Diabetic Ketoacidosis



Diabetic ketoacidosis (DKA) is an acute metabolic complication of diabetes that is related to a deficiency in insulin (24). DKA may require hospitalization for treatment and increases the use of health care services and the cost of diabetes. This report finds that DKA continues to be more problematic for blacks than for whites.

Inpatient hospital care.

In 1994, DKA was the primary diagnosis for 89,000 hospital discharges and a listed diagnosis for 113,000 hospital discharges (Figure 7.1; Tables 7.1, 7.4). The average length of stay for a primary diagnosis of DKA increased with age (Figure 7.2), decreased more than 40% between 1980 and 1994, and averaged 4.5 days in 1994 (Figure 7.2; Table 7.1).

Age-adjusted rates of hospital discharge for DKA as the primary diagnosis and as a listed diagnosis per 1,000 persons with diabetes increased from 1980 to 1984 and decreased thereafter (Figure 7.4, Tables 7.13, 7.16). Hospital discharge rates for DKA decreased with age (Figure 7.5; Table 7.13, 7.16). In 1994, the hospital discharge rate for DKA as the primary diagnosis was more than 20 times higher for persons aged <45 years than for persons aged >65 years.

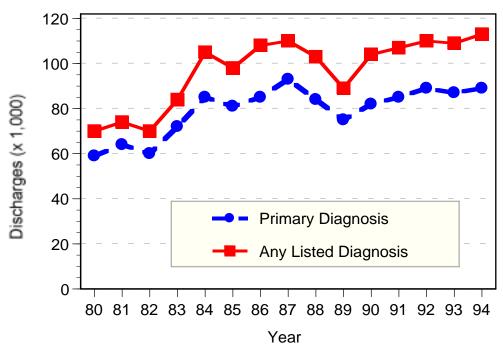


Figure 7.1: Number of Hospital Discharges with Diabetic Ketoacidosis (DKA) as First-Listed Diagnosis and as Any Listed Diagnosis, United States, 1980-1994

Hospital discharge rates for DKA were similar for males and females (Figure 7.6; Table 7.14, 7.17) but higher for blacks than for whites (Figure 7.7; Tables 7.15, 7.18). In 1994, the age-adjusted rates of hospital discharge for DKA as the primary diagnosis among blacks was 2.3 times that of whites (15.7 vs 6.8 per 1,000 diabetic population). Trends over time also differed, with blacks having higher rates in 1994 than in 1980 and whites having lower rates in 1994 than in 1980.

Mortality.

The number of deaths with DKA as the underlying (DKA deaths) and any listed cause of death (DKA-related deaths) varied little between 1980 and 1994 (Figure 7.8; Tables 7.19, 7.26). Age-adjusted death rates per 100,000 diabetic population for DKA and DKA-related deaths declined between 1980 and 1987, increased in 1988 and 1989, and then began decreasing once more in 1990 (Figure 7.10; Table 7.33, 7.40). Overall, both the age-adjusted DKA death rate and the DKA-related death rate were 34% lower in 1994 than in 1980.

The highest DKA death rates were among persons aged >75 years, followed by persons aged <45 years(Figure 7.11; Table 7.33). Among the four race-sex groups examined, DKA death rates were highest among black males, followed by black females and then by whites (Figure 7.12; Tables 7.36-39). In 1994, the age-adjusted DKA death rate for black males was almost twice that for white males (37.9 vs 20.3 per 100,000 diabetic population). Similar trends are seen in DKA related death rates (Tables 7.43-7.46).

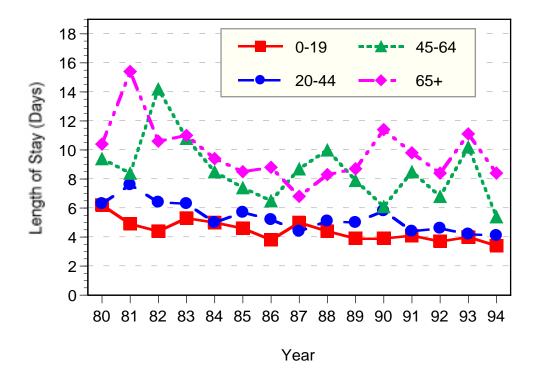


Figure 7.2: Average Length of Stay (LOS) of Hospital Discharges with Diabetic Ketoacidosis as First-Listed Diagnosis, by Age, United States, 1980-1994

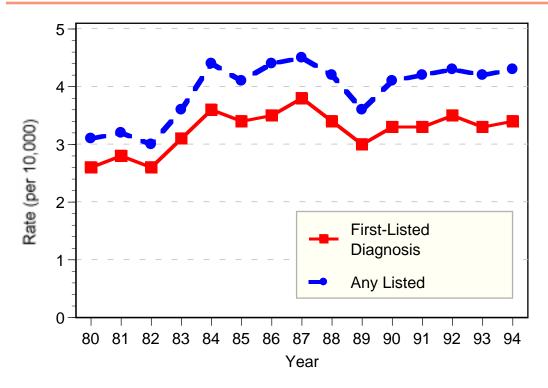


Figure 7.3: Age-standardized Rates of Hospital Discharge for DKA as First-Listed Diagnosis and as Any Listed Diagnosis per 10,000 Population, United States, 1980-1994.

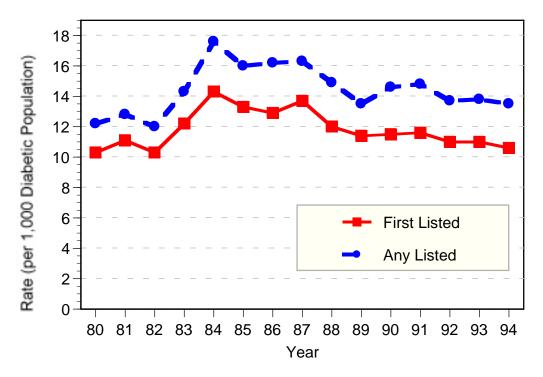


Figure 7.4: Age-standardized Rates of Hospital Discharge for DKA as First-Listed Diagnosis and as Any Listed Diagnosis per 1,000 Diabetic Population, United States, 1980-1994.

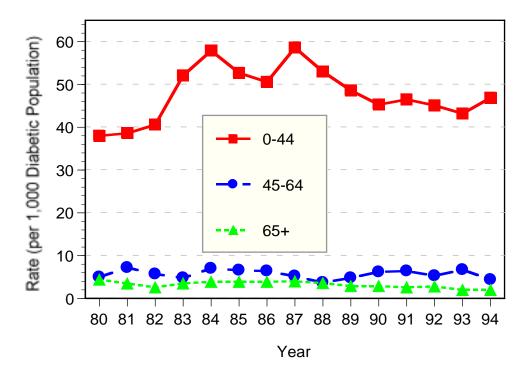


Figure 7.5: Hospital Discharge Rate for Diabetic Ketoacidosis as a Primary Diagnosis per 1,000 Diabetic Population, by Age, United States, 1980-1994.

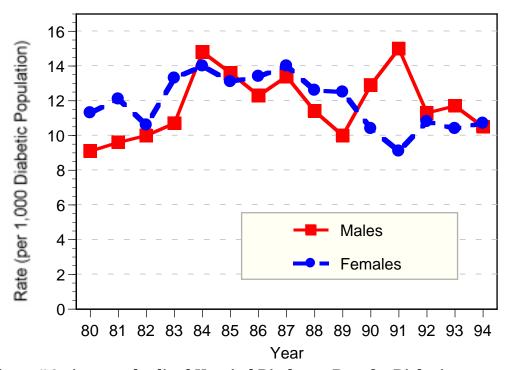


Figure 7.6: Age-standardized Hospital Discharge Rate for Diabetic Ketoacidosis as a Primary Diagnosis per 1,000 Diabetic Population, by Sex, United States, 1980-1994.

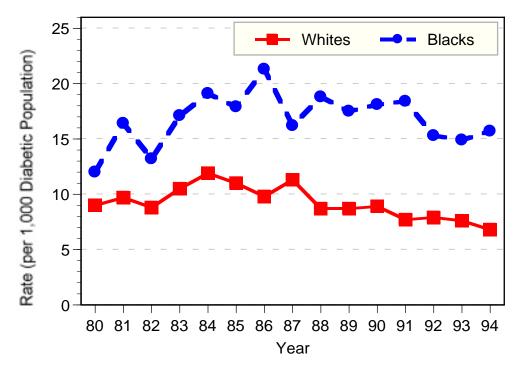


Figure 7.7: Age-standardized Hospital Discharge Rate for Diabetic Ketoacidosis as First-Listed Diagnosis per 1,000 Diabetic Population, by Race, United States, 1980-1994.

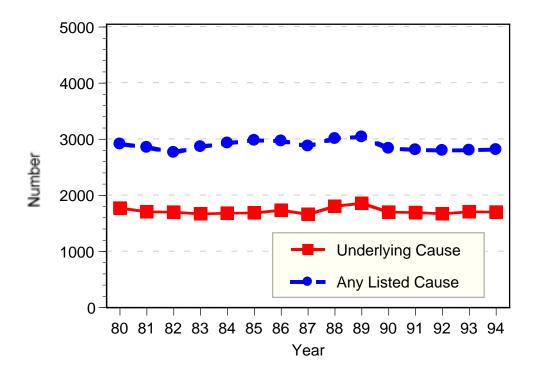


Figure 7.8: Number of Deaths with Diabetic Ketoacidosis as Underlying and Any Listed Cause of Death, United States, 1980-1994.

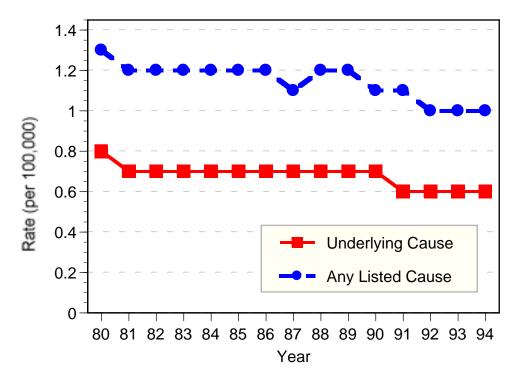


Figure 7.9: Age-standardized Death Rates for Diabetic Ketoacidosis as Underlying and Any Listed Cause of Death per 100,000 Population, United States, 1980-1994.

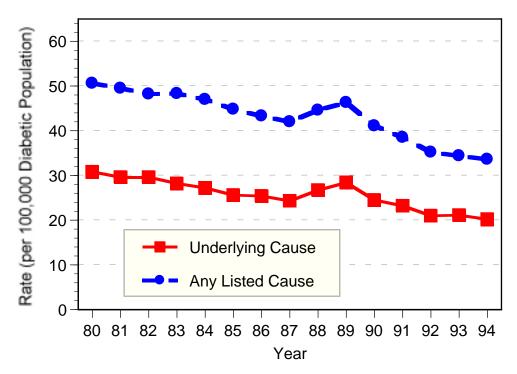


Figure 7.10: Age-standardized Death Rates per 100,000 Diabetic Population for Diabetic Ketoacidosis as Underlying and Any Listed Cause of Death, United States, 1980-1994.

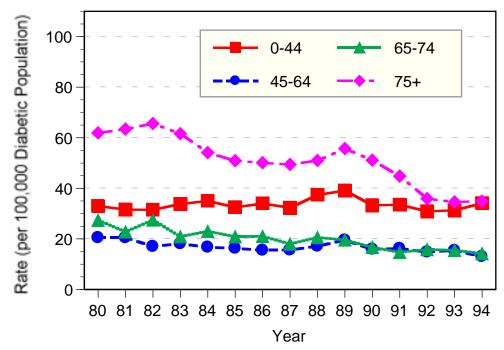


Figure 7.11: Age-Specfic Death Rates for Diabetic Ketoacidosis as Underlying Cause of Death Among Persons with Diabetes, United States, 1980-1994.

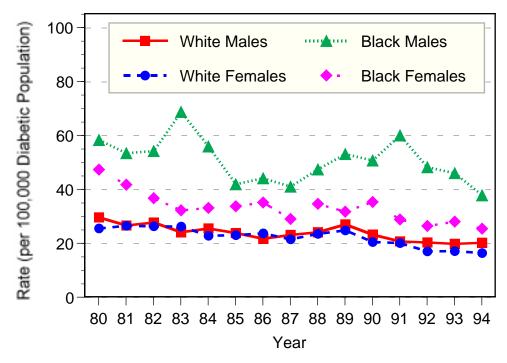


Figure 7.12: Age-standardized Death Rates per 100,000 Diabetic Population for Diabetic Ketoacidosis as Underlying Cause of Death, By Race and Sex, United States, 1980-1994.

Table 7.1: Number of Hospital Discharges^a with Diabetic Ketoacidosis as Primary Diagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Age, United States, 1980-1994.

			1			
Year		0-19	Age C 20-44	45-64	65 +	Total
1980	Discharges	16	21	12	10	59
	Days	99	132	116	106	452
	Average LOS	6.2	6.3	9.4	10.4	7.6
1981	Discharges	15	23	18	8	64
	Days	72	177	152	127	528
	Average LOS	4.9	7.6	8.4	15.4	8.2
1982	Discharges	16	24	15	6	60
	Days	71	151	206	63	492
	Average LOS	4.4	6.4	14.2	10.6	8.2
1983	Discharges	20	31	12	9	72
	Days	109	197	126	94	526
	Average LOS	5.3	6.3	10.8	11.0	7.3
1984	Discharges	21	37	16	10	85
	Days	105	188	140	97	530
	Average LOS	5.0	5.0	8.5	9.4	6.2
1985	Discharges	21	32	16	11	81
	Days	98	184	119	95	496
	Average LOS	4.6	5.7	7.4	8.5	6.1
1986	Discharges	21	37	16	11	85
	Days	80	192	105	100	477
	Average LOS	3.8	5.2	6.5	8.8	5.6
1987	Discharges	29	39	13	11	93
	Days	144	174	116	77	511
	AverageLOS	5.0	4.4	8.7	6.8	5.5
1988	Discharges	25	39	9	10	84
	Days	111	199	93	82	485
	AverageLOS	4.4	5.1	10.0	8.3	5.8
1989	Discharges	21	35	12	8	75
	Days	82	173	93	71	418
1000	AverageLOS	3.9	5.0	7.9	8.7	5.6
1990	Discharges	20	39	16	8	82
	Days	76	222	97	96	491
1001	Average LOS	3.9	5.8	6.1	11.4	6.0
1991	Discharges	19	42	16	8	85
	Days	78	184	137	80	479
1000	Average LOS	4.1	4.4	8.5	9.8	5.6
1992	Discharges	22	43	15	9	89
	Days	81	196	101	79	457
1009	Average LOS	3.7	4.6	6.8	8.4	5.1
1993	Discharges	14	47	20	7	87
	Days	56	194	204	76	530
1004	Average LOS	4.0	4.2	10.2	11.1	11.1
1994	Discharges	21	48	14	7	89
	Days	70	198	75	57	400
	Average LOS	3.4	4.1	5.4	8.4	4.5
^a In thousands						

States, 1980		,5 01 1105	filai Olay, and I	length of Stuy	(100), by	Sex, Onteu
Veen		Males			Females	
Year	Discharges	Days	Average LOS	Discharges	Days	Average LOS
1980	23	165	7.3	37	288	7.8
1981	24	175	7.1	40	353	8.9
1982	26	240	9.1	34	252	7.5
1983	27	162	6.1	45	363	8.1
1984	38	224	5.9	47	306	6.5
1985	34	188	5.5	47	308	6.6
1986	37	214	5.7	48	264	5.5
1987	43	218	5.0	49	293	5.9
1988	38	205	5.4	46	280	6.1
1989	31	182	6.0	45	236	5.3
1990	40	234	5.8	42	257	6.1
1991	48	252	5.3	37	227	6.1
1992	42	200	4.8	48	258	5.4
1993	43	207	4.8	44	323	7.3
1994	43	187	4.4	47	213	4.5

Table 7.2: Number of Hospital Discharges ^awith Diabetic Ketoacidosis as PrimaryDiagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Sex, UnitedStates, 1980-1994.

^a In thousands.

Table 7.3: Number of Hospital Discharges^a with Diabetic Ketoacidosis as Primary Diagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Race, United States, 1980-1994.

Year		Whites			Blacks	
rear	Discharges	Days	Average LOS	Discharges	Days	Average LOS
1980	43	318	7.5	12	107	8.8
1981	46	404	8.7	16	115	7.2
1982	42	343	8.1	12	97	7.9
1983	51	367	7.2	16	104	6.4
1984	58	335	5.8	19	148	7.7
1985	56	341	6.1	17	119	6.9
1986	54	267	4.9	22	163	7.5
1987	62	320	5.2	18	136	7.4
1988	49	264	5.4	23	158	6.8
1989	45	266	5.9	21	109	5.2
1990	51	300	5.9	21	135	6.6
1991	45	246	5.4	21	124	5.8
1992	52	252	4.9	20	115	5.7
1993	47	215	4.6	21	128	6.0
1994	44	188	4.3	25	130	5.2
^a In thousands.						

Table 7.4: Number of Hospital Discharges^a with Diabetic Ketoacidosis as a Listed Diagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Age, United States, 1980-1994.

Hear 0-19 20-44 45-64 65+ 100att 1980 Discharges 17 24 15 15 77 1981 Discharges 165 163 565 348 586 1981 Discharges 16 26 21 11 77 300 AverageLOS 4.9 7.5 10.1 13.4 8.8 1982 Discharges 17 25 18 9 77 301 Days 77 167 250 110 600 4verageLOS 4.4 6.6 13.9 11.7 8.8 1983 Discharges 22 35 1.4 12 84 1984 Discharges 22 38 20 18 100 3045 AverageLOS 4.9 5.1 9.0 10.5 6.6 1985 Discharges 22 44 32 169 161 4verageL			Age Group				
Days 105 162 136 163 565 AverageLOS 6.1 6.7 9.3 11.2 8.0 1981 Discharges 16 26 21 11 7.7 Days 77 196 213 150 633 AverageLOS 4.9 7.5 10.1 13.4 8.8 1982 Discharges 17 25 18 9 7.7 1983 Discharges 22 35 14 12 84 1983 Discharges 23 42 22 18 100 AverageLOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 AverageLOS 4.9 5.1 9.0 10.5 6.6 1984 Discharges 22 38 20 18 98 1985 Discharges 22 44 22	Year		0-19			65+	Total
AverageLOS 6.1 6.7 9.3 11.2 8.6 1981 Discharges 16 26 21 11 77 Bays 77 10 13 150 633 AverageLOS 4.9 7.5 10.1 13.4 86.6 1982 Discharges 17 25 18 9 77 AverageLOS 4.4 6.6 13.9 11.7 86.6 1983 Discharges 22 35 14 12 88 AverageLOS 5.3 6.28 148 123 6615 AverageLOS 5.3 6.25 10.2 9.9 7.4 AverageLOS 110 216 196 191 713 AverageLOS 10.9 10.5 6.63 10.7 10.6 AverageLOS 10.9 10.6 6.64 198 191 71 10.5 1986 Discharges 22 44 22	1980	Discharges	17	24	15	15	70
1981 Discharges 16 26 21 11 77 Bays 77 196 213 150 633 AverageLOS 4.9 7.5 10.1 13.4 8.8 1982 Discharges 17 25 18 9 77 Bays 77 167 250 110 600 Average LOS 4.4 6.6 13.9 11.7 8.6 Bays 116 228 148 123 615 Average LOS 5.3 6.5 10.2 9.9 7.4 Average LOS 4.9 5.1 9.0 10.5 6.8 1984 Discharges 22 38 20 18 198 Jays 110 216 196 191 713 Average LOS 4.6 6.2 9.0 88 6.6 1985 Discharges 22 44 22 19 100		Days	105	162	136	163	565
Days 77 196 213 150 633 AverageLOS 4.9 7.5 10.1 13.4 86 1982 Discharges 17 25 18 9 77 Bays 77 167 250 110 660 Average LOS 4.4 6.6 13.9 11.7 8.6 Bays Discharges 22 35 14 12 84 Average LOS 5.3 6.5 10.2 9.9 7.4 Average LOS 5.3 6.5 10.2 9.9 7.4 Bays 110 216 196 191 713 Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 6.3 1986 Discharges 22 44 22 19 100		AverageLOS	6.1	6.7			8.0
AverageLOS 4.9 7.5 10.1 13.4 8.6 1982 Discharges 17 25 18 9 77 1983 Discharges 22 35 110 600 Average LOS 4.4 6.6 13.9 11.7 861 1983 Discharges 22 35 14 12 884 Average LOS 5.3 6.5 10.2 9.9 7.4 Average LOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 6.6 1986 Discharges 22 44 22 19 100 Days 144 233 168 1662	1981	Discharges	16	26	21	11	74
1982 Discharges 17 25 18 9 77 Marce Days 77 167 250 110 604 Average LOS 4.4 6.6 13.9 11.7 84 1983 Discharges 22 35 14 12 84 Days 116 228 148 123 615 Average LOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 Days 110 216 196 191 715 Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 100 Average LOS 4.0 5.4 7.6 8.6 6.1 <th></th> <th>Days</th> <th>77</th> <th>196</th> <th>213</th> <th>150</th> <th>637</th>		Days	77	196	213	150	637
Days 77 167 250 110 6604 Average LOS 4.4 6.6 13.9 11.7 8.6 1983 Discharges 22 35 14 12 84 Days 116 228 148 123 615 Average LOS 5.3 6.5 10.2 9.9 7.4 Iska Discharges 23 42 22 18 100 Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 98 Average LOS 4.6 6.2 9.0 8.8 6.6 1986 Discharges 22 44 22 19 100 Mays 106 5.4 6.6 6.2 9.0 8.8 6.6 1986 Discharges 29 45 19 17 110 Mays 115 237 168							8.6
Average LOS 4.4 6.6 13.9 11.7 8.6 1983 Discharges 22 35 14 12 88 Average LOS 5.3 6.5 10.2 9.9 7.4 Average LOS 5.3 6.5 10.2 9.9 7.4 I984 Discharges 23 42 22 18 100 Average LOS 4.9 5.1 9.0 10.5 6.6 Average LOS 4.9 5.1 9.0 10.5 6.6 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 6.6 1986 Discharges 22 44 22 19 100 Bays 100 233 184 157 6.7 6.7 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19	1982	Discharges	17	25	18		70
1983 Discharges 22 35 14 12 84 Days 116 228 148 123 615 Average LOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 Days 110 216 196 191 713 Average LOS 4.9 5.1 9.0 10.5 68.8 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 65.5 1986 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 64 1987 Discharges 26 4.3 17 17 100 Days 115 237 168 172 693							604
Days 116 228 148 123 615 Average LOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 Days 110 216 196 191 713 Average LOS 4.9 5.1 9.0 10.5 66.8 1985 Discharges 22 38 20 18 99 Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 100 Case Days 88 241 165 168 662 Average LOS 4.0 5.4 7.6 8.6 6.5 1986 Discharges 29 45 19 17 110 Days 144 233 169 161 700 6.4 7.6 8.6 6.1 700 6.4 70 <		Average LOS					8.6
Average LOS 5.3 6.5 10.2 9.9 7.4 1984 Discharges 23 42 22 18 100 Days 110 216 196 191 713 Average LOS 4.9 5.1 90 10.5 68.8 1985 Discharges 22 38 20 18 99 Days 100 233 184 157 6674 Average LOS 4.6 6.2 9.0 8.8 65.9 1986 Discharges 22 44 22 19 100 Days 88 241 165 168 66.5 6.4 1986 Days 88 241 165 168 66.5 1987 Discharges 29 45 19 17 110 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17	1983	Discharges	22	35	14	12	84
1984 Discharges 23 42 22 18 105 Days 110 216 196 191 713 Average LOS 4.9 5.1 9.0 10.5 65.8 1985 Discharges 22 38 20 18 996 Days 100 233 184 157 677 Average LOS 4.6 6.2 9.0 8.8 65.9 1986 Discharges 22 44 22 19 106 Days 88 241 165 168 666 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 114 233 169 161 700 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 100 </th <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>615</td>							615
Days 110 216 196 191 713 Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 99 Days 100 233 184 157 66.8 Average LOS 4.6 6.2 9.0 8.8 65.9 1986 Discharges 22 44 22 19 106 Days 88 241 165 168 662 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 100 Mays 115 237 168 172 695 6.4 19 9.5 Average LOS 4.0 5.8 8.0		Average LOS					7.4
Average LOS 4.9 5.1 9.0 10.5 6.8 1985 Discharges 22 38 20 18 99 Days 100 233 184 157 677 Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 00 Days 88 241 165 168 666 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 4.3 17 17 106 Days 115 237 168 172 66.5 2 100 10.3 6.5 1989 Discharges 20	1984	Discharges	23	42	22	18	105
1985 Discharges 22 38 20 18 98 Days 100 233 184 157 674 Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 106 Days 88 241 165 168 662 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 4.3 17 17 100 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 4.3 17 17 100 Average LOS 4.4 5.5 10.0 10.3 6.5 1989 Discharges 20 46 21 17 </th <td></td> <td>Days</td> <td>110</td> <td>216</td> <td>196</td> <td>191</td> <td>713</td>		Days	110	216	196	191	713
Days 100 233 184 157 674 Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 108 Days 88 241 165 168 666 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 100 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 100 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 JB89 Discharges 22 41 15 12 88 JB90 Discharges 20 46 21 17		Average LOS	4.9	5.1	9.0	10.5	6.8
Average LOS 4.6 6.2 9.0 8.8 6.5 1986 Discharges 22 44 22 19 108 Days 88 241 165 168 666 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 15.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 100 Mays 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 1989 Discharges 20 46 21 17 106 Mays 79 264 171 169 683 <td>1985</td> <td>Discharges</td> <td>22</td> <td>38</td> <td>20</td> <td>18</td> <td>98</td>	1985	Discharges	22	38	20	18	98
1986 Discharges 22 44 22 19 106 Days 88 241 165 168 662 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 700 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 100 Days 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 J989 Discharges 22 41 15 12 88 J989 Discharges 22 41 15 12 88 J990 Discharges 20 46 21 17 106 J990 Discharges 20 46 21 <		Days	100	233	184	157	674
Days 88 241 165 168 662 Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 103 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 1989 Discharges 20 4.6 21 17 104 1990 Discharges 19 49 25 14 107 1990 Discharges 19 49 25 1		Average LOS	4.6	6.2	9.0	8.8	6.9
Average LOS 4.0 5.4 7.6 8.6 6.1 1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 103 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 1989 Discharges 22 41 15 10 552 Average LOS 4.0 5.8 8.0 9.4 6.2 552 1990 Discharges 20 46 21 17 104 Average LOS 3.9 5.7 8.2 10.1 6.2 1991 Discharges 19 49	1986	Discharges	22	44	22	19	108
1987 Discharges 29 45 19 17 110 Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 103 Days 115 237 168 172 6693 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 Jays 86 237 120 109 552 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 Days 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.2		Days	88	241	165	168	662
Days 144 233 169 161 707 Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 103 Days 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 Average LOS 4.0 5.8 8.0 9.4 6.2 I990 Discharges 20 46 21 17 104 Mays 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Mays 82 237 326 149 794		Average LOS	4.0	5.4	7.6	8.6	6.1
Average LOS 5.0 5.2 8.8 9.3 6.4 1988 Discharges 26 43 17 17 103 Days 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 Mays 86 237 120 109 552 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 Mays 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Mays 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4	1987	Discharges	29	45	19	17	110
1988 Discharges 26 43 17 17 103 Days 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 1989 Discharges 22 41 15 12 88 Average LOS 4.0 5.8 8.0 9.4 6.2 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 Marcage LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Marcage LOS 3.9 5.7 8.2 10.1 6.6 6.6 1991 Discharges 19 49 25 14 107 7.4 1992 Discharges <t< th=""><td></td><td>Days</td><td>144</td><td>233</td><td>169</td><td>161</td><td>707</td></t<>		Days	144	233	169	161	707
Days 115 237 168 172 693 Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 Days 86 237 120 109 552 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 Days 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 1992 Discharges 19 49 25 14 107 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 17 110 1992 Discharges 3.8 5.0 8.1		Average LOS	5.0	5.2	8.8	9.3	6.4
Average LOS 4.4 5.5 10.0 10.3 6.7 1989 Discharges 22 41 15 12 88 Days 86 237 120 109 552 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 1990 Discharges 20 46 21 17 104 Marce LOS 3.9 5.7 8.2 10.1 6.6 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Interpret LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 Marce LOS 3.8 5.0 8.1 10.2	1988	Discharges	26	43	17	17	103
1989Discharges2241151288Days86237120109552Average LOS4.05.88.09.46.21990Discharges20462117104Days79264171169683Average LOS3.95.78.210.16.61991Discharges194925141071991Discharges194925141071992Discharges225021171101992Discharges225021171101992Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges145527131091993Discharges14 <t< th=""><th></th><th>Days</th><th>115</th><th>237</th><th>168</th><th>172</th><th>693</th></t<>		Days	115	237	168	172	693
Days 86 237 120 109 552 Average LOS 4.0 5.8 8.0 9.4 6.2 1990 Discharges 20 46 21 17 104 Days 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Days 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 17 110 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109		Average LOS	4.4	5.5	10.0	10.3	6.7
Average LOS4.05.88.09.46.21990Discharges20462117104Days79264171169683Average LOS3.95.78.210.16.61991Discharges19492514107Days82237326149794Average LOS4.24.813.011.07.41992Discharges22502117110Days85248173173675Average LOS3.85.08.110.26.21993Discharges14552713109Days56340284132812	1989	Discharges	22	41	15	12	89
1990 Discharges 20 46 21 17 104 Days 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Days 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 17 110 1992 Discharges 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812		Days	86	237	120	109	552
Days 79 264 171 169 683 Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Days 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 17 110 1992 Discharges 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812		Average LOS	4.0	5.8	8.0	9.4	6.2
Average LOS 3.9 5.7 8.2 10.1 6.6 1991 Discharges 19 49 25 14 107 Days 82 237 326 149 994 994 994 994 994 994 994 994 995 994 994 995 994 994 994 995 994 994 995 994 <t< th=""><th>1990</th><th>Discharges</th><th>20</th><th>46</th><th>21</th><th>17</th><th>104</th></t<>	1990	Discharges	20	46	21	17	104
1991 Discharges 19 49 25 14 107 Days 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 1992 Discharges 22 50 21 173 675 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812							683
Days 82 237 326 149 794 Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 Days 85 248 173 173 679 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812		Average LOS					6.6
Average LOS 4.2 4.8 13.0 11.0 7.4 1992 Discharges 22 50 21 17 110 Days 85 248 173 173 679 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812	1991	Discharges					107
1992 Discharges 22 50 21 17 110 Days 85 248 173 173 675 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812							794
Days 85 248 173 173 679 Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812		-					7.4
Average LOS 3.8 5.0 8.1 10.2 6.2 1993 Discharges 14 55 27 13 109 Days 56 340 284 132 812	1992	0	22				110
1993Discharges14552713109Days56340284132812		Days	85	248	173	173	679
Days 56 340 284 132 812			3.8				6.2
5	1993	Discharges					109
							812
-		Average LOS	3.9	6.2	10.3	10.1	7.4
	1994	Discharges	22		23	15	113
		-					638
Average LOS 3.4 4.7 6.8 10.2 5.6		Average LOS	3.4	4.7	6.8	10.2	5.6
^a In thousands	' In tho <u>usands</u>	·					

Year		Males			Females			
Tear	Discharges	Days	Average LOS	Discharges	Days	Average LOS		
1980	27	194	7.3	44	371	8.5		
1981	27	229	8.4	47	408	8.7		
1982	31	305	9.7	39	299	7.7		
1983	32	200	6.3	52	415	8.0		
1984	45	288	6.4	59	425	7.1		
1985	42	276	6.6	56	399	7.1		
1986	48	295	6.2	60	366	6.1		
1987	50	290	5.7	59	418	7.0		
1988	45	279	6.1	58	413	7.2		
1989	37	251	6.7	51	300	5.8		
1990	51	316	6.2	53	366	6.9		
1991	56	331	5.9	51	463	9.0		
1992	53	306	5.8	57	373	6.5		
1993	54	402	7.5	56	410	7.4		
1994	51	272	5.3	62	365	5.9		

Table 7.5: Number of Hospital Discharges^a with Diabetic Ketoacidosis as a ListedDiagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Sex, UnitedStates, 1980-1994.

Table 7.6: Number of Hospital Discharges^a with Diabetic Ketoacidosis as a Listed Diagnosis, Number of Days^a of Hospital Stay, and Length of Stay (LOS), By Race, United States, 1980-1994.

T		Whites			Blacks	
Year	Discharges	Days	Average LOS	Discharges	Days	Average LOS
1980	50	383	7.6	15	135	9.3
1981	55	506	9.2	17	123	7.1
1982	49	427	8.7	14	115	8.2
1983	59	422	7.2	18	120	6.6
1984	73	484	6.6	20	158	7.7
1985	68	460	6.7	20	145	7.4
1986	71	403	5.7	24	186	7.8
1987	72	443	6.1	22	177	7.9
1988	61	377	6.2	28	241	8.5
1989	54	341	6.3	24	148	6.2
1990	68	428	6.3	23	168	7.5
1991	62	501	8.0	23	147	6.3
1992	65	387	5.9	23	167	7.2
1993	61	329	5.4	27	267	9.9
1994	59	348	5.9	29	174	5.9
^a In thousands						