Urban Indian Health Institute
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July 17, 2007

Dear Urban Indian Health Organization Executive Director,

We are pleased to provide you with a copy of an aggregate report summarizing urban diabetes audit data that you have reported to the Special Diabetes for Indians Program through the IHS Diabetes audit for the years 2000 to 2005. Thanks to Dr. Acton and her staff for providing us with access to this information. The report summarizes data collected from the audit process for all UIHOs that submitted reports during this period. The report includes background information on the Special Diabetes Program for Indians, the methods used to collect and analyze the data, the results, and the limitations of the data itself. Findings from this work will be used to help us here at the UIHI focus our technical assistance to better serve your diabetes programs and improve ongoing capacity to monitor diabetes care and service delivery. To date, Urban Indian Health Organization diabetes data for 2006 – 2007 are not yet available for reporting.

Efforts are underway to create site-specific reports to help you better understand your individual program status and to provide information for your planning and advocacy. These individual organization reports will be issued as soon as possible. Please review the data in the aggregate report, and if you have comments or concerns, please notify us so that we can help assure the accuracy of our work.

Our thanks to all of you for your exceptional efforts in addressing the epidemic of diabetes among Indian people.

Sincerely,

Maile Taualii

Maile Taualii, MPH
Associate Director
Urban Indian Health Institute

AN URBAN INDIAN HEALTH INSTITUTE REPORT

Urban Indian Health Organization Diabetes Care and Outcomes Audit Aggregate Report 2000 - 2005

A Division of the Seattle Indian Health Board

The Urban Indian Health Institute (UIHI) is a division within the Seattle Indian Health Board (SIHB), a community health center targeting urban American Indians and Alaska Natives. The UIHI provides centralized nationwide management of health surveillance, research, and policy considerations regarding the health status deficiencies affecting urban American Indians and Alaska Natives.

To learn more about the UIHI please visit, www.uihi.org

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Background

Diabetes Mellitus is one of the leading causes of chronic disease among American Indians and Alaska Natives (AIAN).[1] The prevalence of diagnosed diabetes among AIAN adults (aged 20 years and older) is more than twice that of the overall U.S. adult population.[1] In an effort to reduce the burden of diabetes among AIAN, the Indian Health Service (IHS) along with other government agencies established the Special Diabetes Program for Indians (SDPI).[2] Guided by Public Law 107-360, this program is a non-competitive grant created to specifically aid in the prevention and treatment of diabetes among AIAN located in reservation/rural and urban areas. As a consequence of this funding, national data on diabetes among AIAN living in or near urban areas has become available for analysis.

Data collected by the SDPI provides a unique opportunity to gain insight on urban AIAN, a segment of the population which typically has not been captured in routine surveillance systems. Over the past three decades, AIAN have increasingly relocated from reservation/rural areas to urban areas.[3] Reports from 2000 Census data revealed that 67 percent of AIAN now reside in urban areas.[4] Most of the published information around the burden of diabetes disease is derived from data collected on AIAN who live on or near reservations and as a consequence, may not reflect those who live in urban areas.[4] Moreover, it has been found that much of the available AIAN health data is plagued with errors of racial misclassification, under-reporting, and other systematic biases.[5] As the population continues to shift from reservation/rural to urban areas, there is an increasing need for diabetes health-related services, as well as surveillance-related activities that monitor diabetes outcomes and measures.

A potential source of health services with diabetes-related care for AIAN living in or near urban areas are Urban Indian Health Organizations (UIHO). Currently, 34 UIHO exist in 19 states and 94 counties in the U.S.[6] These organizations are independent, non-profit, Indian-controlled health facilities which contract with the IHS to provide health care services and assistance to off-reservation urban AIAN. These organizations provide a wide array of culturally appropriate and sensitive health care services to AIAN and low-income patients. While the scope and delivery of health care services varies between facilities, all receive SDPI funding to provide diabetes standard of care services.

In an attempt to gain a greater understanding of the trends in diabetes services and outcomes among the AIAN population, the IHS Division of Diabetes Treatment and Prevention (DDTP) conducts an annual medical chart review, also known as the Diabetes Care and Outcomes Audit, of health organizations that receive SDPI funding. The IHS Standards of Care for Patients with Type 2 Diabetes is utilized in the annual medical review and drives the collection of data.[7] The information obtained by the DDTP is used for diabetes surveillance and for helping to create a clinical picture of the AIAN population who receive diabetes care and services through the SDPI.

The purpose of this report is to provide a descriptive summary of the data collected from the 34 UIHO SDPI-funded programs. The specific objectives of this report are: 1) to provide a first-time aggregate description of the UIHOs' diabetes programs and service outcomes; and 2) to provide a description of site specific data for each UIHO. Directed by a memorandum of agreement with

the IHS, the Urban Indian Health Institute (UIHI) collaborated with the IHS DDTP in the development of this report.

Materials and Methods

Study Design

The data examined for this report were collected by the IHS Diabetes Care and Outcomes Audit of medical records performed at participating UIHOs during 2000 through 2005. Guided by written instructions, diabetes coordinators or trained staff at each of the participating organizations performed the audit. Patient charts were selected using a systematic random sampling scheme with a sufficient sample size to provide estimates within 10 percent of the true estimate.[8]

Target Population

The data analyzed in this report were derived from registries of the 34 UIHOs that participated in the annual IHS Diabetes Care and Outcomes Audit. The Organizations' were instructed to include data from AIAN patients who received diabetes health care services from one of the UIH Os', and who had a least one primary care visit in the last 12 months and to exclude patients who met any of the following criteria; received primary referral or contract care paid by IHS; arranged other health care services with non-IHS monies; received primary care at another IHS or tribal facility; lived in a jail or nursing home and received care there; attended a dialysis unit (if on-site dialysis was not available); had gestational diabetes; had pre-diabetes (IFG or IGT) only; or had moved, died or were non-contactable after three tries in 12 months.

Survey Design

The IHS Diabetes Care and Outcomes Audit is based on consensus-derived standards of care, also known as the IHS Standards of Care for Patients with Type 2 Diabetes.[8] These standards are derived from the American Diabetes Association (ADA) *Clinical Practice Recommendations* and are regularly reviewed by the IHS DDTP.[9] The audit examines the health facility's performance on a number of key parameters known to describe the health of people with diabetes, including: demographic characteristics, vital statistics, examinations and educational services, therapy services, immunizations, and laboratory data.

The demographic data included the following: number of patients in the registry, number of medical charts audited, age, sex, tobacco use, referral for tobacco cessation counseling. Data from vital statistics included the following: height, weight, hypertension charted, body mass index and blood pressure. The examination and educational data included the following: foot, eye, and dental exam, diet, exercise, and general diabetes instruction. The therapy, immunization, and laboratory data included the following: therapy type, flu immunization, TB status, urinalysis, proteinuria and microalbuminuria screening, and the distribution of HbA1c, creatinine, cholesterol (LDL, HDL, and total), and triglyceride values.

Data Collection

Two options for data collection were made available to the health organizations depending on their capacity to report: 1) a manual diabetes audit or 2) a computerized diabetes audit. The manual diabetes audit data were collected using the DDTP data collection tool, which is a detailed examination of people with type 2 diabetes (also known as the Assessment of Diabetes Care Form).[7]

The computerized diabetes audit utilized the Resource and Patient Management System (RPMS); an integrated electronic method for the management of clinical, business practice, and administrative information used by the IHS. The data collected by the UIHOs from 2000 through 2005 were provided to the UIHI by the IHS DDTP.

Descriptive Statistics

The statistical analysis software (SAS) 9.1 was used to perform all statistical analyses. Tabular analyses were preformed to determine the distribution of audit statistics, demographic characteristics, vital statistics, examinations, educational services, therapy, immunizations and laboratory data.

The estimates reported represent the number and weighted percent of the of the total audit sample having that attribute or having received a particular standard of care with the exception of tobacco cessation, chronic aspirin use, EKG, creatinine, proteinuria, and microalbuminuria. In the case of tobacco cessation counseling, the estimates reported represent the weighted percent of current tobacco users having received cessation counseling/services. The estimates for chronic aspirin use and EKG represent the weighted percent of all individuals 30 years or older in the audit sample with chronic aspirin use or having received an ECG. Creatinine estimates were derived from individuals who had blood tested for creatinine in the past year. Proteinuria estimates were based on only the patients who received an urinanalysis. Calculated in a similar fashion, microalbuminauria estimates were derived from all individuals who had a urinalysis in the past year and no proteinuria by standard dipstick.

Results

Table 1. UIHO participation in the Indian Health Service Diabetes Care and Outcomes Audit, IHS, 2000 - 2005

	2000	2001	2002	2003	2004	2005	Total
No. UIHO audited	11	16	16	20	23	21	
% UIHO audited*	32.4	47.1	47.1	58.8	67.7	61.8	
No. patients in registry+	2215	3290	3264	2851	4534	2833	18987
No. charts audited^	533	782	747	1180	1377	1161	5889
% of registry audited¶	24.1	23.8	22.9	41.4	30.4	41	31

UIHO=urban Indian Health Organization

* Total number of UIHO that receive SDPI funding=34

+ Sum of the number of patients in each registry

^ Sum of the number of charts reviewed by each site or total charts reviewed

¶ No. charts audited/no. patients in registry

Table 2. UIHO demographics of AI/AN with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000-2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
Sex														
Male	196	37.1	313	39.8	308	40.9	453	38.7	519	35.3	459	38.8	2248	38.3
Female	337	63.0	469	60.2	439	59.1	727	61.3	858	64.7	702	61.2	3532	61.7
Age														
< 15 years	3	0.2	4	0.4	1	0.1	2	0.1	0	0.0	0	0.0	10	0.1
15-44 years	131	25.1	214	26.2	195	26.2	354	29.9	372	23.9	307	24.7	1573	25.9
45-64 years	304	55.1	438	57.0	426	56.3	634	54.3	771	56.5	646	56.5	3219	56.1
≥ 65 years	93	19.0	122	16.0	121	16.8	190	15.7	230	19.4	207	18.8	963	17.7
Missing	2	0.6	4	0.4	4	0.7	0	0.0	4	0.2	1	0.0	15	0.3
Diabetes duration														
< 5 years	216	40.9	335	42.3	327	41.9	557	46.2	569	39.3	507	44.7	2511	42.3
5 – 9 years	127	25.6	161	19.5	184	26.1	281	23.4	339	25.1	314	26.0	1406	24.3
≥ 10 years	165	30.3	151	21.1	174	21.4	254	22.7	334	27.6	282	24.9	1360	24.6
Missing	25	3.2	135	17.2	62	10.6	88	7.8	135	7.9	58	4.5	503	8.9
Current tobacco use														
User	155	27.9	252	32.3	249	34.7	351	31.9	390	31.1	356	32.1	1753	31.8
Non-user	342	69.4	473	59.6	459	59.4	731	61.1	887	62.8	746	64.4	3638	62.4
Missing	36	2.1	57	8.1	39	5.9	98	7.0	100	6.1	59	3.5	389	5.8
Cessation referral^														
Yes	93	48.2	144	48.9	148	53.9	206	66.2	226	48.1	201	49.6	1018	52.3
No	49	45.1	84	43.6	80	31.5	115	25.4	114	27.4	110	31.6	552	33.1
Refused	5	5.2	12	2.5	5	2.8	27	6.9	35	13.4	37	16.7	121	8.3
Missing	8	1.5	12	5.0	16	11.7	3	1.6	15	11.1	8	2.1	62	6.3

* weighted percent

^ Distribution of cessation referral among those who reported current tobacco use

Table 3. UIHO vital statistics among AI/AN with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000 - 2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
No. UIHO	11		16		16		20		23		21		107	
No. charts audited	533		782		747		1180		1377		1161		5780	
BMI+														
<25	46	13.7	59	7.0	63	8.4	88	7.3	106	8.2	92	8.2	454	8.5
25-29	146	27.5	179	23.9	157	22.0	254	21.2	317	23.7	249	21.3	1302	23.1
≥ 30	324	56.6	492	65.8	468	63.9	743	64.7	874	63.5	786	68.4	3687	64.1
Missing	17	2.2	52	3.3	59	5.7	95	6.8	80	4.6	34	2.2	337	4.2
Hypertension ^														
Yes	306	67.9	475	67.4	450	64.3	693	62.4	828	68.1	790	71.4	3542	67.0
No	203	28.8	270	27.7	268	32.0	478	37.0	504	26.9	349	26.2	2072	29.5
Missing	24	3.3	37	4.9	29	3.8	9	0.7	45	4.9	22	2.5	166	3.5
Blood pressure														
<120/<70	43	6.9	51	5.4	48	4.9	75	5.9	84	6.3	105	7.4	406	6.1
120/70 - <130/<80	145	27.9	208	24.6	213	28.3	275	23.8	381	28.4	382	35.4	1604	28.1
130/80 - <140/<90	163	29.1	272	39.0	243	37.5	347	32.7	416	32.2	340	31.1	1781	33.8
140/90 - <160/<95	124	28.1	147	19.5	120	15.6	163	15.4	211	17.8	142	13.1	907	17.8
>160/>95	29	4.3	43	5.9	51	7.9	50	4.6	72	5.1	42	3.7	287	5.3
Missing	29	3.7	61	5.6	72	5.8	270	17.6	213	10.3	150	9.3	795	8.9
Self monitors blood glucose														
Yes	358	65.8	603	80.0	558	73.0	869	77.9	1004	77.0	895	79.6	4287	76.1
No	146	28.0	133	13.4	141	18.3	268	17.4	295	15.1	218	14.9	1201	17.0
Refuses	22	5.2	29	4.0	33	5.0	35	3.9	61	6.9	44	5.2	224	5.2
Missing	7	1.0	17	2.7	15	3.7	8	0.9	17	0.9	4	0.4	68	1.6

* Weighted percent

+ BMI, weight in kilograms divided by the square height in meters; normal < 25, overweight 25-29, obese >30

^ Documented diagnosis or taking prescription medication

Table 4. UIHO distribution of diabetes standards of care among AI/AN with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000 - 2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
No. UIHO	11		16		16		20		23		21		107	
No. charts audited	533		782		747		1180		1377		1161		5780	
Dental exam														
Yes	143	20.0	183	23.9	128	14.7	323	23.5	367	25.9	342	29.8	1486	23.3
No	363	78.5	567	72.8	568	78.0	827	73.3	949	70.3	751	63.0	4025	72.2
Refused	23	1.3	26	2.0	31	4.0	25	2.5	52	2.8	61	6.5	218	3.3
Missing	4	0.2	6	1.2	20	3.3	5	0.7	9	1.0	7	0.7	51	1.2
Eye exam														
Yes	297	61.2	337	47.6	296	44.5	543	48.5	660	54.5	614	52.2	2747	51.1
No	219	37.8	423	49.8	408	49.9	579	44.4	667	41.9	482	40.8	2778	44.3
Refused	14	0.8	15	2.0	23	3.0	52	6.5	41	2.6	61	6.7	206	3.6
Missing	3	0.2	7	0.6	20	2.7	6	0.7	9	1.0	4	0.3	49	1.0
Foot exam														
Yes	341	49.8	472	54.4	485	59.8	690	58.7	824	67.5	743	64.5	3555	60.2
No	185	49.7	296	43.4	242	37.5	469	38.9	534	30.9	388	32.1	2114	37.7
Refused	2	0.2	4	0.7	9	1.1	16	1.9	12	0.7	27	3.2	70	1.3
Missing	5	0.3	10	1.5	11	1.7	5	0.5	7	0.9	3	0.2	41	0.9
Diab education														
Yes	344	47.4	551	71.7	564	64.0	849	69.9	1049	67.9	920	79.4	4277	67.7
No	180	51.0	186	26.1	156	30..4	309	27.6	305	29.3	230	19.6	1366	29.6
Refused	7	1.4	36	1.3	12	1.8	16	1.9	18	1.6	9	0.9	98	1.5
Missing	2	0.1	9	1.0	15	3.8	6	0.6	5	1.2	2	0.1	39	1.2
Exercise instructions														
Yes	261	37.2	489	62.4	455	52.6	708	54.6	847	56.7	785	67.5	3545	56.1
No	249	59.8	274	35.4	255	40.2	447	42.3	511	41.5	364	31.2	2100	40.8
Refused	17	2.6	14	1.6	17	2.5	23	2.9	16	1.1	9	0.9	96	1.8
Missing	6	0.4	5	0.7	20	4.7	2	0.3	3	0.7	3	0.4	39	1.2
Diet instructions														
Reg Diet	165	20.2	177	27.9	163	26.5	345	29.6	383	32.2	292	30.0	1525	28.4
Other	125	17.8	353	40.7	335	35.0	341	26.1	429	25.5	317	25.1	1900	28.1
Both	20	1.6	39	3.0	34	2.2	103	9.0	164	9.0	197	13.0	557	6.6
None	222	60.4	208	27.7	190	28.9	389	35.3	398	32.6	351	31.4	1758	34.5
Missing	1	0.1	5	1.0	25	7.5	3.2	0.1	3	0.7	4	0.5	40	1.6

* weighted percents

Table 5. UIHO distribution of immunizations and services among AI/AN with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000 - 2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
No. UIHO	11		16		16		20		23		21		107	
No. charts audited	533		782		747		1180		1377		1161		5780	
Flu vaccine														
Yes	306	54.0	373	47.8	356	49.1	604	53.4	707	55.3	701	59.1	3047	53.2
No	200	42.8	374	47.6	351	45.0	524	41.6	596	36.6	395	34.9	2440	41.1
Refused	23	3.0	21	2.3	26	3.3	43	3.6	59	5.0	63	5.7	235	3.9
Missing	4	0.2	14	2.3	14	2.7	9	1.4	15	3.2	2	0.3	58	1.9
Pneumo vaccine														
Yes	445	87.3	517	71.4	497	71.2	720	65.5	834	67.4	742	66.6	3755	70.6
No	69	9.8	244	26.1	222	25.0	435	32.2	492	27.7	391	30.9	1853	26.1
Refused	14	2.6	14	1.0	10	1.1	20	2.0	34	3.2	26	2.5	118	2.1
Missing	5	0.3	7	1.5	18	2.7	5	0.4	17	1.7	2	0.1	54	1.2
EKG														
Yes	395	78.4	422	59.2	459	67.7	644	60.4	779	65.1	709	65.5	3408	65.4
No	138	21.6	360	40.8	288	32.3	536	39.6	598	34.9	452	34.5	2372	34.6
TB status														
Positive	120	25.0	125	15.0	108	16.0	157	14.0	168	13.1	163	13.2	841	15.4
Negative	269	50.8	286	40.9	265	37.3	438	34.8	498	38.0	447	36.1	2203	39.0
Refused	4	0.4	3	0.3	3	0.7	11	0.7	15	1.2	19	1.7	55	0.9
Unknown	135	23.5	363	43.1	345	41.8	564	49.7	680	46.4	521	48.1	2608	43.2
Missing	5	0.4	5	0.7	26	4.3	10	0.9	16	1.3	11	0.8	73	1.5

* weighted percents

Table 6. UIHO distribution of diabetes standard of care therapies among AI/AN people with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000 - 2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
No. UIHO	11		16		16		20		23		21		107	
No. charts audited	533		782		747		1180		1377		1161		5780	
Diet/exercise alone	45	6.3	55	6.2	78	9.8	197	10.4	162	6.5	123	8.9	660	8.0
Insulin	55	9.6	84	10.2	85	12.4	78	7.7	113	7.7	83	8.4	498	9.2
Oral agt.	186	34.4	277	31.3	231	28.4	351	26.7	391	27.8	357	28.8	1793	29.2
Oral agt./ insulin	92	19.7	112	16.9	104	13.4	164	15.2	203	15.4	174	15.6	849	15.8
Oral agt combo	150	29.8	224	32.0	235	32.7	368	38.7	476	41.5	406	37.6	1859	36.0
Refused	4	0.2	12	1.7	5	0.9	20	1.1	29	1.1	18	0.7	88	1.0
Missing	1	0.1	18	1.7	9	2.4	2	0.1	3	0.1	0	0	33	0.7
ACE/ARB use														
Yes	316	65.9	477	62.0	426	56.0	660	63.9	851	71.7	790	73.5	3520	65.9
No	198	29.9	261	30.3	277	34.7	499	33.1	500	26.1	358	25.1	2093	29.6
Missing	19	4.3	44	7.7	44	9.3	21	3.1	26	2.2	13	1.4	167	4.6
Chronic aspirin+														
Yes	257	46.7	395	58.4	422	61.9	614	61.0	868	71.7	785	70.6	3341	63.2
No	211	42.5	257	31.1	233	27.7	439	29.8	440	27.0	332	28.8	1912	30.3
Missing	41	10.8	90	10.4	54	10.5	76	9.2	16	1.4	4	0.6	281	6.5
Lipid lowering agent														
Yes	116	19.9	250	34.2	266	34.7	415	37.1	673	53.8	644	57.7	2364	41.5
No	314	72.4	443	56.2	432	54.9	685	53.2	688	44.3	512	41.8	3074	52.2
Missing	103	7.7	89	9.7	49	10.4	80	9.7	16	1.9	5	0.5	342	6.3

* weighted percents

+ Chronic aspirin use reported for those 30 years or older

Table 7. Distribution of diabetes standard of care laboratory results among AI/AN people with type 2 diabetes, IHS Diabetes Care and Outcomes Audit, 2000 - 2005

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
No. UIHO	11		16		16		20		23		21		107	
No. charts audited	541		789		759		1200		1408		1192		5889	
HbA1c (%)														
<6.5	114	21.4	173	23.6	185	25.1	290	27.2	323	27.0	350	32.6	1435	26.4
6.6– 6.9	42	6.6	69	8.8	59	8.0	107	10.2	147	11.4	130	11.9	554	9.8
7.0 – 7.9	80	14.4	148	19.5	144	18.6	222	19.1	279	22.3	236	20.4	1109	19.5
8.0 – 8.9	89	20.9	129	17.5	100	15.3	142	13.1	186	13.2	169	14.7	815	15.4
9.0 – 9.9	74	14.1	75	8.2	79	11.3	119	10.4	134	9.7	74	6.5	555	9.8
10.0 - 10.9	52	7.5	46	6.8	56	7.1	73	5.7	71	4.2	62	4.7	360	5.8
11.0+	61	13.4	83	10.6	70	9.8	93	7.8	120	7.1	73	5.6	500	8.7
Missing	21	1.7	59	4.9	54	4.8	134	6.7	117	5.1	67	3.5	452	4.6
Urinalysis														
Yes	478	93.1	644	84.4	597	85.1	888	80.9	1009	82.9	804	77.1	4420	83.5
No	54	6.9	126	13.6	135	12.7	282	18.1	357	16.1	350	22.3	1304	15.3
Refused	0	0.0	7	1.0	1	0.2	8	0.9	7	0.9	3	0.3	26	0.6
Missing	1	0.1	5	1.0	14	2.0	2	0.1	4	0.1	4	0.4	30	0.6
Proteinuria[+]														
Yes	121	29.6	143	23.4	149	25.1	174	19.0	274	25.5	161	21.6	1022	24.1
No	355	69.7	499	76.4	436	73.3	713	81.0	734	74.5	639	78.2	3376	75.5
Missing	2	0.6	2	0.2	12	1.7	1	0.0	1	0.1	4	0.2	22	0.5
Microalbuminuria[^]														
Positive	81	17.9	101	15.6	78	13.7	119	14.2	133	25.5	136	21.1	648	18.5
Negative	153	36.7	198	42.0	200	41.2	319	45.9	370	46.8	339	49.8	1579	44.1
Not tested	119	45.3	163	39.5	132	36.8	259	38.8	198	23.1	142	27.4	1013	33.9
Missing	2	0.2	37	3.0	26	8.4	16	1.1	33	4.6	22	1.8	136	3.5
Creatine (mg/dl)														
<2.0	434	80.3	568	73.0	603	79.0	880	81.4	1073	85.5	906	83.6	4464	80.8
≥ 2.0	13	3.1	20	3.2	17	2.9	21	1.9	26	2.7	18	2.2	115	2.7
Missing	86	16.6	194	23.8	127	18.1	279	16.7	278	11.8	237	14.2	1201	16.6
Total cholesterol (mg/dl)														
< 200	217	38.1	342	46.0	332	43.5	575	50.6	706	58.5	663	61.6	2835	50.8
200-239	142	28.2	171	21.4	173	20.6	226	19.1	241	16.9	181	14.6	1134	19.6
≥ 240	79	11.9	85	10.7	65	10.4	107	9.5	136	11.2	95	8.7	567	10.4
Missing	95	21.8	184	21.9	177	25.6	272	20.8	294	13.4	222	15.1	1244	19.2

Table 7. Continued

	2000		2001		2002		2003		2004		2005		Total	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
HDL cholesterol (mg/dl)														
< 35	75	15.4	119	17.0	110	13.1	178	15.1	215	17.2	197	16.5	894	15.8
35 -45	140	29.7	230	30.4	221	27.4	331	29.6	389	30.1	369	32.2	1680	29.9
46 -55	68	11.4	98	12.1	98	11.1	208	17.6	209	15.6	202	19.5	883	14.7
> 55	72	16.1	92	12.0	81	10.3	150	13.7	228	21.2	156	15.4	779	15.2
Missing	178	27.4	243	28.4	237	38.1	313	24.0	336	16.0	237	16.4	1544	24.4
LDL cholesterol (mg/dl)														
< 100	113	20.0	206	27.4	208	25.8	377	33.4	504	44.8	464	44.6	1872	34.1
100 – 129	136	23.8	197	25.3	182	24.9	278	23.3	291	22.1	256	22.1	1340	23.5
130 – 160	91	20.0	91	11.2	87	12.4	118	11.0	136	10.1	110	8.9	633	11.8
>160	36	4.6	42	5.5	23	3.9	49	4.7	60	4.0	38	3.6	248	4.3
Missing	157	31.6	246	30.7	247	33.0	358	27.6	386	19.1	293	20.8	1687	26.4
Triglyceride (mg/dl)														
<150	157	33.8	203	27.7	188	27.7	340	30.5	421	37.7	361	34.8	1670	32.3
150 – 199	80	12.5	128	15.8	97	11.0	185	16.4	229	18.2	216	19.4	935	15.9
200 – 400	155	26.3	222	27.2	221	24.9	307	26.2	346	25.3	314	26.6	1565	26.0
>400	35	4.7	21	2.8	22	1.6	47	3.8	53	3.6	35	3.2	213	3.2
Missing	106	22.7	208	26.6	219	34.8	301	23.1	328	15.2	235	16.0	1397	22.6

* Weighted percent

+ Proteinuria reported for those who received a urinanalysis

^ Microalbuminuria reported for those who received a negative proteinuria

Limitations

One of the limitations of the data is the fluctuation in UIHO participation. As a result, these data may not reflect a representative audit sample. In light of this, conservative interpretation of the findings is recommended. Identifying and understanding the obstacles and facilitators to site participation may provide insight around the accuracy of the estimates.

Another limitation pertains to the lack of general demographic data for all registry patients. The audit does not collect information on the socioeconomic indicators of education, income, employment status, or mobility. Understanding the baseline distribution of these variables and changes over time, could provide important information concerning the registry and hence, audit population.

Furthermore, the degree of missing information for a few select variables should be considered. Most of the variables with 20 percent or more missing data were from laboratory results. It is important to note that the array of health care services offered vary by facility. For example, not all sites provide clinical services. Additionally, the availability of laboratory-related services may be either lacking or remote, and retrieving follow up laboratory values may pose challenges. Therefore, a breakdown of the clinical capability and capacity of each UIHO to report on the entire audit categories (e.g. laboratory-related) would be helpful in interpreting these results.

Conclusion

Diabetes is a significant and rapidly growing health problem among AIAN. More than 15 percent of AIAN adults (aged 20 years or older) are estimated to have type 2 diabetes and the rate is rising rapidly among children and youth.[10] Diabetes is now the fourth leading cause of death for AIAN in the United States.[11] Yet it is estimated that nearly one-third of people with diabetes are unaware that they have the illness.[9] Left untreated, diabetes disease may lead to serious complications, disability, and premature death. For these reasons, the early diagnosis of, treatment for, and surveillance around diabetes related care, are all key factors to combating the disease.

Data collected from the IHS SDPI annual medical chart review were used to describe diabetes related care and services among AIAN who received care at one of the health organizations participating in the audit. The IHS SDPI annual medical chart review data collected from 2000 to 2005 provide a unique opportunity to identify and better understand the health status of urban AIAN and diabetes-related services to this population. This report is a first step in addressing the gap in knowledge around diabetes among urban AIAN. However, it is imperative that surveillance and efforts to increase participation in the audit continue. The latter is critical for ensuring a representative description of the trends and distributions of diabetes-related care and services for urban AIAN.

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