Utah Health Status Update:
The Influence of Insurance Status on Length of Hospital Stays Among Preventable Adult Diabetes Hospitalizations
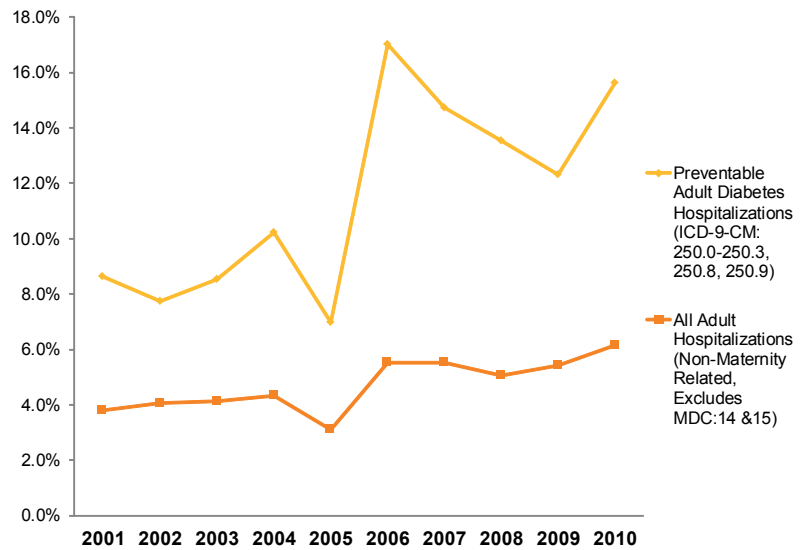
December 2012

Adult diabetes hospitalizations could often have been avoided if the disease would have been managed and controlled through preventative outpatient care.[1] These hospitalizations, labeled as "ambulatory care sensitive conditions (ACSCs)," represent a more costly approach for obtaining care.[2,3] Literature suggests that the uninsured may be more susceptible to ACSC hospitalizations, because they avoid seeking out preventative care in an outpatient setting.[4] Furthermore, there is also concern that hospitals may be maximizing financial margins by reducing the length of hospital stay among the uninsured.[5] Such practices could result in inadequate care among an already vulnerable population, increasing the likelihood of further health consequences and hospital readmissions.

To further investigate the relationship between insurance status and length of hospital stays among preventable adult diabetes hospitalizations, the Utah Hospital Discharge Database was closely examined between years 2001 and 2010. All statistical testing and processing was performed using SAS v9.2. For mean statistical comparisons, a square root transformation was implemented due to length of hospital stay not being normally distributed. Two independent sample t-tests were

Percent Uninsured

Figure 1. Preventable diabetes hospitalizations vs. all non-maternity hospitalizations, Adults aged 18+, Utah, 2001-2010

Source: Utah Inpatient Hospital Discharge Data, Office of Health Care Statistics, Utah Department of Health.

utilized in determining statistical differences in mean length of hospital stay between the uninsured and insured.

Among preventable Utah diabetes hospitalizations, the percent of uninsured has increased in the past decade from 8.6% to 15.6% (Figure 1). These include individuals who paid out-of-pocket or obtained assistance through charity organizations. As a comparable benchmark, all adult hospitalizations, excluding maternity-related cases, were also examined (Figure 1). The percent of uninsured is considerably higher among preventable diabetes hospitalizations; however, similar trends are visually apparent. This finding, coupled with recent increases in cost of health care, further defines the level of vulnerability of this population.[6] In fact, in Utah the average hospital charge per preventable diabetic hospital stay has more than doubled in the past decade (Figure 2).

Average length of hospital stay among these diabetic hospitalizations was found to be 2.78 days and 3.69 days for the uninsured and insured, respectively. Statistical comparison testing found this difference to be statistically significant ($p<0.001$). In order to further characterize this relationship, patients were additionally classified into the following three insurance status groupings: uninsured, government coverage, and private insurance (Table 1). A one-way analysis of variance (ANOVA) test was utilized in determining statistical differences in mean length of hospital stay when examining insurance status as three distinct groups. Average length of hospital stay significantly differed between all three insurance classifications ($p<0.001$). Approximately 53.4% of all preventable adult diabetes hospitalizations were insured through government programs (e.g.

- **Literature suggests that the uninsured may be more susceptible to ACSC hospitalizations, because they avoid seeking out preventative care in an outpatient setting.**
- **Among preventable Utah diabetes hospitalizations, the percent of uninsured has increased in the past decade from 8.6% to 15.6%.**
- **Average length of hospital stay among these diabetic hospitalizations was found to be 2.78 days and 3.69 days for the uninsured and insured, respectively.**
- **Further investigation would be warranted in determining the potential influences of patient age.**

Medicare/Medicaid). These individuals also had the longest average length of hospital stay (4.09 days). However, age may likely be influencing these results as diabetes prevalence and Medicare utilization are higher in seniors. In addition, age may also be influencing severity of disease, resulting in longer hospital stay. Average length of hospital stay was much more comparable between the uninsured (2.79 days) and those covered by private insurance programs (3.08 days) (e.g. Blue Cross/Blue Shield). However, statistical comparisons solely between the private insurance and uninsured groups were still found to be significant (p<0.001).

These findings indicate the vulnerability of uninsured individuals suffering from diabetic-related ACSCs. Among Utah preventable diabetic hospitalizations, the uninsured have an average shorter length of hospital stay than patients with insurance coverage. This coincides with recent findings suggesting that insurance status is influential in determining hospital treatment duration. However, by further stratification of insurance coverage, it would appear that the magnitude in differences between the insured and uninsured may be influenced by other factors. Further investigation would be warranted to determine the potential influences of patient age. For example, limiting the study population to adults less than 64 years of age may be important in reducing the overrepresentation of individuals insured through Medicare. However, we would argue that this exploratory analysis still stresses the importance of health policy centered on improving access to care and equality of treatment, regardless of insurance status.

References

1. Institute of Medicine (U.S.). Committee on Monitoring Access to Personal Health Care Services. M.L. Millman, Access to health care in America 1993, Washington, D.C.: National Academy Press. vii, p. 229.
2. AHRQ Quality Indicators - Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions. Rockville, MD: Agency for Healthcare Research and Quality. Revision 3 (AHRQ Pub. No. 02-R0203).
3. Newton, M.F., et al., Uninsured adults presenting to U.S. emergency departments: assumptions vs. data. JAMA, 2008. 300(16): p. 1914-24.

Average Hospital Charges

Figure 2. Preventable adult diabetic hospitalizations (aged 18+), Utah, 2001-2010, (ICD-9-CM: 250.0-250.3, 250.8-250.9)
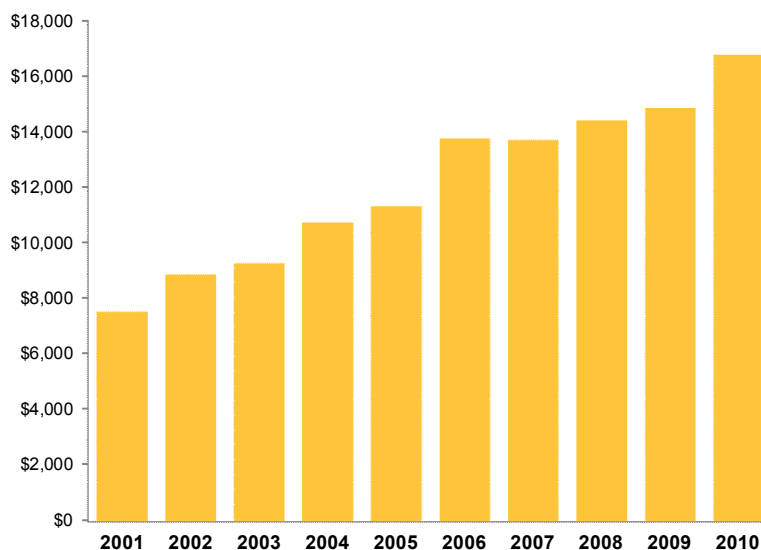
Source: Utah Inpatient Hospital Discharge Data, Office of Health Care Statistics. Utah Department of Health.

Average Length of Stay for Preventable Diabetes Hospitalizations

Table 1. By insurance status, adults aged 18+, Utah, 2001-2010, (ICD-9-CM: 250.0-250.3, 250.8-250.9)

	Diabetes Hospitalizations		Average Length of Stay	P-Value
	N	%	Days	
Insurance Status				
Total	13,356			
Government Coverage	7,135	53.4%	4.09	<0.001
Private Insurance	4,652	34.8%	3.08	
Uninsured	1,569	11.7%	2.76	

4. Bindman, A.B., et al., Preventable hospitalizations and access to health care. JAMA, 1995. 274(4): p. 305-11.
5. Mainous, A.G., 3rd, et al., Impact of insurance and hospital ownership on hospital length of stay among patients with ambulatory care-sensitive conditions. Ann Fam Med, 2011. 9(6): p. 489-95.
6. Bodenheimer, T., High and rising health care costs. Part 1: seeking an explanation. Ann Intern Med, 2005. 142(10): p. 847-54.
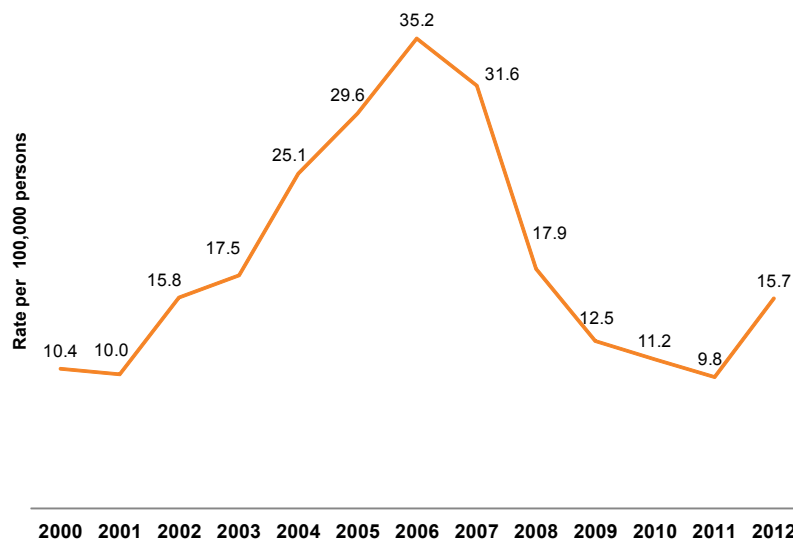
Breaking News, December 2012

Gonorrhea in Utah

Gonorrhea rates in Utah have risen and fallen over the past 12 years. The rate increased from 10.4 cases per 100,000 population in 2000 to 35.2 cases per 100,000 population in 2006. From the 2006 peak, the rate decreased 72% to 9.8 cases per 100,000 population in 2011.

Based on the number of gonorrhea cases reported during the first ten months of 2012, the projected gonorrhea rate in 2012 will be 15.7 cases per 100,000 population, higher than the rates reported during the previous three years. The year-to-date (YTD) increase in cases has occurred in both males and females and across age groups ranging from 15-19 to 55-59 years of age. Correctional and family planning facilities diagnosed more cases in 2012 compared to the previous three-year YTD average. This draws attention to the need to address prevention messages to a wide range of age groups and to those with a broad set of risk factors.

Gonorrhea Rates, Utah, 2000-2012*

* The 2012 rate is based on cases reported during the January to October 2012 time period

The current Centers for Disease Control and Prevention's Sexually Transmitted Diseases Treatment Guidelines are available at www.cdc.gov/std/treatment/2010.

Community Health Indicators Spotlight, December 2012

Social Determinants of Health: Education Disparities

The social determinants of health include a broad range of conditions in people's environments, such as access to educational opportunities, that affect health. According to the 2011 American Community Survey, 9.7% of Utahns over 25 had not attained a high school diploma or GED, whereas 29.7% had completed a bachelor's degree. Literature supports the link between education and health, even when other factors are taken into account. Analysis of the Utah Behavioral Risk Factor Surveillance System (BRFSS) by these two levels of educational attainment show that Utah adults aged 25+ with less than a high school education have higher rates of certain diseases and disease risks than those with bachelor's degrees. Besides improving the likelihood of better employment and income opportunities, education affects health by increasing knowledge and cognitive skills and enhancing social and psychological factors such as sense of control, social standing and social support.[1]

Utah Disease and Risk Factor Prevalence Rates by Education, 2011
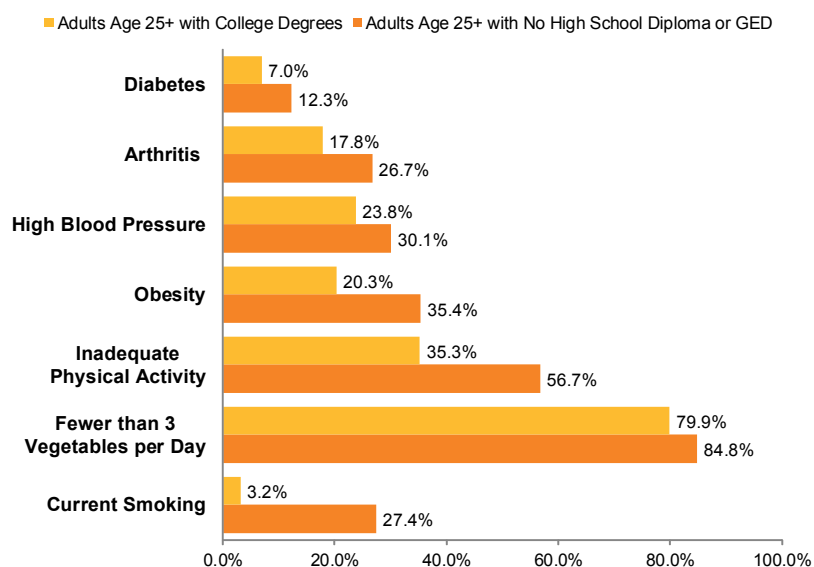
Source: Utah BRFSS, Age-adjusted to the U.S. 2000 population

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1. Robert Wood Johnson Foundation. (2009). Education Matters for Health. Retrieved November 29, 2012, from Commission to Build a Healthier America:http://www.commissiononhealth.org/.

Monthly Health Indicators Report
(Data Through October 2012)

Monthly Report of Notifiable Diseases, October 2012	Current Month # Cases	Current Month # Expected Cases (5-yr average)	# Cases YTD	# Expected YTD (5-yr average)	YTD Standard Morbidity Ratio (obs/exp)
Campylobacteriosis (Campylobacter)	44	24	429	334	1.3
Shiga toxin-producing Escherichia coli (E. coli)	9	10	101	111	0.9
Hepatitis A (infectious hepatitis)	0	1	4	8	0.5
Hepatitis B, acute infections (serum hepatitis)	0	1	12	9	1.3
Influenza*	Weekly updates at http://health.utah.gov/epi/diseases/flu				
Meningococcal Disease	1	0	4	6	0.7
Pertussis (Whooping Cough)	56	34	1128	289	3.9
Salmonellosis (Salmonella)	21	23	225	288	0.8
Shigellosis (Shigella)	6	4	31	37	0.8
Varicella (Chickenpox)	22	51	232	480	0.5

Quarterly Report of Notifiable Diseases, 3rd Qtr 2012	Current Quarter # Cases	Current Quarter # Expected Cases (5-yr average)	# Cases YTD	# Expected YTD (5-yr average)	YTD Standard Morbidity Ratio (obs/exp)
HIV/AIDS†	8	25	67	82	0.8
Chlamydia	2,038	1,604	5,773	4,739	1.2
Gonorrhea	138	112	326	341	1.0
Syphilis	14	8	23	25	0.9
Tuberculosis	11	5	31	23	1.3

Medicaid Expenditures (in Millions) for the Month of October 2012	Current Month	Expected/ Budgeted‡ for Month	Fiscal YTD	Budgeted‡ Fiscal YTD	Variance - over (under) budget
Capitated Mental Health	$ 8.5	$ 17.4	$ 46.7	$ 41.6	$ 5.2
Inpatient Hospital	$ 58.2	$ 36.5	$ 99.4	$ 97.1	$ 2.3
Outpatient Hospital	$ 6.1	$ 8.0	$ 22.2	$ 29.9	$ (7.8)
Long Term Care	$ 13.9	$ 12.8	$ 49.5	$ 48.0	$ 1.5
Pharmacy§	$ 12.7	$ 10.8	$ 54.8	$ 40.3	$ 14.4
Physician/Osteo Services	$ 7.4	$ 7.7	$ 27.7	$ 28.8	$ (1.1)
TOTAL HCF MEDICAID	$225.5	$ 232.0	$ 605.2	$ 616.9	$ (11.8)

Program Enrollment for the Month of October 2012	Current Month	Previous Month	% Change¶ From Previous Month	1 Year Ago	% Change¶ From 1 Year Ago
Medicaid	255,590	254,046	+0.6%	248,463	+2.9%
PCN (Primary Care Network)	15,110	15,515	-2.6%	14,900	+1.4%
CHIP (Children's Health Ins. Plan)	35,990	36,045	-0.2%	37,563	-4.2%

Health Care System Measures	Annual Visits			Annual Charges	
	Number of Events	Rate per 100 Population	% Change¶ From Previous Year	Total Charges in Millions	% Change¶ From Previous Year
Overall Hospitalizations (2010)	274,576	9.0%	-2.6%	$ 5,416.2	+5.9%
Non-maternity Hospitalizations (2010)	167,340	5.3%	-0.9%	$ 4,552.5	+5.9%
ED Encounters - Not Admitted (2010)	645,962	21.5%	-7.7%	$ 1,160.9	+7.4%
Outpatient Surgery (2009)	311,442	10.6%	+1.9%	$ 1,465.7	+14.7%

Annual Community Health Measures	Current Data Year	Number Affected	Percent/ Rate	% Change¶ From Previous Year	State Rank# (1 is best)
Obesity (Adults 18+)	2011	472,400	24.4%	+1.3%	12 (2011)
Cigarette Smoking (Adults 18+)	2011	229,300	11.8%	+2.7%	1 (2011)
Influenza Immunization (Adults 65+)	2011	147,400	56.9%	-15.5%	41 (2011)
Health Insurance Coverage (Uninsured)	2011	377,700	13.4%	+26.4%	n/a
Motor Vehicle Traffic Crash Injury Deaths	2010	231	8.1 / 100,000	+0.1%	19 (2009)
Poisoning Deaths	2010	342	12.0 / 100,000	-38.1%	47 (2009)
Suicide Deaths	2010	479	16.8 / 100,000	+5.8%	n/a
Diabetes Prevalence (Adults 18+)	2011	129,600	6.7%	-1.8%	6 (2011)
Poor Mental Health (Adults 18+)	2011	315,300	16.3%	-0.4%	17 (2011)
Coronary Heart Disease Deaths	2010	1,488	52.2 / 100,000	-0.4%	2 (2008)
All Cancer Deaths	2010	2,791	98.0 / 100,000	+7.9%	1 (2008)
Stroke Deaths	2010	736	25.8 / 100,000	-1.4%	13 (2008)
Births to Adolescents (Ages 15-17)	2010	876	14.3 / 1,000	-13.2%	17 (2009)
Early Prenatal Care	2010	38,124	73.1%	+2.1%	n/a
Infant Mortality	2010	251	4.8 / 1,000	-9.0%	3 (2008)
Childhood Immunization (4:3:1:3:3:1)	2010	38,900	70.6%	-7.8%	12 (2010)

Note: Active surveillance has ended for influenza virus until the 2012-2013 season.
† Diagnosed HIV infections, regardless of AIDS diagnosis.
‡ Budget has been revised to include supplemental funding from 2011 General Session.
§ Only includes the gross pharmacy costs. Pharmacy Rebate and Pharmacy Part-D amounts are excluded from this line item.
¶ % Change could be due to random variation.
# State rank based on age-adjusted rates.
Notes: Data for notifiable diseases are preliminary and subject to change upon the completion of ongoing disease investigations. Active surveillance for West Nile virus has ended until the 2013 season.