Trends in Indian Health 2002-2003 EDITION

U.S. Department of Health and Human Services
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INDIAN HEALTH SERVICE
TRENDS IN INDIAN HEALTH
2002-2003 EDITION

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PREFACE

Since 1955, the Indian Health Service (IHS) has upheld the Federal Government's obligation to promote healthy American Indian and Alaska Native (AI/AN) communities and cultures, while honoring and protecting each Tribe's inherent sovereign rights. Our mission is to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level.

*The 2002–2003 edition of "**Trends in Indian Health**" describes IHS programs and provides tables and charts detailing the health status of AI/AN people. This report presents demographic information and trends as well as statistics on patient care delivery services and community health. Where appropriate, comparisons are made to the U.S. population at large.*

The IHS remains committed to ensuring that comprehensive, culturally acceptable personal and public health services are available and accessible to AI/AN people. The data contained within this report advances our ongoing efforts to achieve this vital health care goal.

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CONTENTS

Overview 1

Trends in Indian Health 2

Introduction 2

Scope and Organization of this Report 2

Summary of Data Shown 3

Indian Health Service Organizational Structure 3

Population Statistics 3

Natality and Infant/Maternal Mortality Statistics 4

General Mortality Statistics 4

Patient Care Statistics 5

Community Health Statistics 5

Sources and Limitations of Data 7

Population Statistics 7

IHS Service Population 7

Definition 7

Description of Service Population Calculation 8

Changes in Methodologies 9

ICD-9 Conversion to ICD-10 9

2000 U.S. Census Populations with Bridged Race Categories (2000 Census Bridged File) 10

Age Adjustment Based on the 2000 Standard Population 10

Vital Event Statistics 10

Patient Care Statistics 13

Community Health Statistics 13

Glossary 15

Sources of Copies and Additional Information 17

Part 1: Indian Health Service Structure

Chart 1.1 Indian Health Service 19

Chart 1.2 Indian Health Service Area Offices 19

Chart 1.3 American Indian and Alaska Native Tribal Governments 20

Chart 1.4 Urban Indian Health Programs 20

Chart 1.5 Number of Facilities Operated by Indian Health Service and Tribes as of October 1, 2006 21

Chart 1.6 Trend in Indian Health Service Budget 22

Table 1.6 Trend in Indian Health Service Budget 23

Chart 1.7 Accreditation Status of Selected Health Facilities, October 2007 24
Table 1.7 Accreditation Status of Hospitals, Health Centers, and Regional Youth Treatment Centers, October 2007 24
Chart 1.8 Accreditation Status of IHS Laboratories, October 2007 25
Table 1.8 Indian Health Service Laboratory Accreditation Status, October 2007 25

Part 2: Population Statistics

Chart 2.1 American Indian and Alaska Natives IHS Service Population 26
Chart 2.2 Indian Health Service—Service Population by Area, CY 2009 26
Table 2.1 IHS Service Population by Area, 2000-2009 27
Chart 2.3 Population by Age and Sex, 2000 Census with Bridged Race Categories 28
Table 2.3 Age and Sex Percent Distribution 29
Chart 2.4 Population by Age, 2000 Census with Bridged Race Categories 30
Table 2.4 Percent Age Distribution 30
Chart 2.5 Educational Attainment 31
Chart 2.6 Employment Status by Sex 31
Chart 2.7 Income Status in 1999 32
Table 2.5 Selected Economic Profiles for the United States, 2000 Census 32
Chart 2.8 Urban Indian Health Programs Service Area Population by Category 33
Table 2.8 Urban Indian Health Programs Service Area Population by Category 33

Part 3: Natality and Infant/Maternal Mortality Statistics

Chart 3.1 Birth Rates 34
Table 3.1 Number and Rate of Live Births 35
Chart 3.2 Low Birthweight (less than 2,500 grams) as a Percent of Total Live Births by Age of Mother 36
Table 3.2 Low Birthweight (less than 2,500 grams) by Age of Mother 37
Chart 3.3 High Birthweight (4,000 grams or more) as a Percent of Total Live Births by Age of Mother 38
Table 3.3 High Birthweight (4,000 grams or more) by Age of Mother 39
Chart 3.4 Birth Order by Age of Mother, Percent within Birth Order, American Indians and Alaska Natives 40
Chart 3.5 Birth Order by Age of Mother, Percent within Birth Order, U.S. All Races 40
Chart 3.6 Birth Order by Age of Mother, Percent within Birth Order, U.S. White 40
Table 3.4 Number and Percent Distribution of Live Births by Age of Mother within Birth Order 41
Chart 3.7 Maternal Death Rates 42
Table 3.7 Maternal Deaths and Death Rates 43
Chart 3.8 Infant Mortality Rates 44
Table 3.8 Infant Mortality Rates 45
Chart 3.9 Infant Mortality Rates by Age 46

Table 3.9 Infant Mortality Rates by Age 47
Chart 3.10 Leading Causes of Infant Deaths (Birth to Under 1 Year) 48
Chart 3.11 Leading Causes of Neonatal Deaths (Under 28 Days) 48
Chart 3.12 Leading Causes of Postneonatal Deaths (28 Days to Under 1 Year) 49
Table 3.10 Leading Causes of Infant Deaths by Age 50

Part 4: General Mortality Statistics

Chart 4.1 Death Rates, Leading Causes: Ages 1 to 4 Years 51
Table 4.1 Ten Leading Causes of Death for Decedents for 1 to 4 Years of Age 51
Chart 4.2 Death Rates, Leading Causes: Ages 5 to 14 Years 52
Table 4.2 Ten Leading Causes of Death for Decedents for 5 to 14 Years of Age 52
Chart 4.3 Death Rates, Leading Causes: Ages 15 to 24 Years 53
Table 4.3 Ten Leading Causes of Death for Decedents for 15 to 24 Years of Age 53
Chart 4.4 Death Rates, Leading Causes: Ages 25 to 44 Years 54
Table 4.4 Ten Leading Causes of Death for Decedents for 25 to 44 Years of Age 54
Chart 4.5 Death Rates, Leading Causes: Ages 45 to 54 Years 55
Table 4.5 Ten Leading Causes of Death for Decedents for 45 to 54 Years of Age 55
Chart 4.6 Death Rates, Leading Causes: Ages 55 to 64 Years 56
Table 4.6 Ten Leading Causes of Death for Decedents for 55 to 64 Years of Age 56
Chart 4.7 Death Rates, Leading Causes: 65 Years of Age and Older 57
Table 4.7 Ten Leading Causes of Death for Decedents for 65 Years of Age and Older 57
Chart 4.8 Death Rates for Leading Causes of All Ages 58
Table 4.8 Ten Leading Causes of Death for Decedents of All Ages 58
Chart 4.9 Death Rates, Leading Causes: Males 59
Chart 4.10 Death Rates, Leading Causes: Females 59
Table 4.9 Leading Causes of Death by Sex 60
Chart 4.11 Selected Age-Adjusted Death Rates, Ratio of American Indians and Alaska Natives (2002-2004) to U.S. All-Races (2003) 61
Table 4.11 Age-Adjusted Death Rates 61
Chart 4.12 Age-Specific Death Rates, Ratio of American Indians and Alaska Natives (2002-2004) to U.S. All-Races (2003) 62
Chart 4.13 Age-Specific Death Rates, Ratio of American Indians and Alaska Natives (2002-2004) to U.S. White (2003) 62
Table 4.12 Age-Specific Death Rates 63
Chart 4.14 Deaths by Age 63
Chart 4.15 Deaths by Age and Race 64
Chart 4.16 Deaths by Age and Sex 64
Table 4.14 Number and Percent Distribution of Deaths by Age and Sex 65
Chart 4.17 Age-Adjusted Poisoning Death Rates 66

Table 4.17 Poisoning Deaths and Death Rates 67
Chart 4.18 Poisoning Death Rates by Age and Sex 68
Table 4.18 Poisoning Death Rates by Age and Sex 69
Chart 4.19 Age-Adjusted Unintentional Injury Death Rates 70
Table 4.19 Unintentional Injury Deaths and Death Rates 71
Chart 4.20 Unintentional Injury Death Rates by Age and Sex 72
Table 4.20 Unintentional Injury Death Rates by Age and Sex 73
Chart 4.21 Age-Adjusted Suicide Death Rates 74
Table 4.21 Suicide Deaths and Death Rates 75
Chart 4.22 Suicide Death Rates by Age and Sex 76
Table 4.22 Suicide Death Rates by Age and Sex 77
Chart 4.23 Age-Adjusted Homicide Death Rates 78
Table 4.23 Homicide Deaths and Death Rates 79
Chart 4.24 Homicide Death Rates by Age and Sex 80
Table 4.24 Homicide Death Rates by Age and Sex 81
Chart 4.25 Age-Adjusted Firearm Injury Death Rates 82
Table 4.25 Firearm Injury Deaths and Death Rates 83
Chart 4.26 Firearm Injury Death Rates by Age and Sex 84
Table 4.26 Firearm Injury Death Rates by Age and Sex 85
Chart 4.27 Age-Adjusted Other Injury Death Rates 86
Table 4.27 Other Injury Deaths and Death Rates 87
Chart 4.28 Other Injury Death Rates by Age and Sex 88
Table 4.28 Other Injury Death Rates by Age and Sex 89
Chart 4.29 Age-Adjusted Alcohol-Related Death Rates 90
Table 4.29 Alcohol-Related Deaths and Death Rates 91
Chart 4.30 Alcohol-Related Death Rates by Age and Sex 92
Table 4.30 Alcohol-Related Death Rates by Age and Sex 93
Chart 4.31 Age-Adjusted Chronic Liver Disease and Cirrhosis Death Rates 94
Table 4.31 Chronic Liver Disease and Cirrhosis Deaths and Death Rates 95
Chart 4.32 Chronic Liver Disease and Cirrhosis Death Rates by Age and Sex 96
Table 4.32 Chronic Liver Disease and Cirrhosis Death Rates by Age and Sex 97
Chart 4.33 Age-Adjusted Malignant Neopolasm Death Rates 98
Table 4.33 Malignant Neoplasm Deaths and Death Rates 99
Chart 4.34 Malignant Neoplasm Death Rates by Age and Sex 100
Table 4.34 Malignant Neoplasm Death Rates by Age and Sex 101
Chart 4.35 Age-Adjusted Lung Cancer Death Rates 102

Table 4.35 Lung Cancer Deaths and Death Rates 103
Chart 4.36 Lung Cancer Death Rates by Age and Sex 104
Table 4.36 Lung Cancer Death Rates by Age and Sex 105
Chart 4.37 Death Rates for Leading Cancer Sites 106
Table 4.37 Leading Sites for Cancer Deaths for Decedents of All Ages 107
Chart 4.38 Death Rates, Leading Cancer Sites: Males 108
Table 4.38 Leading Sites for Cancer Deaths for Males 109
Chart 4.39 Death Rates, Leading Cancer Sites: Females 110
Table 4.39 Leading Sites for Cancer Deaths for Females 111
Chart 4.40 Death Rates, Leading Cancer Sites: 55 Years of Age and Older 112
Table 4.40 Leading Sites for Cancer Deaths for Decedents 55 Years of Age and Older 113
Chart 4.41 Death Rates, Leading Cancer Sites: Males, 55 Years of Age and Older 114
Chart 4.42 Death Rates, Leading Cancer Sites: Females, 55 Years of Age and Older 114
Table 4.41 Leading Sites for Cancer Deaths by Sex, 55 Years of Age and Older 115
Chart 4.43 Age-Adjusted Pneumonia and Influenza Death Rates 116
Table 4.43 Pneumonia and Influenza Deaths and Death Rates 117
Chart 4.44 Pneumonia and Influenza Death Rates by Age and Sex 118
Table 4.44 Pneumonia and Influenza Death Rates by Age and Sex 119
Chart 4.45 Age-Adjusted Tuberculosis Death Rates 120
Table 4.45 Tuberculosis Deaths and Death Rates 121
Chart 4.46 Age-Adjusted Diabetes Mellitus Death Rates 122
Table 4.46 Diabetes Mellitus Deaths and Death Rates 123
Chart 4.47 Diabetes Mellitus Death Rates by Age and Sex 124
Table 4.47 Diabetes Mellitus Death Rates by Age and Sex 125
Chart 4.48 Age-Adjusted Heart Disease Death Rates 126
Table 4.48 Heart Disease Deaths and Death Rates 127
Chart 4.49 Heart Disease Death Rates by Age and Sex 128
Table 4.49 Heart Disease Death Rates by Age and Sex 129
Chart 4.50 Age-Adjusted Cerebrovascular Diseases Death Rate 130
Table 4.50 Cerebrovascular Diseases Deaths and Death Rates 131
Chart 4.51 Cerebrovascular Diseases Death Rates by Age and Sex 132
Table 4.51 Cerebrovascular Diseases Death Rates by Age and Sex 133
Chart 4.52 Age-Adjusted Alzheimer's Disease Death Rates 134
Table 4.52 Alzheimer's Disease Deaths and Death Rates 135
Chart 4.53 Alzheimer's Disease Death Rates by Age and Sex 136
Table 4.53 Alzheimer's Disease Death Rates by Age and Sex 137
Chart 4.54 Age-Adjusted Gastrointestinal Disease Death Rates 138

Table 4.54 Gastrointestinal Disease Deaths and Death Rates 139
Chart 4.55 Human Immunodeficiency Virus (HIV) Disease Death Rates 140
Table 4.55 Human Immunodeficiency Virus (HIV) Disease Deaths and Death Rates 141
Chart 4.56 Human Immunodeficiency Virus (HIV) Disease Death Rates by Age and Sex 142
Table 4.56 Human Immunodeficiency Virus (HIV) Disease Death Rates by Age and Sex 143
Chart 4.57 Age-Adjusted Asthma Death Rates 144
Table 4.57 Asthma Deaths and Death Rates 145
Chart 4.58 Age-Adjusted Mortality for All Causes Death Rates 146
Table 4.58 Mortality for All Causes Deaths and Death Rates 147
Chart 4.59 Life Expectancy at Birth 148
Chart 4.60 Years of Potential Life Lost (YPLL) 148
Chart 4.61 Age-Adjusted Death Rates 149
Table 4.59 Overall Measures of Indian Health 150
Chart 4.62 IHS Program Accomplishments Since 1973 (Adjusted Mortality Data) 151
Table 4.62 IHS Program Accomplishments, IHS Service Area 151

Part 5: Patient Care Statistics

Chart 5.1 IHS Tribal Health Contract, Grant, and Compact Awards 152
Table 5.1 IHS Tribal Health Contract, Grant, and Compact Awards, FY 2002-2006 153
Chart 5.2 IHS Tribal Health Contract and Compact Awards by Type, FY 2006 154
Chart 5.3 Indian Health Service Tribal Health Grant and Compact Awards by Type, FY 2006 154
Table 5.2 IHS Tribal Health Contract and Grant Awards by Type, FY 2006 155
Chart 5.4 Urban Indian Health Program Workload and Appropriation 156
Table 5.4 Urban Indian Health Program Workload and Appropriation, FY 1985-2007 157
Chart 5.5 Number of Hospital Admissions 158
Table 5.5 Number of Hospital Admissions 159
Chart 5.6 Average Daily Hospital Patient Load 160
Table 5.6 Average Daily Hospital Patient Load 161
Chart 5.7 Leading Causes of Hospitalization: Ages Under 1 Year 162
Table 5.7 Ten Leading Causes of Hospitalization for GM&S Patients Under 1 Year of Age 162
Chart 5.8 Leading Causes of Hospitalization: Ages 1 to 4 Years 163
Table 5.8 Ten Leading Causes of Hospitalization for GM&S Patients 1 to 4 Years of Age 163
Chart 5.9 Leading Causes of Hospitalization: Ages 5 to 14 Years 164
Table 5.9 Ten Leading Causes of Hospitalization for GM&S Patients 5 to 14 Years of Age 164
Chart 5.10 Leading Causes of Hospitalization: Ages 15 to 24 Years 165
Table 5.10 Ten Leading Causes of Hospitalization for GM&S Patients 15 to 24 Years of Age 165
Chart 5.11 Leading Causes of Hospitalization: Ages 25 to 44 Years 166
Table 5.11 Ten Leading Causes of Hospitalization for GM&S Patients 25 to 44 Years of Age 166

Chart 5.12 Leading Causes of Hospitalization: Ages 45 to 54 Years 167
Table 5.12 Ten Leading Causes of Hospitalization for GM&S Patients 45 to 54 Years of Age 167
Chart 5.13 Leading Causes of Hospitalization: Ages 55 to 64 Years 168
Table 5.13 Ten Leading Causes of Hospitalization for GM&S Patients 55 to 64 Years of Age 168
Chart 5.14 Leading Causes of Hospitalization: 65 Years of Age and Older 169
Table 5.14 Ten Leading Causes of Hospitalization for GM&S Patients 65 Years of Age and Older 169
Chart 5.15 Leading Causes of Hospitalization for GM&S Patients by Sex 170
Table 5.15 Ten Leading Causes of Hospitalization for GM&S Patients by Sex 170
Chart 5.16 Leading Causes of Hospitalization for Males 171
Chart 5.17 Leading Causes of Hospitalization for Females 171
Table 5.16 Ten Leading Causes of Hospitalization by Sex 172
Chart 5.18 Hospital Discharge Rates by Age 173
Table 5.18 Comparison of Indian Health Service and U.S. Hospital Discharge Rates by Age 173
Chart 5.19 Beds per Hospital, IHS (FY 2006) Versus U.S. Short-Stay (CY 2006) 174
Table 5.19 Comparison of Indian Health Service and U.S. Hospitals by Bed Size 174
Chart 5.20 Number of Ambulatory Medical Visits 175
Table 5.20 Number of Ambulatory Medical Visits 176
Chart 5.21 Leading Causes of Ambulatory Medical Clinical Impressions Visits: Ages Under 1 Year 177
Table 5.21 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients Under 1 Year of Age 177
Chart 5.22 Leading Causes of Ambulatory Medical Clinical Impressions Visits: Ages 1 to 4 Years 178
Table 5.22 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 1 to 4 Years of Age 178
Chart 5.23 Leading Causes of Ambulatory Medical Clinical Impressions Visits: Ages 5 to 14 Years 179
Table 5.23 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 5 to 14 Years of Age 179
Chart 5.24 Leading Causes of Ambulatory Medical Clinical Impressions Visits: Ages 15 to 24 Years 180
Table 5.24 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 15 to 24 Years of Age 180
Chart 5.25 Leading Causes of Ambulatory Medical Visits: Ages 25 to 44 Years 181
Table 5.25 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 25 to 44 Years of Age 181
Chart 5.26 Leading Causes of Ambulatory Medical Visits: Ages 45 to 54 Years 182
Table 5.26 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 45 to 54 Years of Age 182

Chart 5.27 Leading Causes of Ambulatory Medical Clinical Impressions Visits: Ages 55 to 64 Years 183
Table 5.27 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 55 to 64 Years of Age 183
Chart 5.28 Leading Causes of Ambulatory Medical Clinical Impressions Visits: 65 Years of Age and Older 184
Table 5.28 Ten Leading Causes of Ambulatory Medical Clinical Impressions for Patients 65 Years of Age and Older 184
Chart 5.29 Leading Causes of Ambulatory Medical Clinical Impressions Visits 185
Table 5.29 Ten Leading Causes of Ambulatory Medical Clinical Impressions Visits for All Sexes 185
Chart 5.30 Leading Causes of Ambulatory Medical Clinical Impressions Visits for Males 186
Chart 5.31 Leading Causes of Ambulatory Medical Clinical Impressions Visits for Females 186
Table 5.30 Ten Leading Causes of Ambulatory Medical Clinical Impressions Visits by Sex 187
Chart 5.32 Percent Distributions for Population and Patient Care Workloads, Ages Under 25, FY 2006 188
Chart 5.33 Percent Distributions for Population and Patient Care Workloads, Ages 25 and Over, FY 2006 189
Table 5.32 Percent Distributions for Estimated Population, Ambulatory Medical Clinical Impressions, and Inpatient Discharges and Days, FY 2006 189
Chart 5.34 Percent Distribution of Ambulatory Medical Visits by Type of Provider 190
Table 5.34 Number of Ambulatory Medical Visits by Type of Provider 190
Chart 5.35 Trend in Average Daily Patient Load 191
Chart 5.36 Trend in Number of Ambulatory Medical Visits 191
Chart 5.37 Trend in Preventive Ambulatory Medical Clinical Impressions Visits 192
Chart 5.38 Dental Services Provided 192
Chart 5.39 Dental Services Provided by Tribal/Urban Programs 193
Table 5.38 Number of Dental Services Provided 194

Part 6: Community Health Statistics

Chart 6.1 Age-Adjusted Drug-Related Death Rates 195
Table 6.1 Drug-Related Deaths and Death Rates 196
Chart 6.2 Drug-Related Death Rates by Age and Sex 197
Table 6.2 Drug-Related Death Rates by Age and Sex 198
Chart 6.3 Alcohol-Related Discharge Rates (First-Listed Diagnosis) 199
Table 6.3 Number and Rate for Discharges with a First-Listed Alcohol-Related Diagnosis of Persons 15 Years Old and Older 199
Chart 6.4 Hospitalizations for Injuries and Poisonings 200
Chart 6.5 Age-Adjusted Motor Vehicle Death Rates for Males 200
Table 6.5 Motor Vehicle Deaths and Death Rates for Males 201
Chart 6.6 Age-Adjusted Motor Vehicle Death Rates for Females 202

Table 6.6 Motor Vehicle Deaths and Death Rates for Females 203
Chart 6.7 IHS Public Health Nursing—Percent of Visits by Program Area, FY 2006 204
Table 6.7 IHS Public Health Nursing Visits by Program Area, FY 2006 204
Chart 6.8 IHS Public Health Nursing—Percent of PHN Visits by Type of Activity, FY 2006 205
Table 6.8 IHS Public Health Nursing Visits Worked by Type of Activity, FY 2006 205
Chart 6.9 IHS Public Health Nursing—Percent Visits by Age and Sex, FY 2006 206
Table 6.9 IHS Public Health Nursing Visits by Age and Sex of Patients, FY 2006 206
Chart 6.10 IHS Public Health Nursing Visits by Age, FY 2006 versus 2000 Census 207
Table 6.10 IHS Public Health Nursing Visits by Age of Patients 207
Chart 6.11 Distribution of CHR Client Contacts by Setting, October 1, 2003 to September 30, 2006 208
Table 6.11 Community Health Representative Client Contacts by Setting, October 1, 2003 to September 30, 2006 208
Chart 6.12 CHR Client Contacts by Leading Detailed Activities, October 1, 2003 to September 30, 2006 209
Table 6.12 Community Health Representative Client Contacts by Leading Detailed Activities, October 1, 2003 to September 30, 2006 209
Chart 6.13 Ten Leading Health Problems for CHR Client Contacts, October 1, 2003 to September 30, 2006 210
Table 6.13 Community Health Representative Client Contacts by Leading Health Problems, October 1, 2003 to September 30, 2006 210
Chart 6.14 Leading Health Problems for CHR Client Contacts by Age, October 1, 2003 to September 30, 2006 211
Table 6.14 Community Health Representative Client Contacts by Leading Health Problems, October 1, 2003 to September 30, 2006 211
Chart 6.15 Leading Types of CHR Incoming Client Referrals, FY 2003-2006 212
Chart 6.16 Leading Types of CHR Ongoing Client Referrals, FY 2003-2006 212
Chart 6.17 Types of Indian Homes Provided with Sanitation Facilities by IHS Through 2006 213
Table 6.17 Indian Home Provided with Sanitation Facilities by IHS, FYs 1960-2006 213
Chart 6.18 Contributions to Indian Health Service Sanitation Facilities Projects, FY 2006 214
Table 6.18 P.L. 86-121 Program—Summary of Cash Contributions Received in FY 2006 by Contributor 214
Chart 6.19 Sanitation Facilities Deficiencies, FY 2007—Costs 215
Chart 6.20 Sanitation Facilities Deficiencies, FY 2007—Units 215
Table 6.19 Sanitation Facilities Deficiency Summary, FY 2007 216
Chart 6.21 IHS Clinicians Documenting Patient Education, FY 2007 217
Table 6.21 IHS Clinicians Documenting Providing Patient Education, FY 2007 217
Chart 6.22 IHS Clients Served by IHS Areas, FY 2007 218
Chart 6.23 IHS Patient Education, Percent of Clients Served by Location, FY 2007 218
Table 6.22 IHS Clients Served by Location, FY 2007 219

Chart 6.24 Top 25 IHS Patient and Family Education Code Documented by All IHS Areas, FY 2007 220
Table 6.24 Top 25 IHS Patient and Family Education Code Documented by All IHS Areas, FY 2007 220
Glossary of ICD-10 Codes 221
List of 113 Causes of Death (1999-present) 221
List of 130 Causes of Infant Death (1999-present) 225
Additional causes of death and their corresponding ICD-10 Codes (1999-present) 230
List of ICD-9-CM Codes Used in Patient Care Charts and Tables 231
Methods Used to Rank Leading Sites of Cancer Deaths 232
Index to Charts and Tables 234

OVERVIEW

The Indian Health Service (IHS), an agency within the Department of Health and Human Services (HHS), is responsible for providing federal health services to American Indian and Alaska Native (AI/AN) people. The provision of health services to federally recognized Indians grew out of a special relationship between the federal government and Indian Tribes. This government-to-government relationship is based on Article I, Section 8, of the United States Constitution, and has been given form and substance by numerous treaties, laws, Supreme Court decisions, and Executive Orders.

The Indian Health program became a primary responsibility of the HHS under P.L. 83-568, the Transfer Act, on August 5,1954. This Act provides "that all functions, responsibilities, authorities, and duties…relating to the maintenance and operation of hospital and health facilities for Indians, and the conservation of Indian health…shall be administered by the Surgeon General of the United States Public Health Service."

The IHS is the federal health care provider and health advocate for AI/AN people and its goal is to assure that comprehensive, culturally-acceptable personal and public health services are available and accessible to AI/AN people. The mission of the IHS, in partnership with AI/AN people, is to raise their physical, mental, social, and spiritual health to the highest level. It is also the responsibility of the IHS to work with the people involved in the health delivery programs so they may be cognizant of entitlements of AI/AN people, as American citizens, to all federal, state, and local health programs, in addition to IHS and Tribal services. The IHS also acts as the principal federal health advocate for AI/AN people in the building of health coalitions, networks, and partnerships with Tribal nations and other government agencies as well as with non-federal organizations, e.g., academic medical centers and private foundations.

The IHS has carried out its responsibilities through developing and operating a health services delivery system designed to provide a broad-spectrum program of preventive, curative, rehabilitative, and environmental services. This system integrates health services delivered directly through IHS facilities, purchased by IHS through contractual arrangements with providers in the private sector, and delivered through Tribally operated programs and Urban Indian Health Programs.

The 1975 Indian Self-Determination Act, P.L. 93-638 as amended, builds upon IHS policy by giving Tribes the option of staffing and managing IHS programs in their communities, and provides for funding for improvement of Tribal capability to contract under the Act. The 1976 Indian Health Care Improvement Act, P. L. 94-437 as amended, was intended to elevate the health status of AI/AN people to a level equal to that of the general population through a program of authorized higher resource levels in the IHS budget. Appropriated resources were used to expand health services, build and renovate medical facilities, and step up the construction of safe drinking water and sanitary disposal facilities. It also established programs designed to increase the number of Indian health professionals for Indian needs and to improve health care access for Indian people living in urban areas.

The operation of the IHS health services delivery system is managed through local administrative units called service units. A service unit is the primary level of health organization for a geographic area served by the IHS program, just as a county or city health department in a state health department.

A few service units cover a number of small reservations; some large reservations are divided into a number of service units. The service units are grouped into larger cultural-demographic-geographic management jurisdictions administered by Area Offices.

TRENDS IN INDIAN HEALTH

Introduction

"*Trends in Indian Health*" provides basic statistical information to the IHS and its programs, Tribes, other federal and state government agencies, as well as other customers interested in the IHS. This publication uses narrative, charts, and tables to describe the IHS program and the health status of AI/AN people residing in the IHS service area. The IHS service area consists of counties *"on" or "near"* federal Indian reservations, i.e. contract health service delivery areas (CHSDAs). As of CY 2009 the Indians residing in the service area comprise about 57 percent of all AI/AN people residing in the U.S. Information pertaining to the IHS organizational structure, AI/AN demography, and patient care is included. Historical trends are depicted, and comparisons to other population groups are made, when appropriate.

Scope and Organization of this Report

Narrative, charts, and tables are grouped into six major categories:

- IHS Structure,
- Population Statistics,
- Natality and Infant/Maternal Mortality Statistics,
- General Mortality,
- Patient Care Statistics, and
- Community Health Statistics

The tables provide detailed data, while the charts further depict significant relationships. Throughout this report each table and its corresponding chart appear next to each other. However, some self-explanatory charts do not have a corresponding table. In other instances, a table may have more than one chart associated with it.

SUMMARY OF DATA SHOWN

Indian Health Service Organizational Structure

The IHS is comprised of 12 regional administrative units called Area Offices. As of October 1, 2006, the Area Offices consisted of 163 basic administrative units called service units. Of the 163 service units, 106 were operated by Tribes.

The IHS operated 31 hospitals, 50 health centers, two school health centers, and 31 health stations. Tribes have two different vehicles for exercising their self determination—they can choose to take over the operation of an IHS facility through a P.L. 93-638 self-determination contract (Title I) or a P.L. 93-638 self-governance compact, as amended (Title V). A distinction is made in this publication regarding these two Tribal modes of operation, i.e., Title I and Title V. A non-638 contract mechanism is used by Alaska to provide funding to several tribally operated village clinics. Tribes operated 15 hospitals (Title I, one hospital and Title V, 14 hospitals), 254 health centers (Title I, 122 and Title V, 132), 18 school health centers (Title I, 15 and Title V, three), 112 health stations (Title I, 60 and Title V, 52), and 166 Alaska village clinics (Title I, eight and Title V, 149, and Other, nine).

There were 36 Urban Indian Health Programs ranging from full ambulatory care, limited ambulatory care, referral, and demonstration programs.

As of October 2007, all IHS hospitals, eligible IHS-operated health centers and regional youth treatment centers were accredited by the Joint Commission, Centers for Medicare and Medicaid Services (CMS), and Accreditation Association for Ambulatory Healthcare (AAAHC).

Population Statistics

In Calendar Year (CY) 2009, the IHS service population (a count of those AI/AN people who are eligible for IHS services) will be approximately 1.9 million. Since 2000, the IHS service population is increasing at a rate of about 1.7 percent per year, excluding the impact of new Tribes.

The AI/AN population residing in the IHS service area is younger than the U.S. all-races population, based on the 2000 Census with bridged-race categories. For AI/AN, 31 percent of the population was younger than 15 years, and six percent was older than 64 years. For the U.S. all-races population, the corresponding values were 21 and 12 percent respectively. The AI/AN median age was 25.0 years compared to 34.9 years for U.S. all-races. The estimated CY 2007 population was 939,743 AI/AN residing in the Urban Indian Health Programs service area.

According to the 2000 Census with bridged-race categories, AI/ANs have lower incomes than the general population. In 1999, AI/AN people residing in U.S. had a median household income of $30,599 compared to $41,994 for U.S. all races. The AI/AN median household income was only marginally higher than the median household income ($29,423) for Blacks. During this time period, 25.7 percent of AI/AN people in the U.S. lived below the poverty level in contract to 12.4 percent for the U.S. all races population.

Natality and Infant/Maternal Mortality Statistics

The birth rate for AI/AN people residing in the IHS service area was 20.8 (rate per 1,000 population) in 2002-2004. It is 1.5 times the 2003 birth rate of 14.1 for the U.S. all-races population.

The maternal mortality rate for AI/AN people residing in the IHS service area dropped from 28.5 (rate per 100,000 live births) in 1972-1974 to 11.1 in 2002-2004, a decrease of 61 percent. These AI/AN rates have been adjusted to compensate for misreporting of AI/AN race on state death certificates. In 2002-2004, there were 6 unadjusted maternal deaths, whereas there were 7 maternal deaths adjusted for misreporting of AI/AN race on the state death certificate.

The infant mortality rate for AI/AN people residing in the IHS service area dropped from 25.0 (rate per 1,000 live births) in 1972-1974 to 8.3 in 2002-2004 a decrease of 67 percent. These rates have been adjusted to compensate for misreporting of AI/AN race on state death certificates. The 2002-2004 rate (8.3) is 20 percent higher than the U.S. all-races rate (6.9) for 2003.

General Mortality Statistics

The leading cause of death for AI/AN people residing in the IHS service area (2002-2004) was from heart disease followed by malignant neoplasm. (This is same as for the total U.S. all-races population in 2003). However, the cause-of-death ranking differs by sex. For AI/AN males, the top two leading causes of death were diseases of the heart and unintentional injuries. For AI/AN females, the top two leading causes of death were diseases of the heart and malignant neoplasms.

In 2002-2004, the AI/AN (IHS service area) age-adjusted death rates for the following causes were considerably higher than those for the U.S. all-races population in 2003. These AI/AN rates have been adjusted to compensate for misreporting of AI/AN race on state death certificates. The following list is a comparison of AI/AN age-adjusted rate (using data that are also adjusted for misreporting of AI/AN race on the state death certificates) to the U.S. rate where there are substantial differences.

Comparison of 2002-2004 AI/AN death rates to 2003 U.S. all-races death rates.

- Tuberculosis—750 percent greater;
- Alcoholism—524 percent greater;
- Motor Vehicle Crashes—234.6 percent greater;
- Diabetes mellitus—193 percent greater;
- Unintentional injuries—153 percent greater;
- Homicide—103.3 percent greater;
- Suicide—66 percent greater;
- Pneumonia and influenza—47 percent greater; and
- Firearm injury—28 percent greater;

Patient Care Statistics

In FY 2006, there were 76,054 admissions to IHS and Tribal direct and contract general hospitals. The leading cause of hospitalization was obstetric deliveries and complications of pregnancy and puerperium.

The total number of ambulatory medical visits (IHS and Tribal direct and contract facilities) was more than ten million in FY 2006, an increase of more than 488 percent since FY 1970. The leading cause of ambulatory medical visits in IHS and Tribal direct and contract facilities was supplementary classification conditions. The supplementary classification category includes such clinical impressions as other preventive health services, well child care, physical examination, tests only (lab, x-ray, screening), and hospital, medical, or surgical follow-up.

The number of direct and contract dental services provided by Indian Health Service, Tribal, and Urban Programs, as reported to the IHS central database, has increased almost 16 fold (from under 0.2 million in FY 1955 to about 3.2 million in FY 2006).

Community Health Statistics

The Community Health Representative (CHR) program reported approximately 1,887,881 client services during FY 2003-2006. This number reflects about a third of the 264 tribal CHR Programs submitting data. Most of these services took place in the home (29 percent) and community (49 percent). Throughout FY 2003-2006, the leading service category was Patient Care (nearly 22 percent), followed by Monitor Patients (16 percent), Case Management (nearly 15 percent), and Transportation (nearly 15 percent). During FY 2003-2006, the top six Health Problems/issues were Other Health Promotion/Disease Prevention (32 percent); Diabetes Mellitus (18 percent); Hypertension (13 percent); Nutrition (5 percent); Dialysis (4 percent); and Heart, immunizations, and eye care/glasses (2 percent). A majority of services delivered in those top six Health Problems were to patients age 60 and over (see graphs).

For people accepted for treatment into the IHS substance abuse treatment program, most initial contacts are for alcohol addiction only. However, the number of initial contacts involving other drugs has been increasing. Also, the age-adjusted drug-related death rate for AI/AN residing in the IHS service area increased from 4.9 deaths per 100,000 population in 1979-1981 to 15.0 in 2002-2004. These AI/AN rates have been adjusted to compensate for misreporting of AI/AN race on state death certificates. The 2002-2004 AI/AN rate (15.0) is 1.5 times greater than the U.S. all-races rate (9.9) for 2003.

The IHS Injury Prevention (IP) Program promotes a comprehensive public health approach to prevent injuries. Evidence-based projects are used to reduce motor vehicle injuries and fatalities by increasing occupant restraint use through tribal motor vehicle occupant restraint policy development; supporting tribal law enforcement in deterring drunk drives (DUI policy development); and highway environmental modifications (street lights, guard rails, highway stripping, etc). The IP Program works in partnership through community-based IP coalitions in specific IP projects (Ride, Safe, Sleep Safe), and funds competitive cooperative agreement programs aimed at building tribal capacity, enhancing existing public health infrastructure and implementing effective community-based strategies to prevent injuries. The IHS IP program has contributed to a 6 percent decline in IHS and Tribal direct and contract hospitalizations for injuries and poisonings since FY 2002.

There were 420,778 public health nursing visits recorded in the Headquarters reports for FY 2006. The most frequent program areas dealt with during these visits were health promotion/disease prevention (39 percent of the visits), morbidity (17 percent), maternal health (5 percent) and communicable disease (4 percent). The visits were concentrated in two age groups, children under 5 years of age (21 percent) and adults over the age of 64 (19 percent). Female visits outnumbered male visits by 62 percent.

With completion of all projects approved through FY 2006, approximately 300,000 AI/AN homes will have been provided first service sanitation facilities since 1960. As of the end of FY 2007, there were over 150,000 AI/AN homes in need of sanitation facilities, including over 36,000 AI/AN homes without potable water.

The FY 2007 economically feasible sanitation deficiencies to serve existing AI/AN homes and communities totals $1,054 billion. This amount is to provide first service sanitation facilities, to upgrade existing facilities, to provide solid waste facilities, and to provide assistance to operation and maintenance organizations.

In FY 2007, 4,415,437 patient education codes were documented for 1,924,322 patients. Areas documenting the most patient education are the Oklahoma area (28 percent), Phoenix area (17 percent), and the Navajo area (15 percent). Areas with the greatest improvement in documentation as compared to FY 2003 are the Tucson area (increase of 49.19 percent), Navajo area (increase of 26.6 percent), Nashville area (increase of 26.14 percent), and the Portland area (increase of 14.41 percent). All healthcare disciplines are encouraged to provide and document patient education.

In FY 2007, pharmacists documented 27 percent of the patient education provided to patients, followed by clinical nurses (22 percent), physicians (12 percent), LPNs (10 percent), nursing assistants (7 percent), public health nurse and nurse practitioners (5 percent). Other disciplines provided less than 5 percent and are grouped together in the other category, which totaled provided 13 percent of patient education. Most patient education is provided in the hospital (57 percent) or health center (35 percent) location. Health stations, village clinics, and chapter houses account for 4 percent of health education provided and the remaining 4 percent of health education is provided in non-health care related settings such as home, school, or the office.

The top 25 patient education codes in FY 2007 made up 63.6 percent of all patient education codes provided (2,808,706 codes out of a total 4,415,706). The top 25 education codes fall into 7 categories. The most education was provided on medications (63 percent), immunizations (11 percent), diabetes (9 percent), wellness (6 percent), women's health (5 percent), medical safety (4 percent), and tobacco (2 percent).

SOURCES AND LIMITATIONS OF DATA

Population Statistics

Registered AI/AN patients with at least one direct or contract inpatient stay, outpatient visit, or dental visit during the last three years are defined as users. IHS user population estimates are drawn from data in the IHS Patient Registration System. First implemented in 1984, the Patient Registration System functioned adequately for many years; but, in recent years, system changes resulted in registration record errors. New system-wide improvements were implemented. From December 2003 through January 2006 local facilities re-sent complete and up-to-date information for all patients who had ever received direct or contract health services from IHS or Tribally-operated programs to a central data repository. Data matching software was then applied to the information, allowing for the identification and removal of duplicate records. Thanks to the dedicated efforts of area statistical officers and information technologists alike, this publication contains some of the most accurate user population estimates ever produced.

The service population estimates are based on official U.S. Census Bureau county data, representing self-identified AI/AN people who may or may not use IHS services. IHS service populations between census years (e.g., 1990 and 2000) are estimated using a smoothing technique in order to show a gradual transition between census years. This normally results in upward revisions to service population figures projected prior to a census, since each Census tends to do a better job in enumerating AI/AN people. IHS service populations beyond the latest census year (2000) are projected through linear regression techniques, using the most current ten years of AI/AN birth and death data provided by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

State birth and death certificates do not provide information on use of IHS services, IHS service population figures are used in calculating AI/AN vital event rates for the IHS service areas.

The social and economic data contained in this publication are from the 2000 census and reflect the characteristics of persons self-identifying as AI/AN (alone).

IHS Service Population

Definition

The IHS service population is based on the 2000 Census with bridged-race categories (developed by the U.S. Census Bureau and the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS). The service population consists of AI/AN people and serves as a measure of those eligible for IHS services. Those AI/AN eligible are estimated by counting AI/AN who reside in geographic areas in which IHS has responsibilities ("on or near" reservations) and is comprised of approximately 57 percent of all AI/AN residing in the U.S. These people **may** or **may not** use IHS health services. (Migration is not a factor when developing the IHS service population).

Description of Service Population Calculation

The Division of Program Statistics (DPS) produces service populations for IHS Areas, service units, and counties. Since state birth and death certificates do not provide information on use of IHS services, the IHS service population counts are used as the denominator when calculating AI/AN vital event rates for the IHS service areas.

IHS service populations between census years (e.g., 1990 and 2000) are estimated using a smoothing technique in order to illustrate a gradual transition between census years. This normally results in upward revisions to service population figures projected prior to a census, since each census tends to conduct a better job in enumerating AI/AN people. IHS service populations beyond the latest census years (2000) are projected through linear regression techniques, using the most current ten years of AI/AN birth and death data provided by NCHS.

IHS service population figures are based on the 2000 census with bridged-race categories (at the county level) file. The Census Bureau enumerates those individuals who identify themselves as AI/AN. The IHS service population consists of those enumerated AI/ANs who reside in the geographic areas in which IHS has responsibilities ("on or near" reservations, i.e., contract health service delivery areas (CHSDAs)).

> *The 2000 Census allowed respondents to report more then one race category to describe themselves and household members. This was a result of the revised Office of Management and Budget (OMB) guidelines issued on October 30, 1997. All other censuses prior to 2000 had offered the respondent with the option for self-identification of a single race with which the respondent most closely identified. As a result of the aforementioned OMB revised standards, a methodology was developed to "bridge" the 2000 Census with previous decennial censuses. This impacted the manner in which the total AI/AN population was counted.*

The Census Bureau and NCHS are credited for developing the bridging methodology to address the inconsistencies for identifying race between the 2000 Census and the previous censuses. The 2000 Census with bridged-race categories re-categorizes more than one race responses to a single race response. The 2000 Census' (with bridged-race categories) single race corresponds with the single race categories used on the birth and death certificates.

Source: National Center for Health Statistics. Estimates of the July 1, 2000-July 1, 2004, United States resident population from the Vintage 2004 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. Available on the Internet at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm. September 8, 2005

Using the 2000 Census with bridged-race categories increased the AI/AN population denominators resulting in an AI/AN population of 3.3 million for the entire U.S; thereby slightly decreasing the IHS mortality rates.

This AI/AN population of 3.3 million falls between the population of all AI/AN in the U.S. of 2.5 million who identified themselves as an AI/AN race (alone) and the population of all AI/AN in the U.S. of 4.2 million who identified themselves as an AI/AN and a combination of at least one other race (combination).

IHS service populations beyond the latest census (2000) are projected through linear regression techniques using the latest ten years of AI/AN birth and death data provided by NCHS. The estimated natural change for a county (number of births minus the number of deaths) is applied accumulatively to the latest census

enumeration for each county and each year beyond the census. DPS produces a new set of IHS service population projections each year.

The IHS service populations are produced for the IHS area, service unit, and county levels. If a county is split between and/or among service units and/or IHS service areas, DPS allocates the county population to the affected service units and/or service areas. These population allocations are based on percentage splits developed and agreed by the affected IHS areas. A letter of agreement describing the formal arrangement (including a valid authorization by all authorities for the population allocation) is sent to DPS and kept on file. These percentage splits are calculated using sub-county census data and census maps.

DPS also generates AI/AN population estimates and projections, utilizing an identical methodology, for non-service IHS counties. Therefore, DPS produces census-based AI/AN population figures for every U.S. county and all 50 states.

Changes in Methodologies

DPS used updated methodologies to produce age-adjusted mortality rates. These applied methodologies coincide with methodologies used by NCHS, CDC and the U.S. Census Bureau. Using these updated methodologies enabled AI/AN mortality rates to be compared to U.S. all-races mortality rates produced by the aforementioned agencies.

Age-adjusted mortality rates for ***"Trends in Indian Health" (2000-2001)*** developed for data years 1972-1974 through years 1996-1998 are **NOT** comparable to these latest published mortality rates calculated for data years 1972-1974 through years 2002-2004. This is due to several changes in the methodology used to calculate the age-adjusted mortality rate produced by DPS.

Under **no** circumstances should data published in this issue of ***"Trends in Indian Health"*** be compared to any data published in prior ***"Trends in Indian Health"*** publications. This holds true for other previous IHS publications including ***"Regional Differences in Indian Health,"*** the ***"Focus Reports,"*** the ***"Life Expectancy Report,"*** and all YPLL data provided by DPS. (All forthcoming publications will calculate data that are comparable by using the following updated methodologies).

The three major updated methodologies applied by DPS include:

ICD-9 Conversion to ICD-10

Beginning with the 1999 mortality data a new classification system was implemented to categorize causes of death. The International Classification of Diseases, Version 10 (ICD-10) was used by the states and NCHS to code all causes of death for years 1999 onward. The ICD-10 classification system consists of a new nomenclature scheme with new and revised categories for some causes of death. Comparability ratios are applied when appropriate, i.e., to adjust data analyzed using the past classification system (ICD-9). Such revisions are noted on the data when applicable. ***"Trends in Indian Health"*** applies comparability ratios to all data years prior to the 1999. These comparability ratios were developed by NCHS and applied to ICD-8 (years 1972-1978) and ICD9 codes (years 1979-1998). Since there is no direct 'code-to-code' correlation these comparability ratios assist with bridging the different classifications systems to insure that data are comparable when illustrating trends. ***"Trends in Indian Health"*** provides data for years prior to 1999 therefore necessitating the use of adjustment factors when calculating the mortality rates.

2000 U.S. Census Populations with Bridged Race Categories (2000 Census Bridged File)

The 2000 U.S. Census Population with Bridged-Race Categories (2000 Census Bridged File) for AI/ANs was used by IHS to calculate mortality and natality age-adjusted rates. The 2000 Census allowed respondents to report more than one race category to describe their race. The birth and death certificates (vital events) used by the states for years 1999-2001 allow only a **single race** category to be reported. Vital event totals are used in the numerator and the 2000 Census bridged population is used in the denominator to produce the birth or death rates that occur in the population of interest. The denominator data are based on the 2000 Census bridge file, which re-categorizes responses to a single race where more than one race was reported. This corresponds to the single race categories used on birth and death certificates.

Age Adjustment Based on the 2000 Standard Population

The HHS recommended that all HHS agencies use the 2000 Census standard population to age-adjust mortality rates. IHS calculates age-adjusted rates based on the 2000 standard population to comply with this HHS recommendation.

Vital Event Statistics

AI/AN vital event statistics are derived from data provided annually to IHS by NCHS. Vital event statistics for the U.S. population were derived from data reported in various NCHS publications as well as from some unpublished data from NCHS.[1] NCHS obtains birth and death records for all U.S. residents from state health departments, based on information reported on official birth and death state certificates. The records NCHS provides to IHS contain the same basic demographic items as the vital event records maintained by NCHS for all U.S. residents, but with names, addresses, and record identification numbers deleted. It should be noted that Tribal identity is not recorded on these records.

The natality and mortality data are only as accurate as the reporting by the states to NCHS. NCHS does perform numerous edit checks, applies verification methods, and imputes values for non-responses.

Misreporting of AI/AN race on state death certificates occurs, especially in areas distant from traditional AI/AN reservations. In order to determine the degree and scope of the misreporting, IHS conducted a study utilizing the National Death Index (NDI) maintained by NCHS. The study involved matching IHS patient records of those patients who could have died during 1986 through 1988 with all death records of U.S. residents for 1986 through 1988 as contained on the NDI. The results were published in a document entitled, Adjusting for Miscoding of Indian Race on State Death Certificates, November 1996. The study revealed that on 10.9 percent of the matched IHS-NDI records, the race reported for the decedent was other than AI/AN. The percentage of records with inconsistent classification of race ranged from 1.2 percent in the Navajo Area to 28.0 and 30.4 percent in the Oklahoma and California Areas, respectively.[2]

[1] Arias, E. United States Life Tables, 2003. National Vital Statistics Report; Vol. 54 No 14. Hyattsville, Maryland: National Center for Health Statistics. 2006.

[2] Indian Health Service, Division of Program Statistics, Adjusting for Miscoding of Indian Race on State Death Certificates. November, 1996.

The results of the NDI study provide sufficient numbers to calculate adjustments for each IHS Area, IHS overall and selected age groups. In addition to these adjustments based on the study findings, IHS assumed the following: (a) the results from 1986-88 apply to other years; (b) IHS age-group adjustments applied also to each Area; and (c) the Area adjustments applied to the causes of death used in this publication, i.e. if an Area's total deaths needed to be increased by ten percent, than the deaths for each cause of death would also increase by this same rate. These assumptions cannot be statistically supported by the results of the study. However, it was necessary to adjust all the death rates in this publication to provide a meaningful and comprehensive look at health status.

These NDI adjustments were used for the first time in the 1997 edition of this publication. Both unadjusted and adjusted information is shown, as applicable. The adjustments were applied to the results obtained from using an unadjusted death file.

IHS has more specific adjustment factors for the age group less than one year. These are derived from the linked birth/infant death data sets produced by the NCHS.[3] In this edition unadjusted and adjusted infant mortality rates will be shown. These adjustments based on the linked data sets take precedent over the NDI adjustments for the under one-year age group, described above.

Natality statistics are based on the total file of birth records occurring in the U.S. each year. Mortality statistics are based on the total file of registered deaths occurring in the U.S. each year. Tabulations of vital events for IHS Areas are by place of residence.

The AI/AN vital event statistics in this publication pertain only to AI/AN people residing in the counties that make up the IHS service area, in contrast to earlier editions of the ***"Trends in Indian Health"*** publication which depicted vital event statistics for all AI/AN people residing in the Reservation States. Calculations done on a Reservation State basis include all counties within the State, even those outside the IHS service area. Reservation State vital event rates tend to be lower in value (i.e., lower birth rates, lower death rates) than IHS service area rates. Since prior to 1972, only Reservation State data were available; these data were used to show trends going back to 1955, the inception of the IHS. However, now that sufficient vital event data are available for the IHS service area to show meaningful trends, the ***"Trends in Indian Health"*** publication, beginning with the 1992 edition, shows vital event statistics for the IHS service population. IHS service area data are more indicative of the health status of the AI/AN people that IHS serves.

The AI/AN population is considerably younger than the U.S. all-races population. Therefore, the death rates presented in this publication have been age-adjusted where applicable so that appropriate comparisons can be made between these population groups. Two exceptions are the information presented for leading causes of death and leading cancer sites.[4] In order to determine the leading causes of death or cancer sites for a population group, it is necessary to rank without any adjustment for age. However, it should be kept in mind that the ranking of causes of death or cancer sites for a population group is affected by its age composition.

All age-adjusted death rates calculated using a small number of deaths should be interpreted with caution as the observed rate may be quite different from the true

[3] *http://www.cdc.gov/nchs/linked.htm*

[4] *http://www.cdc.gov/nchs/products/pubs/pubd/hestats/leadingdeaths03/leadingdeaths03.htm*

underlying rate. This occasionally occurred when an Area rate was calculated for a specific cause of death, e.g., tuberculosis. Any rate based upon fewer than 20 deaths may not be reliable as the sample will be too small.

Prior to this publication, "alcohol causes of deaths" used ICD-9 codes for years prior to 1999. All ICD-9 codes used in IHS publications are consistent with codes used by NCHS. For years 1999 onward, alcohol-induced causes of death include the following ICD-10 codes:

F10 (mental and behavioral disorders due to the use of alcohol)
G31.2 (degeneration of the nervous system due to alcohol)
G62.1 (alcoholic polyneuropathy)
I42.6 (alcoholic cardiomyopathy)
K29.2 (alcoholic gastritis)
K70 (alcoholic liver disease)
R78.0 (finding of alcohol in blood)
X45 (accidental poisoning by and exposure to alcohol)
X65 (intentional self-poisoning by and exposure to alcohol), and
Y15 (poisoning by and exposure to alcohol, undetermined intent)

The list of codes for alcohol-induced causes of death was expanded in 2003 to include E24.4, G72.1, and K86.0. Definitions of these expanded codes are:

E24.4 (alcohol-induced pseudo-Cushing's syndrome)
G72.1 (alcoholic myopathy)
K86.0 (alcohol-induced chronic pancreatitis)

The NCHS definition of alcohol-related deaths includes all of these ICD-10 codes groups and that are used in all IHS publications. (*NOTE: The category "alcohol-induced causes" includes not only deaths from dependent and nondependent use of alcohol, but also accidental poisoning by alcohol. It excludes unintentional injuries, homicides, and other causes indirectly related to alcohol use as well as deaths due to fetal alcohol syndrome.*)[5]

Age-Adjustment

The age-adjusted death rates presented in this publication were computed by the direct method, that is, by applying the age-specific death rate for a given cause of death to the standard population distributed by age. The total population as enumerated in 2000 was selected as the standard since this is the standard used by NCHS.[6] The rates for the total population and for each race-sex group were adjusted separately, by using the same standard population. The age-adjusted rates were based on ten-year age groups. It is important **not** to compare age-adjusted death rates with crude rates.

A new table, "Poisoning Deaths and Death Rates," was added beginning with the 2002-2003 edition because of its significance in the AI/AN community. The "poisoning" table and chart include deaths for the following ICD-10 codes: U01.6-U01.7 (poisoning via terrorism); X40-X49 (accidental poisoning by exposure to noxious substances); X60-X69 (suicide by poisoning); X85-X90 (homicide by poisoning); Y10-Y19 (undetermined poisoning); and Y35.2 (poisoning by legal intervention/war).

[5] Hoyert DL, Heron MP, Murphy SL, Kung H. Deaths: Final Data for 2003. National Vital Statistics Reports; vol 54 no 13. Hyattsville, Maryland: National Center for Health Statistics. 2006.

[6] Anderson RN, Rosenberg, HM. Age Standardization of Death Rates: Implementation of the Year 2000 Standard; National Vital Statistics Reports, vol 47 no 3. Hyattsville, Maryland: National Center for Health Statistics. 1998.

Patient Care Statistics

Patient care statistics are derived from several IHS reporting systems. Almost all patient care data used in this report for IHS and Tribal facilities originated from the National Data Warehouse (NDW), the central data repository which is managed by the National Patient Information Reporting System (NPIRS) team in collaboration with the IHS Division of Program Statistics. This effort began in December 2003 with files that contained initial loads of historical data as early as 2001 from the sites. Initial loads were completed in November 2005. In January 2006, incremental files started to be exported from all reporting sites. As of this writing, almost all reporting sites (99 percent) transmit exports to the NDW in incremental files monthly in one of two standard formats, Health Level 7 (HL7) or simplified format. Reporting sites do not need to run the Resource Patient Management System (RPMS) software locally in order to send files successfully to the NDW. Data received by the NDW is subject to errors in entering, transmitting, and formatting. Data quality issues with registration and encounter data might occur. The NPIRS team works with the Division of Program Statistics, Area Statistical staff, and Facility statistical staff to resolve such issues and continuously analyze, maintain, and improve the timeliness and accuracy of the data.

The NDW contains only IHS federal and Tribal direct and contract facility inpatient and outpatient data pertaining to various patient characteristics (age, sex, principal diagnoses, other diagnoses, community of residence, etc.). The data are collected by the local medical records system at each facility (RPMS or other), one record per inpatient discharge or outpatient visit, and then transmitted electronically to the NDW.

Starting with the 1996 edition, leading causes of hospitalization and ambulatory medical visits are shown for specific age groups. In prior editions, they were only shown for all ages and by sex.

In some cases, other information systems than the NDW were used by individual programs to provide data, presented in this report, pertaining to patient care. Facility accreditation, Tribal health contract and grant awards, urban projects, dental services, and provision of sanitary services reports were taken from data sources and reports run by the individual IHS programs.

Community Health Statistics

Data on the IHS Community Health Representatives (CHR) Program is obtained only from the CHR Patient Care Component (PCC) application in the IHS Resource Patient Management System (RPMS). While the primary focus of CHR PCC is documentation of patient services, it is a powerful tool to record all services and activities to provide a complete accounting picture of CHR functions for program management and administration. With roughly a third of CHR Programs reporting nationally, the reduction of **reported** CHR services (4.1 million in FY 1993) through FY 2006 reflects the transfer of resources to Tribes as part of Self-Determination choices, geographic and security-related challenges just to access and use the CHR data application, and under-reporting of services as identified during training sessions on enhancements and upgrades to the data system. The data is derived from CHR Programs which enter and export data through CHR PCC, approximately 85 of 264 Programs nationwide. Data presented herein are primarily aggregate patient data over three fiscal years (FY 2003-2006). Data from CHR Programs utilizing “regular” RPMS PCC is not accessible through the reporting mechanism used at present. Future data based on improvements to the CHR PCC should reflect enhanced capacity and more specificity to better classify health problems and services delivery.

Direct patient care services includes hands-on care such as checking vital signs, providing personal care, providing emotional support, delivering medications/ supplies/equipment, etc. Monitoring patients includes following up on health and well-being of clients pursuant to clinician referrals or as part of regularly scheduled work activities or care plans; ensuring that patients have enough food, medications, a safe living environment, etc. Case management can include services such as making medical appointments or scheduling check-ups or other activities on behalf of patients to ensure they receive health or socio-economic services and care needed. Transport Patients includes conveying patients to medical appointments when patients in mostly remote or rural areas don't have resources to get to health care or in the absence of public or tribally sponsored transportation systems.

IHS continues to encourage Tribal governments to utilize the CHR PCC data application for its 1) user-friendliness, 2) functionality and capacity to yield reports to supply needed patient information and track individual tribal CHR program effectiveness along with 3) identification of health trends and 4) baseline information for grant justifications. Historically and anecdotally patients, providers, tribal leaders and community members have viewed "transportation" as the primary service provided by CHRs. During FY 2003-2006, transportation consumed 31 percent of the CHR work hours yet represented only 14% of the actual patient services CHRs delivered. One hour of transport time is just that, one hour – yet an hour inside a patient's home typically results in the provision of 5-12 other kinds of patient services, many of which often go unreported – an ongoing training and access issue currently being addressed. CHRs verbally report that they often take advantage of that hour of transport time to provide health education or emotional support to patients - but just as often don't report those services in CHR PCC.

Future plans for the CHR Program include increased integration of CHRs into the health care team through collaboration with improvement initiatives within the Indian Health System; enhanced education and skills based competencies; and increased functionality and accessibility of RPMS CHR PCC to ensure program accountability and effectiveness.

Public Law 86-121 authorizes IHS to provide essential sanitation facilities to Indian homes and communities (P.L. 86-121; 42 U.S.C. § 2004a). The IHS, Sanitation Facilities Construction (SFC) Program, an integral component of the IHS disease prevention activity, has carried out those authorities since 1959 using both contributed funds and funds appropriated for SFC to provide potable water and waste disposal facilities for American Indian/Alaska Native (AI/AN) people. The provision of safe water and wastewater disposal not only plays a significant day to day role in improving the quality of life for AI/AN people, it remains the single most important intervention in breaking the chain of waterborne communicable disease episodes as well as enhancing the health promotion and disease prevention efforts of other public health specialists such as public health nurses, nutritionists, and community health representatives.

Data on patient education is collected through the Resource and Patient Management System (RPMS) and the National Data Warehouse (NDW).

GLOSSARY

Age-Adjustment (direct method)—The application of age-specific rates in a population of interest to a standardized age distribution in order to eliminate differences in observed rates that result from age differences in population composition. This adjustment is usually done when comparing two or more populations at one point in time or one population at two or more points in time.

Area—A defined geographic region for Indian Health Service (IHS) administrative purposes. Each Area Office administers several service units.

Average Daily Patient Load—The average number of patients occupying beds in a hospital on a daily basis. It is calculated by dividing total inpatient days for the year by 365.

Birth weight—Weight of fetus or infant at time of delivery (recorded in pounds and ounces, or grams).

Cause of Death—For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and using the international rules for selecting the underlying cause of death from the conditions stated on the death certificate. The underlying cause is defined by the World Health Organization (WHO) as the disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence, which produced the fatal injury. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. The conditions that are not selected as underlying cause of death constitute the non-underlying cause of death, also known as multiple cause of death. Cause of death is coded according to the appropriate revision of the International Classification of Diseases (ICD). Effective with deaths occurring in 1999, the United States began using the Tenth Revision of the ICD (ICD-10); during the period 1979-98, causes of death were coded and classified according to the Ninth Revision (ICD-9). Each of these revisions has produced discontinuities in cause-of-death trends. These discontinuities are measured using comparability ratios.

Census Definitions—Definitions for census information including: unemployment, median household income, and poverty can be found on the census website.[7]

Comparability Ratios—Adjustment factors designed to measure the effects of a new revision of the ICD on the comparability with the previous revision of mortality statistics cause of death.[8]

Contract Care—Services not available directly from IHS or Tribes that are purchased under contract from community hospitals and practitioners.

Health Center—A facility, physically separated from a hospital, with a full range of ambulatory services including at least primary care physicians, nursing, pharmacy, laboratory, and x-ray, which are available at least forty hours a week for ambulatory care.

Health Station—A facility, physically separated from a hospital or health center where primary care physician services are available on a regularly scheduled basis but for less than forty hours a week.

High Birthweight—Birthweight of 4,000 grams or more.

Infant Mortality—The death of a live-born child before his or her first birthday. Deaths in the first year of life may be further classified according to age as neonatal and postneonatal. Neonatal deaths are those that occur before the 28th day of life; postneonatal deaths are those that occur between 28 and 365 days of age.

[7] *http://www.census.gov*

[8] Anderson RN, Minino AM, Hoyert DL, Rosenberg, HM. Comparability of Cause of Death Between ICD-9 and ICD-10: Preliminary Estimates. National Vital Statistics Reports; vol 49 no. 2. Hyattsville, Maryland: National Center for Health Statistics. 2001.

Infant Mortality Rate—A rate based on period files calculated by dividing the number of infant deaths during a calendar year by the number of live births reported in the same year. It is expressed as the number of infant deaths per 1,000 live births.[9]

International Classification of Diseases—The Ninth Revision (ICD-9) codes are used for years prior to 1999. The Tenth Revision (ICD-10) codes are used for data years 1999 onward.

Life Expectancy—Life expectancy is the average number of years of life remaining to a person at a particular age and is based on a given set of age-specific death rates, generally the mortality conditions existing in the period mentioned. Life expectancy may be determined by race, sex, or other characteristics using age-specific death rates for the population with that characteristic.[10]

Live Birth—In the WHO's definition, also adopted by the United Nations and the NCHS, a live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or definite movement of voluntary muscles, whether the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.[11]

Low Birthweight—Birthweight of less than five pounds, eight ounces or 2,500 grams.

Maternal Death—The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy. Maternal death is one for which the certifying physician has designated a maternal condition as the underlying cause of death. Maternal conditions are those assigned to Complications of Pregnancy, Childbirth, and the Puerperium, (ICD-10 codes A34, O00-O95.9, O98-O99.9).[12]

Neonatal Mortality Rate—The number of deaths under 28 days of age per 1,000 live births.

Occurrence—Place where the event occurred.

Postneonatal Mortality Rate—The number of deaths that occur from 28 days to 365 days after birth per 1,000 live births.

Race—Federal Register Notice (October 30, 1997), Revision to the Standards for the Classification of Federal Data on Race and Ethnicity. The revised standards have five minimum categories for data on race: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. There will be two categories for data on ethnicity: "Hispanic or Latino: and "Not Hispanic or Latino." Persons are offered the option to select one or more races.[13]

Reservation State—A State in which IHS has responsibilities for providing health care to American Indians or Alaska Natives.

Residence—Usual place of residence of person to whom an event occurred. For births and deaths, residence is defined as the mother's place of residence.

Service Area—The geographic areas in which IHS has responsibilities—"on or near" reservations, i.e., contract health service delivery areas.

Service Population—AI/AN people identified to be eligible for IHS services.

Service Unit—The local administrative unit of IHS.

User Population—AI/AN people who have used IHS services at least once during the last three-year period according to their community of residence.

Years of Potential Life Lost (YPLL)—A mortality indicator that measures the burden of premature deaths, calculated by subtracting the age at death from age 65 and summing the result over all deaths.[14]

[9] http://www.cdc.gov/nchs/deaths.htm
[10] http://www.cdc.gov/nchs/deaths/htm
[11] http://www.cdc.gov/nchs/births.htm
[12] http://www.cdc.gov/nchs/deaths.htm
[13] http://www.whitehouse.gov/omb/fedreg/1997standards.html
[14] http://webapp.cdc.gov/sasweb/ncipc/ypll9.html

SOURCES OF COPIES AND ADDITIONAL INFORMATION

Additional AI/AN health status information can be obtained from the IHS Division of Program Statistics. Specific responsibilities are as follows:

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Copies of this and other statistical publications may be obtained from Division of Program Statistics at:

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