%).

In 2002, the diabetes grant programs reported that they used the following methods to provide diabetes education in AI/AN communities:

- Community health fairs (93%).
- Traditional methods, such as stories and talking circles (33%).
- Diabetes camps (27%).
- Group classes, such as fitness, cooking, and stress management classes (81%).
- Programs and workshops held in homes, cultural centers, alcohol programs, and elderly centers (76%).

### Community-Based Diabetes Education Efforts



IHS National Diabetes Program SDPI Evaluation, 2002

## Availability of continuing education opportunities for health care providers increased with implementation of the Special Diabetes Program for Indians.

### Why is this important?

To provide quality diabetes care and education services, health care providers and educators must be competent and knowledgeable.

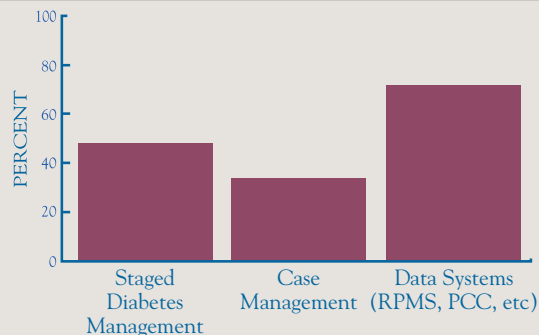
- For current credentialing, health care providers must fulfill continuing education requirements.
- The American Association of Diabetes Educators' Standards of Practice for Diabetes Educators encourage diabetes educators to pursue continuing education to acquire current knowledge and skills.
- The American Diabetes Association's National Standards for Diabetes Self-Management Education require providers to obtain continuing education in diabetes management, behavioral interventions, teaching and learning skills, and counseling skills.

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### Types of Education Provided to Health Professionals

IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



### Short-Term Outcomes

In 2002, the diabetes grant programs reported that they obtained diabetes-related continuing education programs for health professionals:

- 47% of the diabetes grant programs provided Staged Diabetes Management education
- 35% provided case management education
- 71% provided education on data systems, such as RPMS and PCC

To provide quality diabetes care, health professionals need access to diabetes-related continuing education. In 2002, 86% of the diabetes grant programs reported that their health professionals were able to access diabetes-related continuing education programs as compared with 34% before the SDPI. In 2002, 83% of the diabetes grant programs reported that their paraprofessionals were able to access diabetes-related continuing education programs as compared with 24% before the SDPI.

### Availability of Diabetes-Related Continuing Education Programs

Before 1998 vs 2002,  $p=0.0009$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



*A variety of traditional approaches were implemented through the Special Diabetes Program for Indians.*

*Why is this important?*

Traditions are key to a healthier community.

**STORYTELLING:** Storytelling is a powerful tool in conveying positive messages about diabetes prevention and treatment.<sup>26</sup>

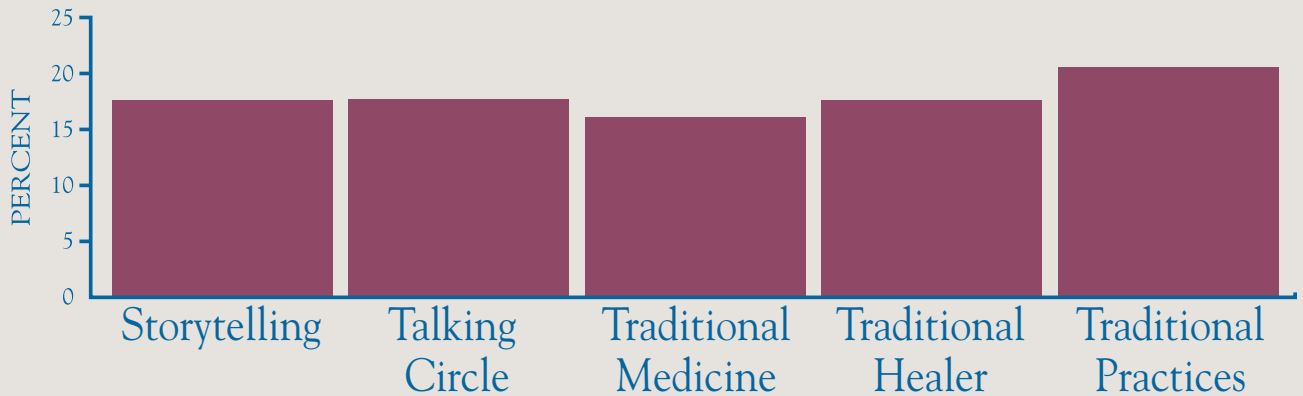
**TALKING CIRCLES:** Most Tribes have a strong oral tradition, often sharing stories of tribal history, ceremony, and culture in group settings. Talking circles, groups in which tribal members sit in a large circle to discuss community concerns, remain an important part of many AI/AN communities today. A study funded by the National Institutes of Health among Aberdeen Area tribes found that people who participated in talking circles were less likely to have a fatalistic attitude toward diabetes. These individuals were also more likely to have general knowledge of the disease and were healthier individuals.<sup>27</sup>

**TRADITIONAL PRACTICES:** Traditional practices describe the healing practices and beliefs of AI/AN communities. True traditional practice is a profound system that is far more deeply rooted and complex than is generally understood. The most important characteristic of traditional practice is the use of religion and spirituality.<sup>28</sup>

**TRADITIONAL HEALERS AND TRADITIONAL**

**MEDICINE:** A traditional healer is an AI/AN individual whom the community considers to possess supernatural powers that support and are supported by the common values of the healer's culture. The traditional healer usually undergoes many years of study and apprenticeship, as well as adheres to personal conduct guidelines. Traditional medicines may include plants, herbs, pollens, physiatry, heat, cupping, and other remedies.<sup>29</sup>

## Traditional and Cultural Approaches Targeted at the Whole Community



IHS National Diabetes Program SDPI Evaluation, 2002

### In 2002:

- **Storytelling:** 17% of the diabetes grant programs reported using funds to establish traditional storytelling activities in their communities.
- **Talking circles:** 17% of the diabetes grant programs reported that they established talking circles for their communities.
- **Traditional medicine:** 16% of the diabetes grant programs reported that they used traditional medicines in diabetes-related activities for their communities.
- **Traditional healers:** 17% of the diabetes grant programs reported that they established relationships with traditional healers for their communities.
- **Traditional practices:** 21% of the diabetes grant programs reported that they incorporated traditional practices into diabetes-related activities for their communities.

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**“There is a story of an orange caterpillar who finds out it has diabetes. It changes to a brown caterpillar because it feels so bad with diabetes. But, by taking care of itself, it can change into a butterfly, a silver butterfly.”**

Anthony Gutierrez (Sandia Pueblo)





## Talking Circle Helps American Indians Talk About Diabetes

There's a lot of power in a name. When the Sonoma County Health Project offered a Diabetes Class to American Indians living near Santa Rosa, California, hardly anyone came. With the help of Lucy McKay a Miwok-Pomo traditional dancer and healer, and naming the class "Wellness Circle," the weekly meeting now attracts a roomfull of people.

Lucy had the idea of bringing traditional methods to American Indians with diabetes

while she was leading a talking circle for children. The children were seated in a circle. They passed a buckskin bag containing angelica root in a counterclockwise direction. Whoever held the bag would speak fully, from their heart.

The children were American Indian. They understood the rule of allowing each person to speak from their heart for as long as they needed. They respected the rule that whatever was said in the circle would

Traditional talking circles were one of the many ways tribes provided culturally-appropriate methods to help American Indians prevent and manage diabetes.



remain in the circle. The children, usually reticent in group discussions, shared openly. Lucy had a hunch that what worked for American Indian children would work for American Indian adults with diabetes.

So Lucy held the first adult talking circle at the Sonoma clinic. Instead of a buckskin bag, circle participants passed a small stuffed bear from person to person. They talked about whatever was on their minds. A lot of times they talked about having diabetes; a lot of times they just talked.

“There were lots of tears in the first circles,” recalled Lucy.

“Don’t worry. Crying is okay. Tears are good healing,” she told participants. “Let the circle take you in the direction you need to go.”

When the circle concludes, clinic staff give participants information on diabetes, such as new herbal treatments that help lower blood sugar, or share a low-fat recipe. But, the talking circle is always the first activity of the hour-long meeting. It breaks the ice. It paves the way to openness. It instills a sense of peace.

Says Shirley Milligan, a Pomo elder, “In the wellness circle, we all talk. And having diabetes becomes easier for me.”

“They talked about whatever was on their minds. A lot of times they talked about having diabetes, a lot of times they just talked.”

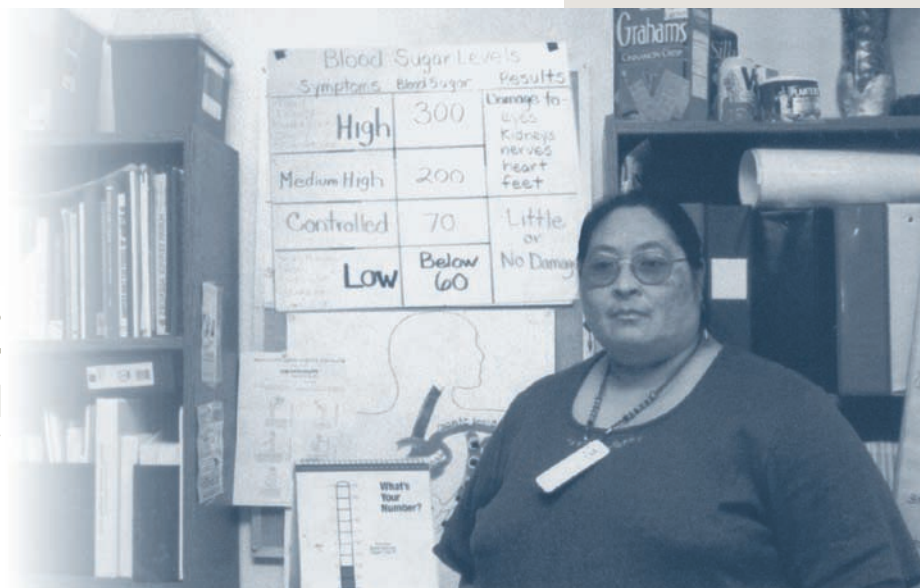
## CHAPTER FOUR

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**“Living a traditional life helps. At first, I doubted our traditions. Then, I started believing. I believe in healing.”**

Lucy McKay (Miwok-Pomo)



*Many diabetes primary prevention activities were established with implementation of the Special Diabetes Program for Indians.*

### *Why is this important?*

Since the inception of the Special Diabetes Program for Indians in 1998, tribal leadership and AI/AN communities recognized the importance of focusing on diabetes primary prevention activities. Physical inactivity and unhealthy eating are known risk factors that contribute to the development of chronic diseases, such as diabetes and cardiovascular disease. Recent scientific evidence demonstrated that type 2 diabetes can be prevented by lifestyle modifications in both men and women, young and old, and in diverse populations, including AI/ANs.<sup>30</sup>



Many tribes chose to offer diabetes prevention programs. Several Southwest tribes participated in a study called the Diabetes Prevention Program which concluded that diabetes can be prevented or delayed through changes in exercise, diet and/or taking diabetes medicine.



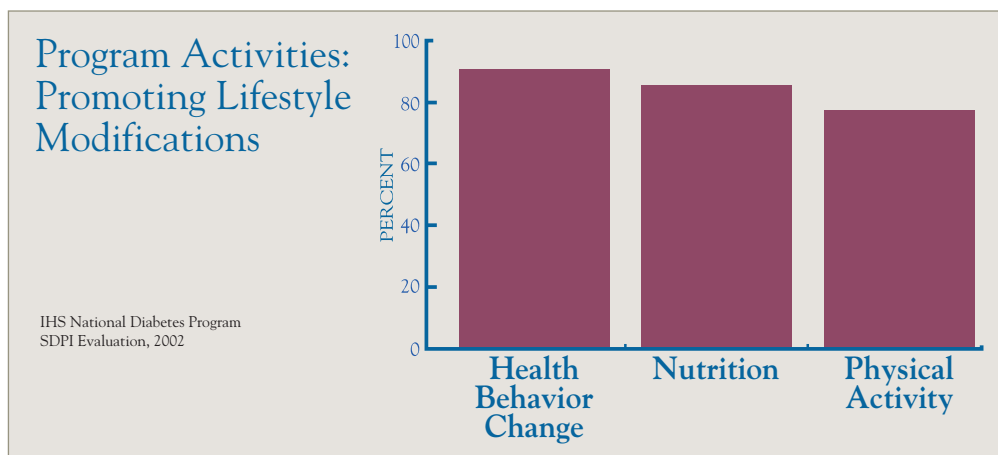
The Nambe Pueblo in New Mexico offers karate classes as a diabetes prevention activity to tribal members ages four through adults. The program is very popular, attracting nearly 30 people from this small community of about 300. Every month, the number of people who are in the karate program increases. Diabetes staff attribute its popularity to its focus on fitness and fun. Having the karate class located at the pueblo's Wellness Center makes it easy for entire families to attend, and is another major reason for its success.

Prior to the SDPI, AI/AN communities had few resources to devote to diabetes primary prevention activities. In 2002, an overwhelming number of diabetes grant programs (96%) reported that they now used funds to support diabetes primary prevention activities in their communities.

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In 2002:

- 91% of the diabetes grant programs reported that they developed activities that promoted health behavior change.
- 86% reported that they developed nutrition activities.
- 78% reported that they developed physical activity programs.

## Community physical fitness activities increased with implementation of the Special Diabetes Program for Indians.

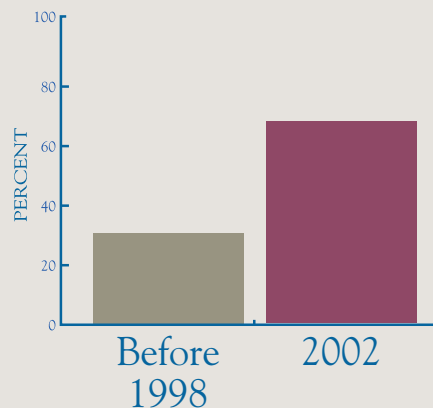
Comparison: Before 1998 vs 2002

### Why is this important?

Exercise is a cornerstone in the treatment of type 2 diabetes. Regular exercise and physical fitness promote weight loss, improve insulin sensitivity, increase muscle strength, reduce stress, enhance self-esteem, and improve the overall quality of life. People of all ages benefit from moderate physical activity.<sup>31</sup>

#### Availability of Recreation/Wellness/Fitness Facilities

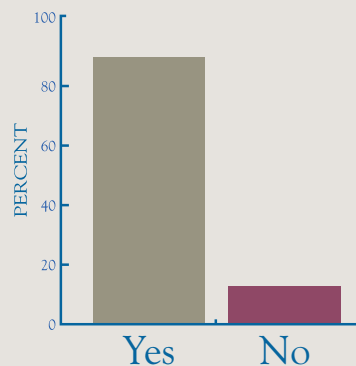
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



Diabetes grant programs used funding to develop or enhance recreation, wellness, or fitness facilities. In 2002, 69% of the programs reported the availability of recreation, wellness, or fitness facilities, compared with 31% before the SDPI.

#### Grant Programs that Reported They Used Grant Funding to Support Fitness/Physical Activities Targeting the Whole Community

IHS National Diabetes Program SDPI Evaluation, 2002



The diabetes grant programs used funding to develop physical fitness activities targeted toward the whole community. In 2002, 87% of the diabetes grant programs reported the addition of physical fitness activities targeted to the whole community.

**“When I first started working out, they put me on a bike, and I cried! But, they stayed on me! Now, I exercise four times a week. Exercise is the best!”**

Cornelia Bowannie (Zuni Pueblo)



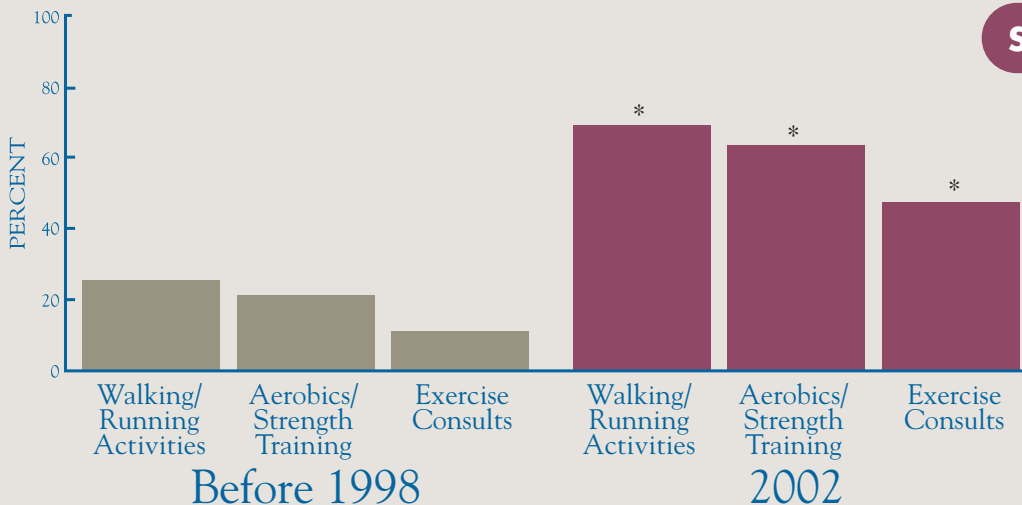
To appeal to the interests of all community members, the diabetes grant programs used a variety of approaches to increase physical activity within AI/AN communities.

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#### Short-Term Outcomes

### Availability of Fitness Classes/Activities Targeted at Your Whole Community



\*Before 1998 vs 2002,  $p < 0.001$  (applies to all three activities) • IHS National Diabetes Program SDPI Evaluation, 1997-2002

Diabetes grant programs used funding to develop a variety of physical fitness classes and activities targeted toward the whole community.

- In 2002, 70% of the diabetes grant programs reported the availability of walking and running clubs as compared with 25% before the SDPI.
- In 2002, 64% of the diabetes grant programs offered fitness activities such as aerobics, stretching, and strength training, as compared with 21% before the SDPI.
- In 2002, 47% of the diabetes grant programs offered individual exercise consultations to their community members as compared with 11% before the SDPI.

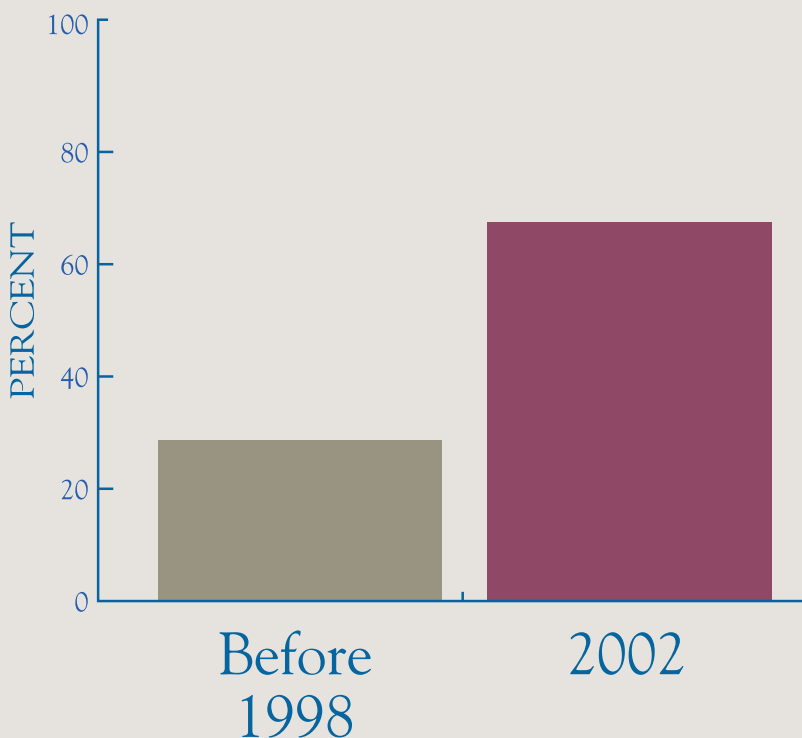
*Availability of community nutrition services increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

*Why is this important?*

Overweight individuals can lower their blood pressure, lower their blood glucose levels, and improve lipid levels by losing as little as 5–15% of their body weight. Blending traditional and local nutrition and fitness activities can help families and communities make the lifestyle changes needed to lose weight.<sup>32</sup>

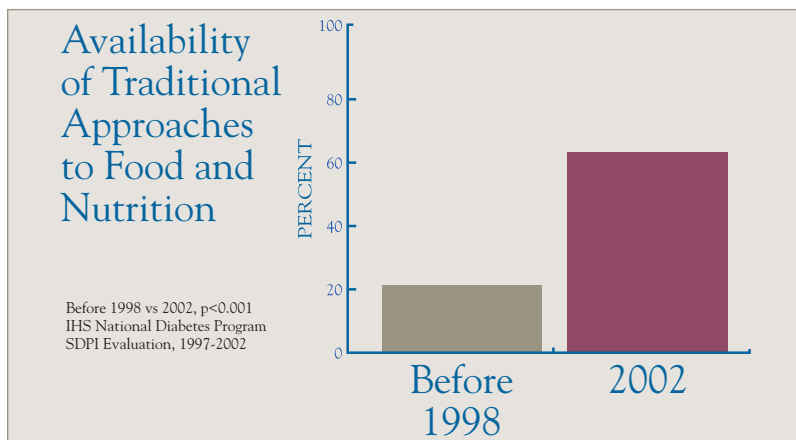
## Availability of Weight Management Programs for Adults



Before 1998 vs 2002 • IHS National Diabetes Program SDPI Evaluation, 1997-2002

The diabetes grant programs used funding to establish adult weight management programs. In 2002, 66% of the diabetes grant programs reported that they had developed an adult weight management program as compared with 28% before the SDPI.

The Blackfeet tribe in Montana provided a program to women called “Strong Women Stay Slim” which included nutrition education and fitness training.



The diabetes grant programs used funding to develop traditional food and nutrition activities. In 2002, 63% of the diabetes grant programs reported that they had developed traditional food and nutrition activities as compared with 22% before the SDPI.



Diabetes grant programs used funding to increase nutrition services, such as cooking classes and grocery store tours. In 2002, 63% of the diabetes grant programs reported the availability of cooking classes for people with diabetes as compared with 19% before the SDPI. In addition, 41% of the diabetes grant programs reported the availability of grocery store tours for people with diabetes as compared with 11% before the SDPI.

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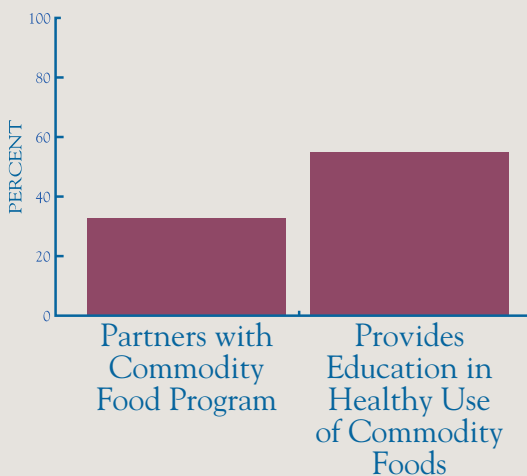


*Programs collaborated with the U.S. Department of Agriculture to improve nutrition in AI/AN communities with implementation of the Special Diabetes Program for Indians.*

*Why is this important?*

Programs, such as the U.S. Department of Agriculture's (USDA) Food and Nutrition Services (FNS) Programs and Food Distribution Program for Indians (FDPIR), use grassroots efforts to encourage communities to eat a healthy diet. These grassroots efforts make healthy foods more available locally, encourage people to eat these healthy foods, and promote changes in local nutrition policies. All of these efforts combine to help communities make positive changes that lead to healthy eating behaviors.<sup>33</sup>

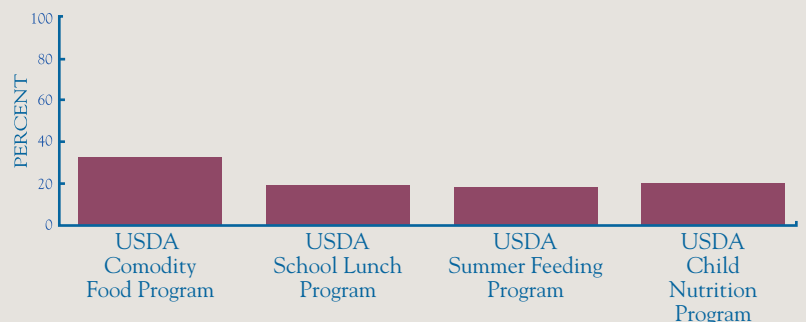
**Collaboration with the USDA Food Distribution Program for Indians**



IHS National Diabetes Program SDPI Evaluation, 2002

The diabetes grant programs worked with their community's USDA FDPIR to enhance nutrition services for people with diabetes and at-risk for diabetes. In 2002, 33% of the diabetes grant programs reported that they worked with the USDA FDPIR, and 55% reported that they provided education in the healthy use of commodity foods.

**Grant Programs Worked with Specific USDA Food & Nutrition Programs**



IHS National Diabetes Program SDPI Evaluation, 2002

The diabetes grant programs worked with their community's USDA FNS to enhance services for people with diabetes and those at-risk for diabetes. In 2002:

- 33% worked with the USDA Commodity Food Program.
- 19% worked with the USDA School Lunch Program.
- 19% worked with the USDA Summer Feeding Program.
- 20% of the diabetes grant programs reported that they had worked with their USDA Child Nutrition Programs.

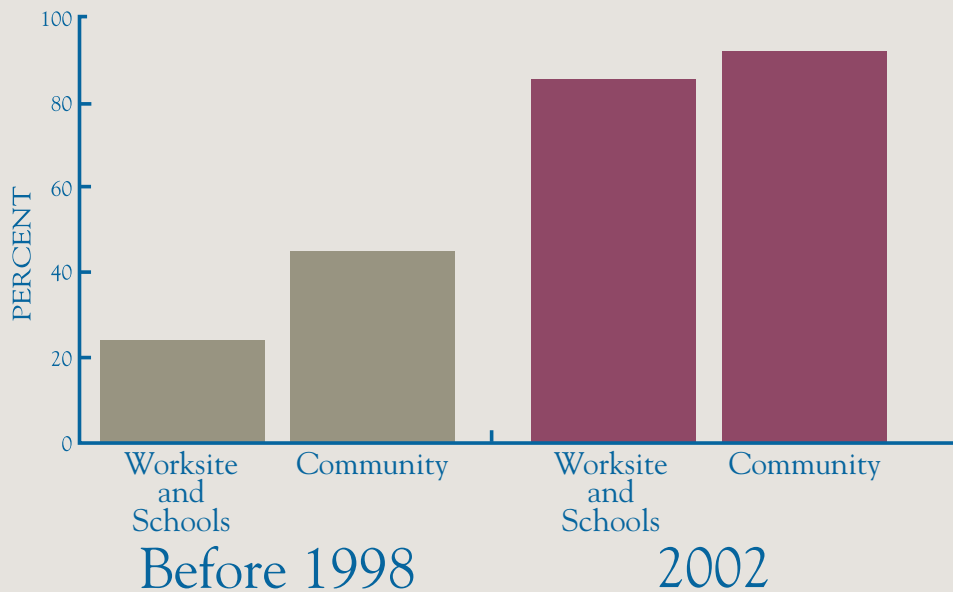
## *Diabetes awareness activities increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Activities that increase diabetes knowledge and awareness help to promote early recognition and prompt treatment of diabetes and pre-diabetes. These activities, in combination with lifestyle changes, can dramatically reduce the burden of diabetes and its complications.<sup>34</sup>

### Grant Programs Reported They Used Grant Funds to Support Diabetes Awareness Activities



Before 1998 vs 2002 • IHS National Diabetes Program SDPI Evaluation, 1997-2002

The diabetes grant programs used funds to support activities that aimed to increase diabetes knowledge and raise diabetes awareness. In 2002:

- 85% of the diabetes grant programs reported that they established diabetes awareness activities in worksites and schools as compared with 24% before the SDPI.
- 92% established diabetes awareness activities in the community as compared with 45% before the SDPI.

## *Diabetes primary prevention programs for children and youth increased with implementation of the Special Diabetes Program for Diabetes.*

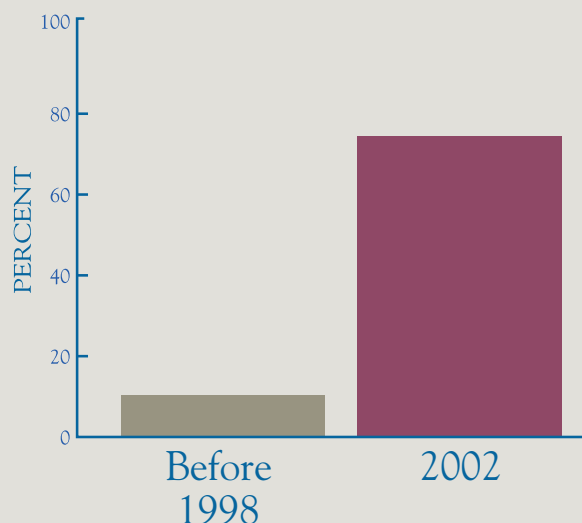
*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Diabetes primary prevention programs for children and youth facilitate healthy lifestyle development and lifestyle change to prevent the onset of diabetes and other chronic diseases.<sup>35</sup> Diabetes prevention programs for children and youth can include:

- Screening for overweight and obesity.
- Healthy eating programs.
- Physical activity programs.
- Breastfeeding programs.

### Diabetes Primary Prevention Programs for Children and Youth



Before 1998 vs 2002,  $p=0.012$   
IHS National Diabetes Program SDPI Evaluation, 1997-2002

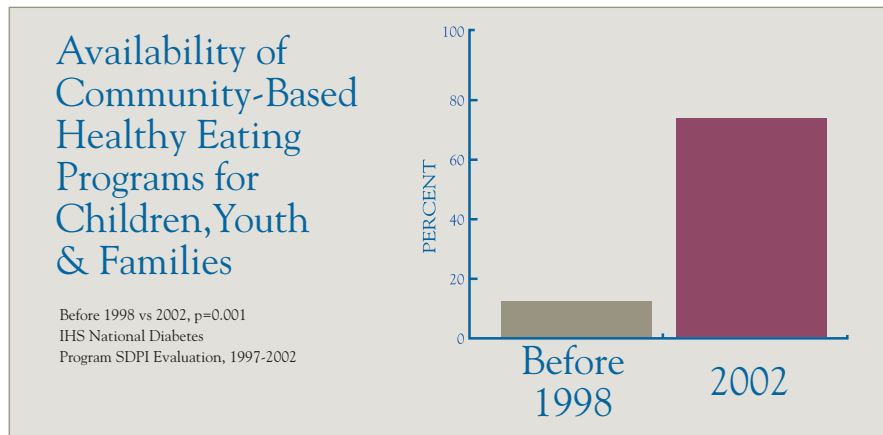
AI/AN communities have identified primary prevention of diabetes as a priority. Diabetes grant programs used funding to increase the availability of diabetes primary prevention programs for children and youth, including breastfeeding programs, healthy eating, physical activity, and screening programs. In 2002, 73% of the diabetes grant programs reported the availability of diabetes primary prevention programs for children and youth as compared with 10% before the SDPI.

## Community-based healthy eating programs for children, youth and families increased with implementation of the Special Diabetes Program for Indians.

Comparison: Before 1998 vs 2001

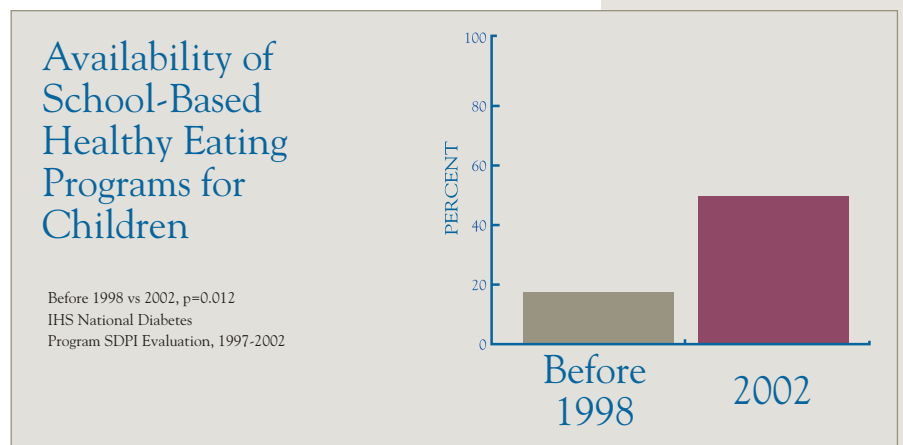
### Why is this important?

Communities need community- and school-based interventions to encourage lifelong healthy eating and regular physical activity to prevent the onset of diabetes and/or prevent the complications of diabetes.<sup>36</sup>



The diabetes grant programs used funding to establish community-based healthy eating programs for children, youth, and families. In 2002, 75% of the diabetes grant programs reported the availability of such programs as compared with 13% before the SDPI.

The diabetes grant programs used funding to establish school-based healthy eating programs for children. In 2002, 50% of the diabetes grant programs reported the availability of such programs for children as compared with 18% before the SDPI.



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## *Screening and management of overweight and obesity among children and youth increased with implementation of the Special Diabetes Program for Indians.*

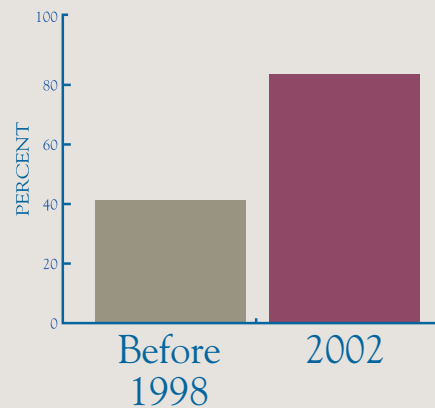
*Comparison: Before 1998 vs 2002*

### *Why is this important?*

Overweight and obesity among children and youth increases the risk of developing diabetes and other medical conditions, including cardiovascular disease and asthma. Several studies have documented an alarming increase in the prevalence of overweight, obesity, and diabetes among children worldwide.<sup>37</sup> Until the Special Diabetes Program for Indians, many AI/AN communities lacked the capability to screen for overweight and obesity in AI/AN children and youth.

### Screening for Overweight and Obesity in Children and Youth

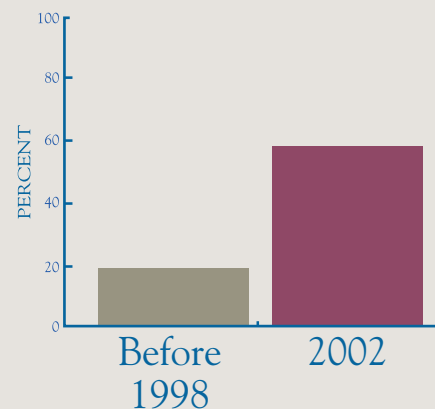
Before 1998 vs2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



The diabetes grant programs used funding to screen children and youth for overweight and obesity. In 2002, 83% of the diabetes grant programs reported screening for overweight and obesity as compared with 41% before the SDPI.

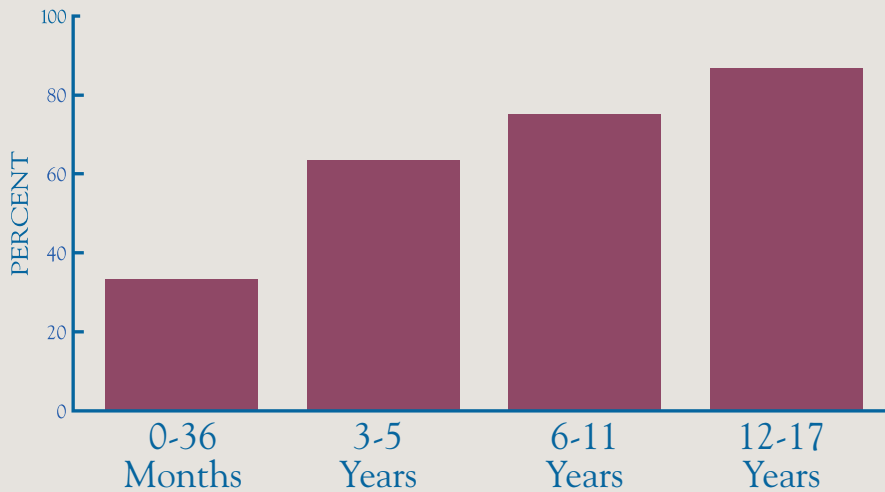
### Availability of Weight Management Programs for Children and Youth

Before 1998 vs2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



The diabetes programs used funding to establish weight management programs for children and youth. In 2002, 60% of the diabetes grant programs reported the availability of weight management programs as compared with 18% before the SDPI.

## Age Groups Screened for Overweight and Obesity



IHS National Diabetes Program SDPI Evaluation, 2002

The diabetes grant programs included all youth age groups in their screening programs to maximize the opportunity for early intervention. The majority of the screening efforts focused on children (aged 6-11 years) and adolescents (aged 12-17 years).

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The Yankton Sioux Tribe in Wagner, South Dakota screened students in first through third grades for diabetes.

## Short-Term Outcomes

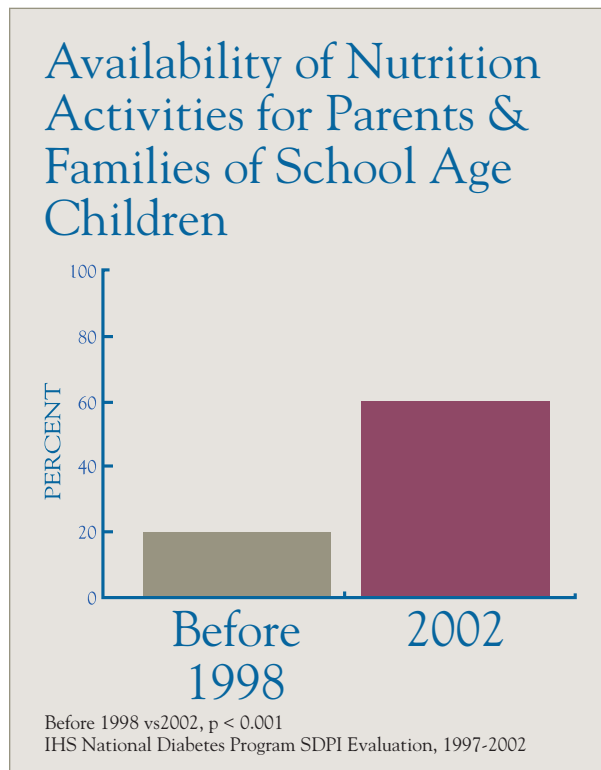


## *Nutrition education services for children and youth increased with implementation of the Special Diabetes Program for Indians.*

*Comparison: Before 1998 vs 2002*

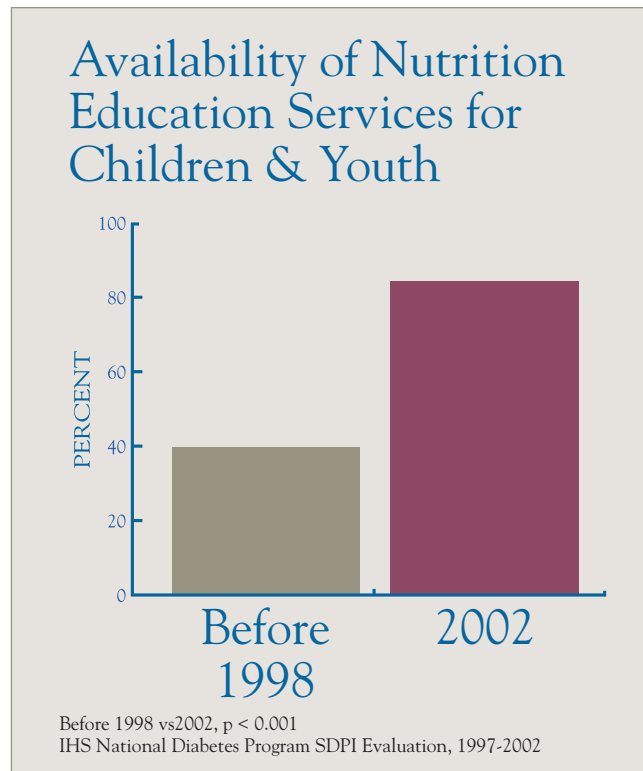
### *Why is this important?*

Providing nutrition information to families and teachers is important for promoting healthy eating in children and youth to prevent the onset of diabetes.



The diabetes grant programs used funding to establish nutrition activities for parents and families of school age children. In 2002, 60% of the diabetes grant programs reported the availability of nutrition activities for parents and families of school age children as compared with 20% before the SDPI.

The diabetes grant programs used funding to enhance nutrition education services for children and youth. In 2002, 83% of the diabetes grant programs reported the availability of nutrition education services for children and youth as compared with 39% before the SDPI.

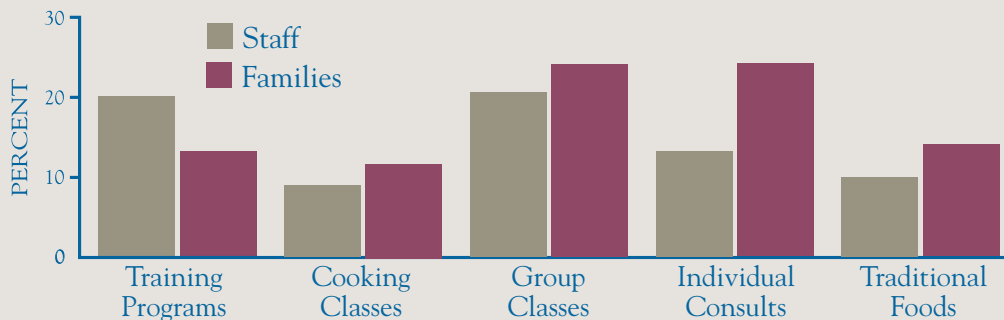


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### Methods to Provide Nutrition Information to Head Start/ Early Childhood Staff & Families

#### Short-Term Outcomes



IHS National Diabetes Program SDPI Evaluation, 2002

The diabetes grant programs used funding to provide nutrition information to Head Start and Early Childhood staff, as well as to families. The diabetes grant programs used the following methods to provide nutrition information in 2002:

- Training programs (20% provided nutrition information to Head Start and Early Childhood staff; 13% provided nutrition information to families)
- Cooking classes (9% to Head Start and Early Childhood staff; 11% to families)
- Group classes (21% to Head Start and Early Childhood staff; 24% to families)
- Individual consults (13% to Head Start and Early Childhood staff; 21% to families)
- Traditional food classes (10% to Head Start and Early Childhood staff; 14% to families)



## *Physical activity programs for children and youth increased significantly with implementation of the Special Diabetes Program for Indians.*

Comparison: 1998 vs 2002

### *Why is this important?*

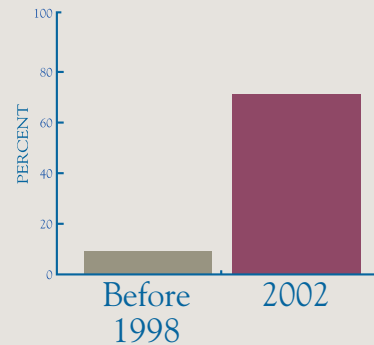
Physical activity is important to help prevent or delay the onset of diabetes. The American Diabetes Association recommends regular, daily physical activity for children and youth to maintain a healthy lifestyle.<sup>38</sup>



The Taos Pueblo in New Mexico offered athletic programs to youth including soccer and rock climbing.

### Availability of Community-Based Physical Activity Programs for Children, Youth and Families

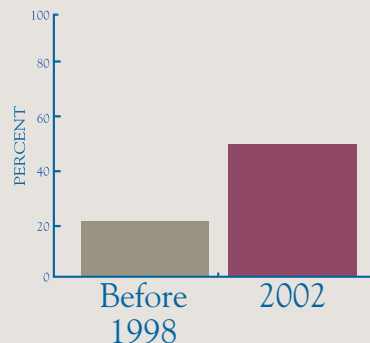
Before 1998 vs 2002,  $p < 0.002$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



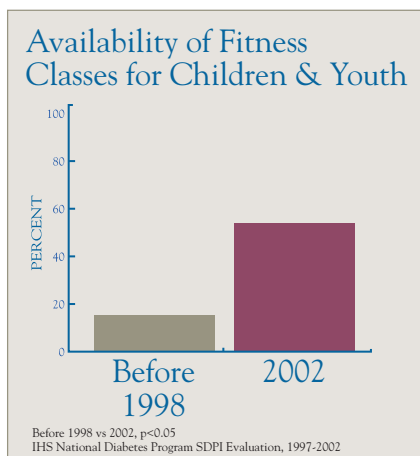
In 2002, 71% of the diabetes grant programs reported the availability of community-based physical activity programs for children, youth, and families as compared with 10% before the SDPI.

### School-Based Health Programs Focused on Physical Activity

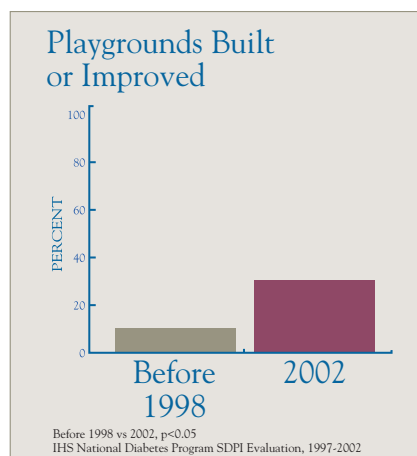
Before 1998 vs 2002,  $p < 0.001$   
IHS National Diabetes Program  
SDPI Evaluation, 1997-2002



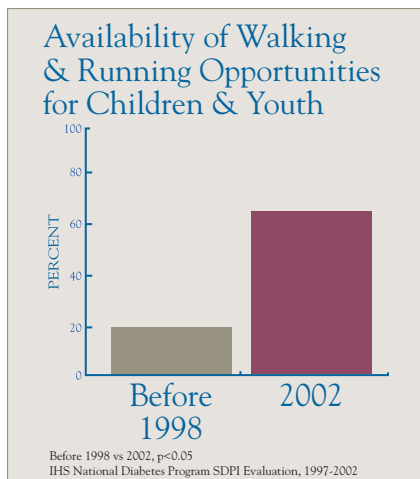
In 2002, 53% of the diabetes grant programs reported the availability of school-based physical activity programs for children and youth as compared with 22% before the SDPI.



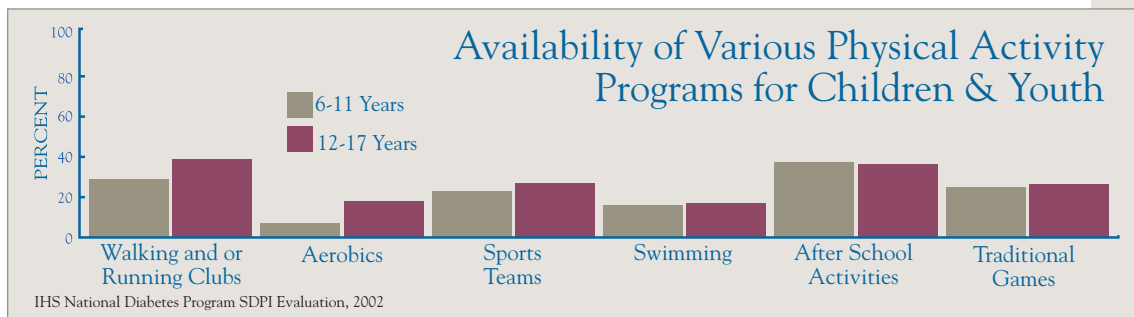
The diabetes grant programs used funding to provide fitness classes for children and youth. In 2002, 54% of the diabetes grant programs reported the availability of fitness classes for children and youth as compared with 15% before the SDPI.



Playgrounds promote physical activity and provide a safe place for children to be active. Prior to the SDPI, many AI/AN communities lacked playgrounds for children. In 2002, 31% of the diabetes grant programs reported building or improving playgrounds as compared with 10% before the SDPI.



The diabetes grant programs used funding to provide walking and running activities for children and youth. In 2002, 64% of the diabetes grant programs reported the availability of running and walking programs for children and youth as compared with 20% before the SDPI.



The diabetes grant programs used funding to offer a variety of physical activity programs for children and youth. In 2002, the diabetes grant programs reported the availability of:

- Walking and running clubs for children aged 6–11 years (27%) and adolescents aged 12–17 years (37%).
- Aerobics classes for children (6%) and adolescents (17%).
- Sports teams for children (22%) and adolescents (26%).
- Swimming classes for children (15%) and adolescents (16%).
- After-school activities for children (35%) and adolescents (34%).
- Traditional games for children (24%) and adolescents (25%).

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## *Breastfeeding promotion increased with implementation of the Special Diabetes Program for Indians.*

### *Why is this important?*

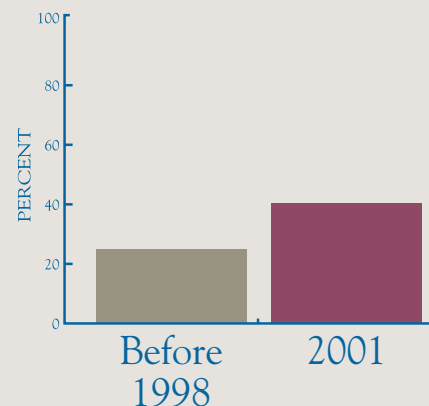
Breast milk has long been recognized and recommended as the ideal source of nutrition for infants. Studies show that breastfed children may be protected from acquiring type 2 diabetes.<sup>39</sup> The Pima Indian study found that infants who were breastfed for at least two months had a significantly decreased risk of developing diabetes before the age of 40 years.<sup>40</sup> Furthermore, several epidemiologic studies have shown that breastfed infants were less likely to be overweight as children and young adults.<sup>41</sup>

### *Phoenix Indian Medical Center Breastfeeding Program:*

The Phoenix Indian Medical Center (PIMC) Diabetes Center of Excellence used diabetes grant funds to implement a breastfeeding program. The goal of the program was to demonstrate simple and efficient breastfeeding methods and to explore the potential for breastfeeding as a protective factor against the development of type 2 diabetes.

#### **Rates of Breast Feeding at the Phoenix Indian Medical Center**

Before 1998 vs 2001,  $p < 0.002$   
PIMC Breast Feeding Initiative Evaluation



Approximately 1,600 mothers and their infants participated in the breastfeeding program. Since the inception of the breastfeeding program, the rates of breastfeeding at PIMC have increased from 24% in 1997 (prior to the SDPI) to over 40% in 2001.



Mothers at the Isleta Pueblo and many other tribes received education and support for breastfeeding.

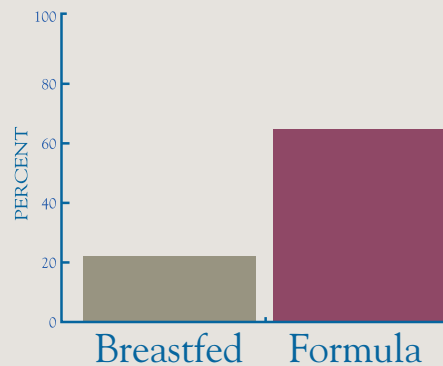
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### Overweight/Obesity Prevalence at PIMC Among Children Ages 3-4 Years by Their Feeding Choice at 6 Months of Age

IHS National Diabetes Program  
Diabetes Care & Outcomes Audit



Children who are breastfed have lower rates of obesity and overweight than formula fed children. At PIMC in 1999, 23% of breastfed children were overweight at 3-4 years compared with 64% of formula fed children of the same age.