

SHIP DATA BRIEFING SUMMARY



Healthier People. Health Care Value.

January 2016

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Introduction

The goal of the data presented in this Data Briefing Summary is to provide a comprehensive picture of the current state of the Wisconsin State Health Innovation Plan's (SHIP) selected populations: 1) diabetes with hypertension including men and women, ages 18-64, statewide (does not include gestational diabetes; includes both Type I and Type II diabetes); and 2) depression with diabetes including men and women, ages 18-64, statewide (does not include postpartum depression; includes both Type I and Type II diabetes). As Wisconsin does not currently have one source of all health care data, varied data sources have been compiled to provide the best picture from multiple angles. Each data source included in the Data Briefing Summary represents a different organization with various methods of collecting and reporting data, and thus is not meant to be reconciled by overlaying multiple data sources (additional details regarding each data source are included below). The SHIP workgroups will use this Data Briefing Summary to extract Key Findings. Ultimately, those key findings will be utilized to develop shared transformation goals and included in the Wisconsin SHIP.

The data is presented as it was given to the State Health Innovation Plan (SHIP).
Grammar will be edited for consistency in the Key Findings Report.

Summary of Data Sources

Behavioral Risk Factor Surveillance System (BRFSS)

BRFSS is a United States health survey that looks at behavioral risk factors. It is run by Centers for Disease Control and Prevention and conducted by the individual state health departments. The survey is administered by telephone and is the world's largest such survey. In 2009, the BRFSS began conducting surveys by cellular phone in addition to traditional "landline" telephones. The Behavioral Risk Factor Surveillance System (BRFSS) and the Family Health Survey (FHS) suffer from limitations inherent to any survey design. The sampling frame uses a limited number of strata to represent the whole state. County based and small area estimations may lead to small cell sizes and cause unreliable estimates. As they rely on self-reported information they are prone to reporting bias. Finally, because the surveys are in English or Spanish, only adults with a telephone who can be interviewed in English/Spanish are included in the sample.

Survey of the Health of Wisconsin (SHOW)

SHOW's specific aims are: 1) to conduct annual health surveys of state residents and communities; 2) to conduct longitudinal follow-up of survey participants; and 3) through a flexible design, enable academic- and community-driven ancillary studies. It measures objective and subjective data on major health determinants and outcomes. Urine, blood, and DNA are collected for long-term storage in a biorepository. It also includes extensive and multi-modal collection of contextual community-level data. Through its multi-modal, modular, flexible design, it enables local community-driven ancillary studies. This is the first state-of-the-art comprehensive health surveillance system of this magnitude and scope. By the end of requested funding, they will have between 5,800 and 8,300 subjects participating. Adults age 21 to 74 in each household are invited to participate. However, SHOW uses sampling strategies to choose a representative sample, and weighs data to mitigate participant bias. SHOW provided data about participants age 21-64, as experimenters do not assess persons 18-20 years old. Participation bias could influence results if persons with certain characteristics choose to participate more often than other persons recruited. SHOW participation rates range from 55% to 63%.

Wisconsin Collaborative for Healthcare Quality (WCHQ)

WCHQ is a multi-stakeholder, voluntary consortium of Wisconsin organizations. The WCHQ membership, including health systems, medical groups, hospitals and health plans, reports performance measures. WCHQ publicly reports a broad and growing collection of healthcare performance measures that evaluate ambulatory and hospital care. WCHQ data represents care delivered by 65% of providers in the state; therefore, WCHQ data only represents a portion of the patients in the state of Wisconsin. WCHQ data is included in the Wisconsin SHIP Data Briefing Summary.

Wisconsin Hospital Association Information Center (WHAIC)

Pursuant to Chapter 153, Wisconsin Statutes, all Wisconsin hospital and surgery centers are required to submit inpatient and outpatient data to WHAIC each quarter. Data are compiled from the following settings: inpatient; outpatient surgery; emergency department visits; observation; and other hospital outpatient. To

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identify the same patient across hospitals, each submitted record contains a unique case identifier (UCID). This is calculated using an algorithm defined by the WHAIC. It is a 64 character hexadecimal hashed value based on the patient's name, sex and date of birth. One limitation is that the UCID is not 100% accurate. Patients having the same birth date and very similar names, such as twins, may receive the same UCID. Or the same patient may have different UCIDs due to a name change or clerical error.

Wisconsin Health Information Organization (WHIO) **WHIO:**

WHIO is a robust All-Payer Claims Database, consisting of a rolling two years of medical and pharmacy claims information (300M claim lines; > \$80B billed charges). It is updated semiannually. The data represents over 4 Million lives covered by 16 payers, including Commercial, WI Medicaid, and Medicare Advantage plans. The claim data are enhanced using grouping software, normalized pricing, and attribution algorithms. Analyses of clinically meaningful episodes of care, nationally endorsed quality measures, and disease categories are useful for understanding resource use and cost of care, patient adherence to evidence-based care standards, and population disease prevalence. At this time, WHIO does not contain Medicare Fee for Service claims from CMS, or any data on services provided to the uninsured population.

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Grammar will be edited for consistency in the Key Findings Report.

Health

Prevalence

Count of Members										
	00-17		00-17 Total	18-64		18-64 Total	65+		65+ Total	Grand Total
	F	M		F	M		F	M		
HTN & Diabetes & Depression	5	9	14	4,743	2,734	7,477	1,801	1,037	2,838	10,329
HTN & Diabetes	32	28	60	11,131	14,521	25,652	11,373	11,577	22,950	48,662
HTN & Depression	37	46	83	10,126	5,609	15,735	4,137	1,573	5,710	21,528
HTN alone	247	407	654	28,958	35,067	64,025	27,014	20,930	47,944	112,623
Diabetes & Depression	173	111	284	7,220	2,848	10,068	857	550	1,407	11,759
Diabetes alone	1,208	1,120	2,328	21,766	21,381	43,147	5,388	6,703	12,091	57,566
Depression alone	11,911	9,686	21,597	101,615	37,989	139,604	4,851	1,977	6,828	168,029
Grand Total	13,613	11,407	25,020	185,559	120,149	305,708	55,421	44,347	99,768	430,496



WHIO count of members broken down by condition, age, and gender.

Prevalence of Diabetes in the Selected Populations		
Type of Diabetes	Diabetes and Hypertension	Depression and Diabetes
Type 1	1%	2%
Type 2	88.2%	85%
Type 1 & 2	12.5%	12.5%



Quintiles

6.17 to 9.78
9.78 to 10.78
10.78 to 11.78
11.78 to 13.33
13.33 to 17.88

- 

Quintiles

Lightest Yellow	8.27 to 14.92
Light Yellow	14.92 to 17.83
Yellow	17.83 to 19.86
Orange	19.86 to 22.47
Red	22.47 to 28.62

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Demographics

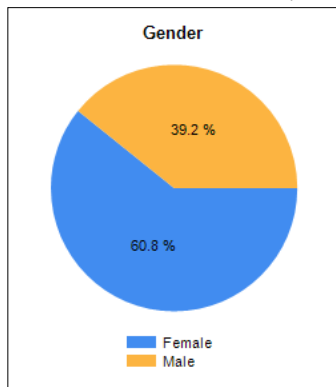
Demographic and Health Indication for Diabetes, Depression and Hypertension Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Gender Prevalence			
Population	Diabetes and Hypertension	WI Population	Depression and Diabetes
Total	138,000	3,560,000	67,000
Male	65,000 (47%)	1,800,000 (51%)	27,000 (40%)
Female	73,000 (53%)	1,760,000 (49%)	40,000 (60%)
NH Whites	104,000 (76%)	2,968,000 (84%)	52,000 (78%)
Minorities	32,000 (24%)	566,000 (16%)	15,000 (22%)
Metro	95,000 (69%)	2,525,000 (71%)	43,000 (65%)
Non-Metro	43,000 (31%)	1,029,000 (29%)	23,000 (35%)

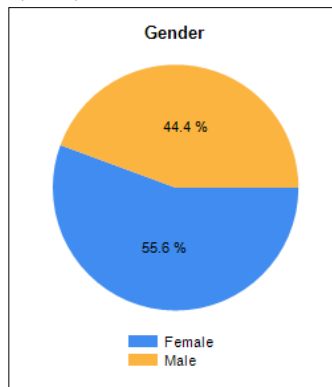


Gender

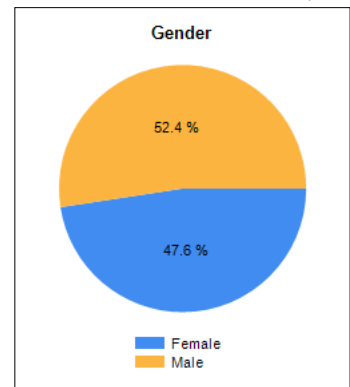
Depression and Diabetes
Age 18-64:
Total # of Patients: 5,732



WI Population
Total # of Patients:
3,662,756



Diabetes and Hypertension
Age 18-64
Total # of Patients: 22,560



Race

Race Prevalence			
Race (age 18-64)	Diabetes and Hypertension	WHA Population	Depression and Diabetes
White	75.4%	84.0%	78.6%
Black/African American	19.8%	8.4%	16.6%
American Indian or Alaskan Native	1.3%	0.9%	1.8%
Multiracial	1.2%	1.6%	1.1%
Declined	0.8%	1.8%	0.8%
Asian	1.0%	1.6%	0.8%
Unavailable	0.4%	1.2%	0.3%



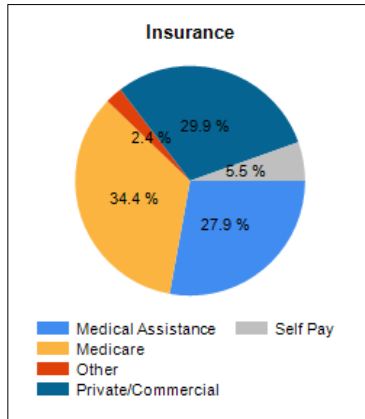
Ethnicity

Ethnicity			
Ethnicity (age 18-64)	Diabetes and Hypertension	WHA Population	Depression and Diabetes
Not Hispanic or Latino Origin	94.1%	91.8%	93.3%
Hispanic Origin	5.1%	5.3%	6.1%
Declined	0.5%	1.7%	0.5%
Unavailable	0.2%	1.1%	0.1%

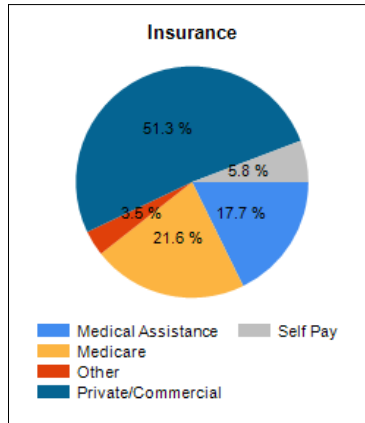


Insurance

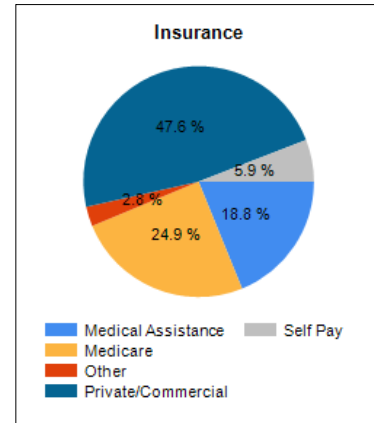
Depression and Diabetes
Age 18-64
Total Population: 5,732



Wisconsin Population
All
Total Population: 3,662,756



Diabetes and Hypertension
Age 18-64
Total Population: 22,560



Available demographic information is limited. Self-Pay = uninsured.



Payor Information for Patients with Depression and Diabetes age 18-64

Payor*	Number of Patients
Commercial	7,659
Medicaid	2,850
Medicare	3,417
Self-Pay	731
Unavailable	810
<i>*Some patients had multiple payers throughout the measurement period</i>	



Education

Demographic and Health Indication for Diabetes, Depression and Hypertension Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Education			
Population (age 18-64)	Diabetes and Hypertension	WI Population	Depression and Diabetes
HS or Less	69,000 (51%)	1,500,000 (41%)	36,000 (54%)
Some College	51,000 (37%)	1,200,000 (34%)	23,000 (35%)
College Degree or more	16,000 (12%)	900,000 (25%)	7,000 (11%)



Risk factors and mitigators

Individual health status

Research shows that diabetes, hypertension and depression all have in common a family history as a major risk factor.ⁱ

Depression with Diabetes Control

36% Diabetic population was uncontrolled at some point within the year



Diabetes with Hypertension Control

- 36% Diabetic population was uncontrolled at some point within the year



Demographic and Health Indicators for Diabetes, Depression and Hypertension Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Demographic and Health Indicators			
Population	Diabetes and Hypertension	WI Population	Depression and Diabetes
People with disability (limited or use special equipment)	63,000 (15%)	632,000 (19%)	63,000 (15%)

Note: All N's are weighted estimates and rounded to nearest thousand, percentages to nearest whole number



Health behaviors

Number and Percent Estimates of Population (18-64) who had any Physical Activity other than Job in the Past 30 Days using BRFSS (2011-2013), Office of Health Informatics, Division of Public Health, and Department of Health Services

Physical Activity			
Gender	Diabetes and Hypertension	WI Population	Depression and Diabetes
All	80,000 (62%)	2,655,000 (80%)	37,000 (59%)
Males	42,000 (68%)	1,333,000 (79%)	15,000 (61%)
Females	38,000 (57%)	1,322,000 (81%)	22,000 (57%)



Demographic and Health Indicators for Hypertension, Diabetes and Depression Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Health Behaviors			
Population	Diabetes and Hypertension	WI Population	Depression and Diabetes
Total	138,000	3,560,000	67,000
Current smoking	27,000 (20%)	790,000 (23%)	23,000 (37%)
Any alcohol past month	56,000 (44%)	2, 247,000 (68%)	24,000 (38%)
Binge drinking past month	12,000 (9%)	920,000 (28%)	5,000 (9%)
Obesity*	85,000 (67%)	967,000 (29%)	42,000 (68%)
Frequent mental distress	25,000 (18%)	398,000 (11%)	26,000 (40%)
Fair/poor health	62,000 (44%)	459,000 (13%)	37,000 (55%)



Access to needed care and services

Insurance and usual source of care

Research indicates that uninsured adults with diabetes have less access to health care and lower levels of preventive care, health care use, and expenditures than insured adults.ⁱⁱ Observational data in the United States suggests that those without health insurance have a higher mortality and worse health outcomes. Significant benefits of coverage have now been robustly demonstrated for adults with acute or chronic conditions for which there are effective treatments. Compared to the continuously insured, those insured but with a recent time uninsured were at high risk of going without needed care and of having problems paying medical bills.ⁱⁱⁱ

Demographic and Health Indicators for Diabetes, Depression and Hypertension Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Insurance Coverage			
Population	Diabetes and Hypertension	WI Population	Depression and Diabetes
Total	138,000	3,560,000	67,000
Insurance coverage (yes)	114,000 (83%)	3,019,000 (85%)	56,000 (87%)
Have usual source of care	127,000 (92%)	2,798,000 (79%)	65,000 (98%)



Employment status

Demographic and Health Indicators for Diabetes, Depression and Hypertension Population using BRFSS (2011-2013) data, Office of Health Informatics, Division of Public Health, Department of Health Services

Employment/ Income			
Population	Diabetes and Hypertension	WI Population	Depression and Diabetes
Total	138,000	3,560,000	67,000
Employed (Yes)	64,000 (47%)	2,525,000 (71%)	21,000 (32%)
Income (groups)**			
<\$25,000:	49,000 (40%)	811,000 (26%)	34,000 (57%)
\$25-49,999:	34,000 (28%)	860,000 (27%)	15,000 (26%)
\$50,000+:	39,000 (31%)	1,511,000 (47%)	11,000 (18%)

** household income - has significant missing data due to refusal to report



Community Conditions

Results from: Survey of the Health of Wisconsin (SHOW) 2008-2013, Adults age 21-64*

	Total	Diabetes and Hypertension (N=173)	Depression and Diabetes (N=91)	SHIP #
Many destinations to go to within easy walking distance from my home (% agree or strongly agree)	57.4%	51.7%	57.0%	66
Community is safe from crime for walking or riding a bike (% that feel somewhat safe or very safe)	97.4%	92.7%	93.1%	66
Usual Source of Care (%)				98
Yes	90.4%	95.8%	94.6%	
No	9.6%	4.2%	1.5%	
Usual Source of Care Type (%)				98
Emergency	3.9%	5.2%	6.3%	
Hospital Outpatient	3.2%	3.3%	5.8%	
Clinic or Doctors Office	88.6%	85.1%	87.0%	
Community Health Center	1.6%	1.3%	0.5%	
Other	2.8%	5.1%	0.4%	



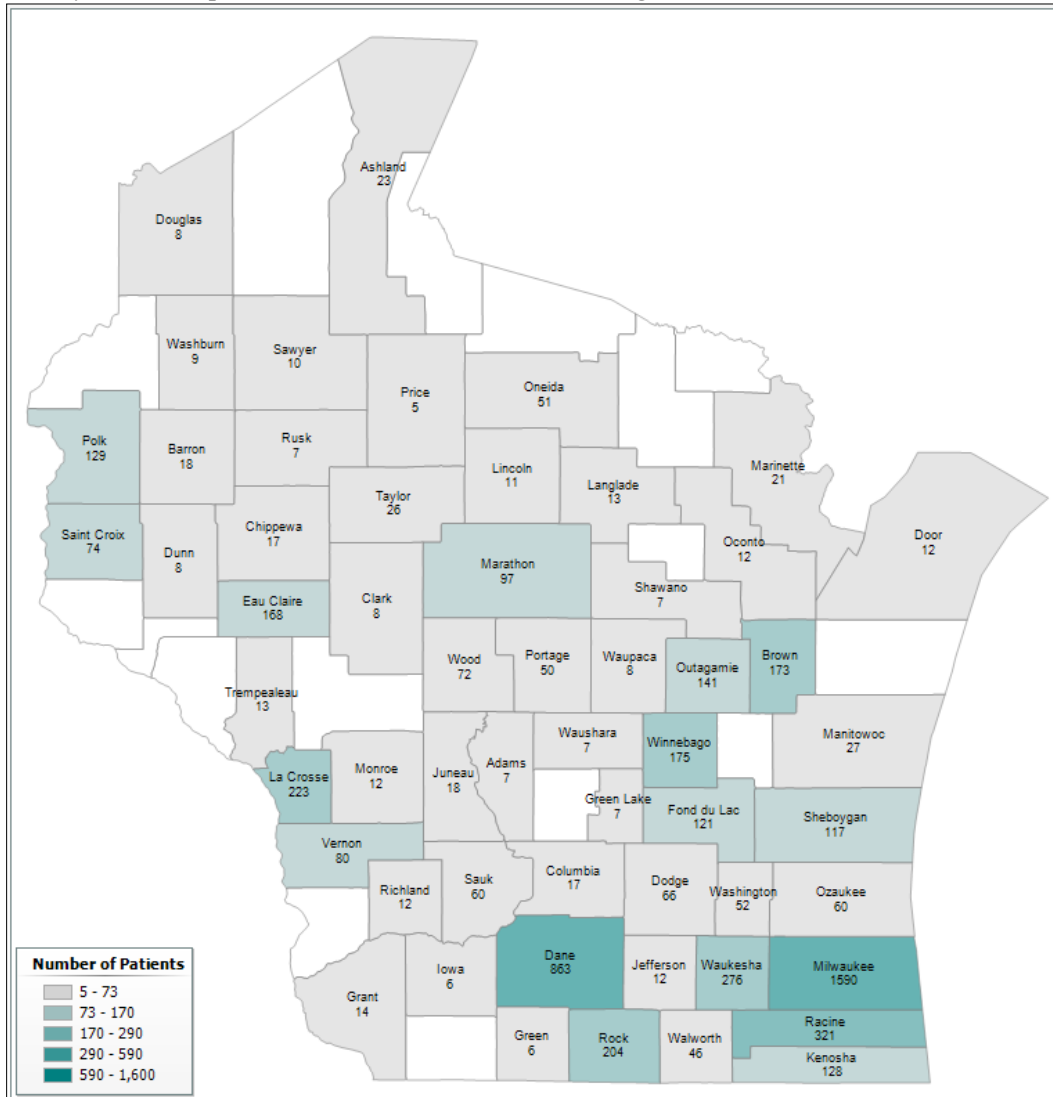
Health Care

Locations of Patients

Depression and Diabetes age 18-64

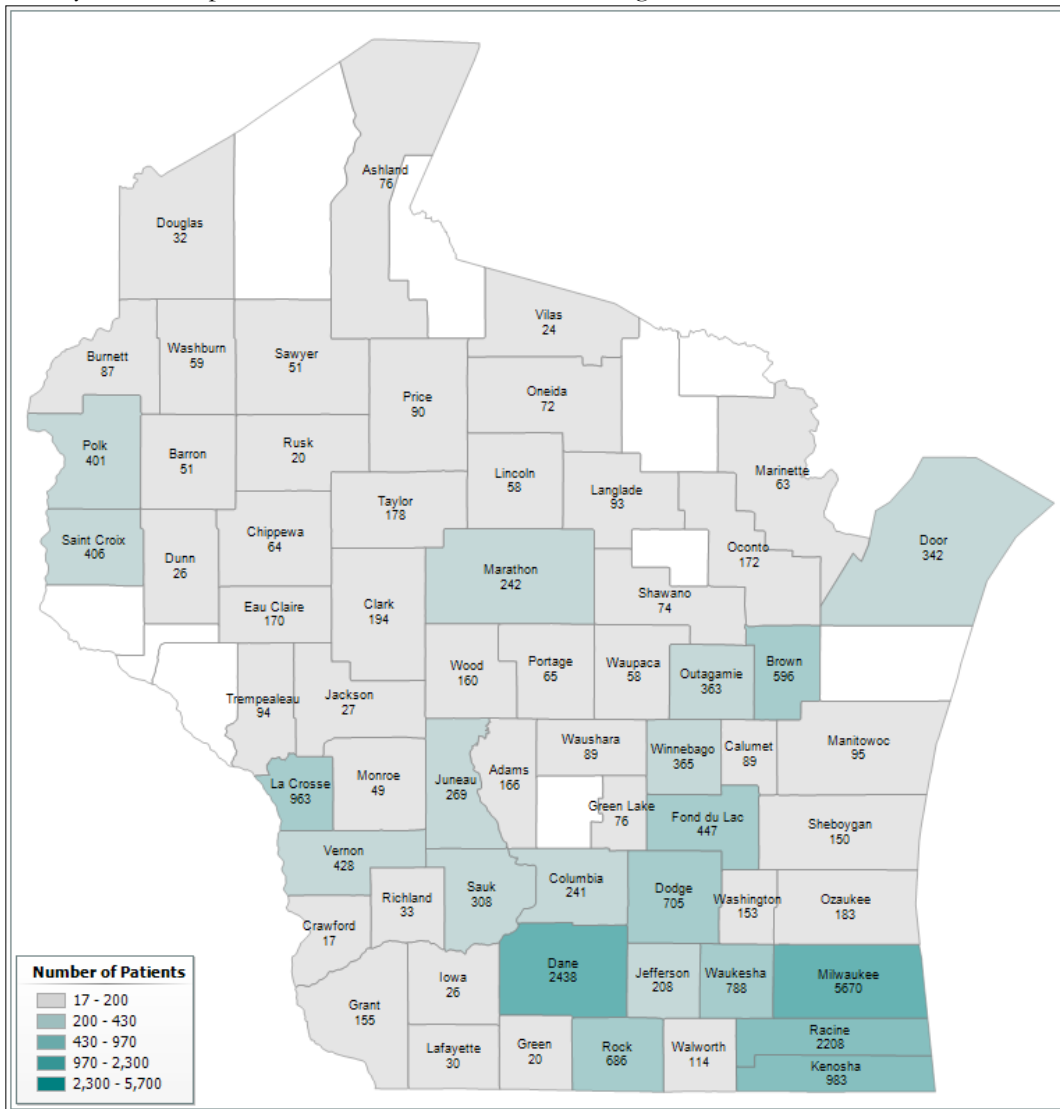
Diagnosed by County Total: 5,732

County of the hospital where the condition was first diagnosed



Locations Patients with Diabetes and Hypertension age 18-64 Diagnosed by County Total: 22,560

County of the hospital where the condition was first diagnosed



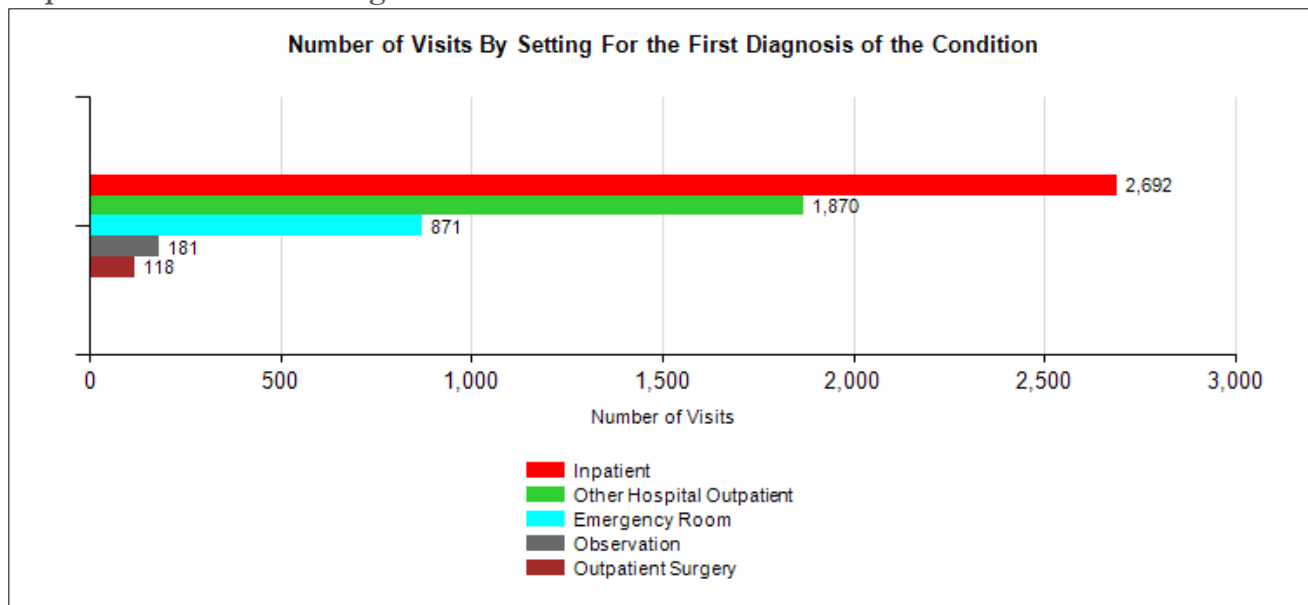
Results from: Survey of the Health of Wisconsin (SHOW) 2008-2013, Adults age 21-64*

Age of First Diagnosis

	Total	Diabetes and Hypertension (N=173)	SHIP #
Age at first diagnosis of diabetes (mean (SE))	1.1(0.1)	0.9 (0.3)	24
Age at first diagnosis of hypertension (mean (SE))	41.9 (0.5)	44.0 (1.4)	49

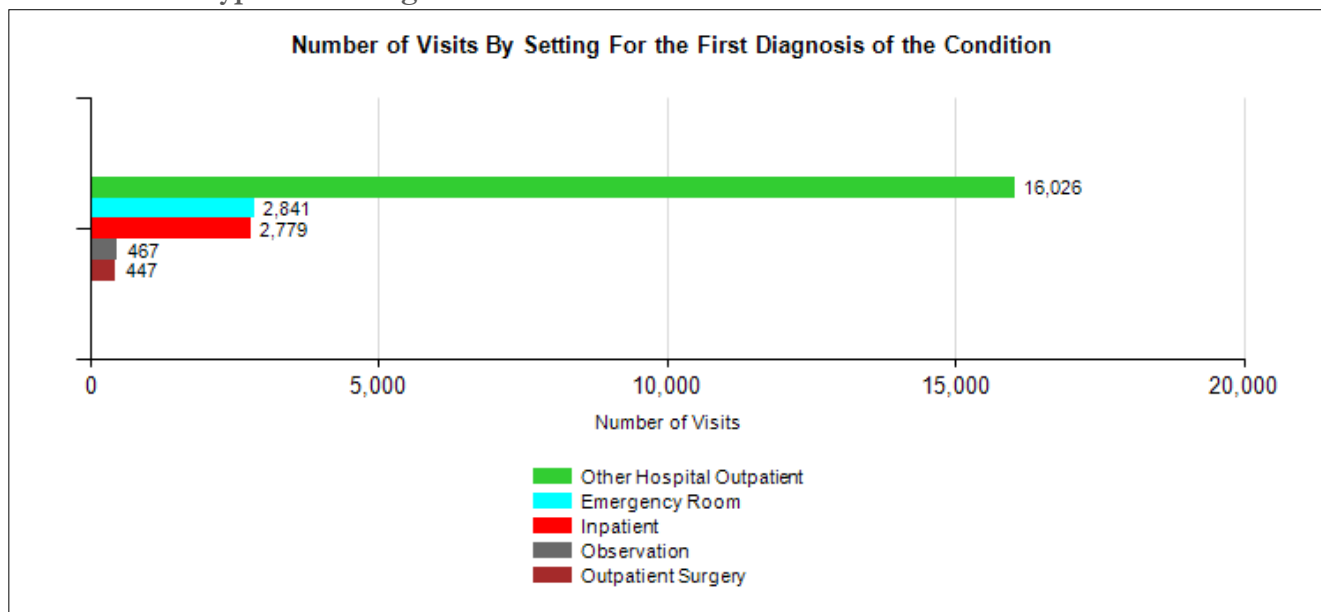
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Counts by setting for the first diagnosis of the condition
Depression and Diabetes age 18-64



WHA
Information Center LLC
The Respected Source for Health Care Data

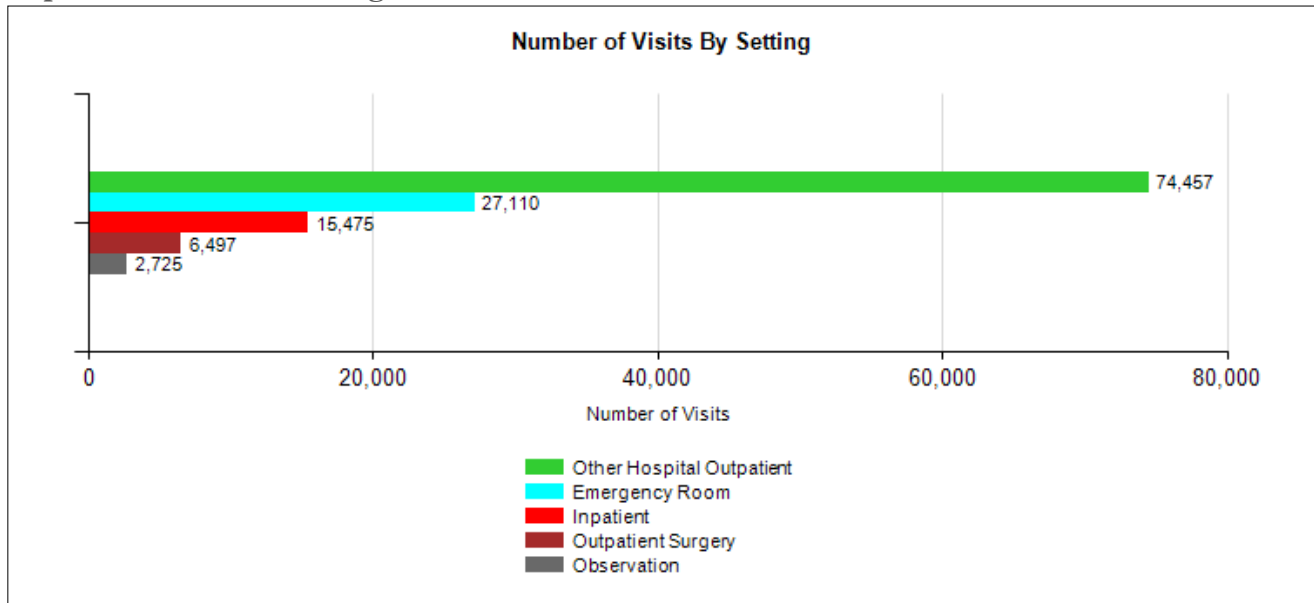
Counts by setting for the first diagnosis of the condition
Diabetes and Hypertension age 18-64



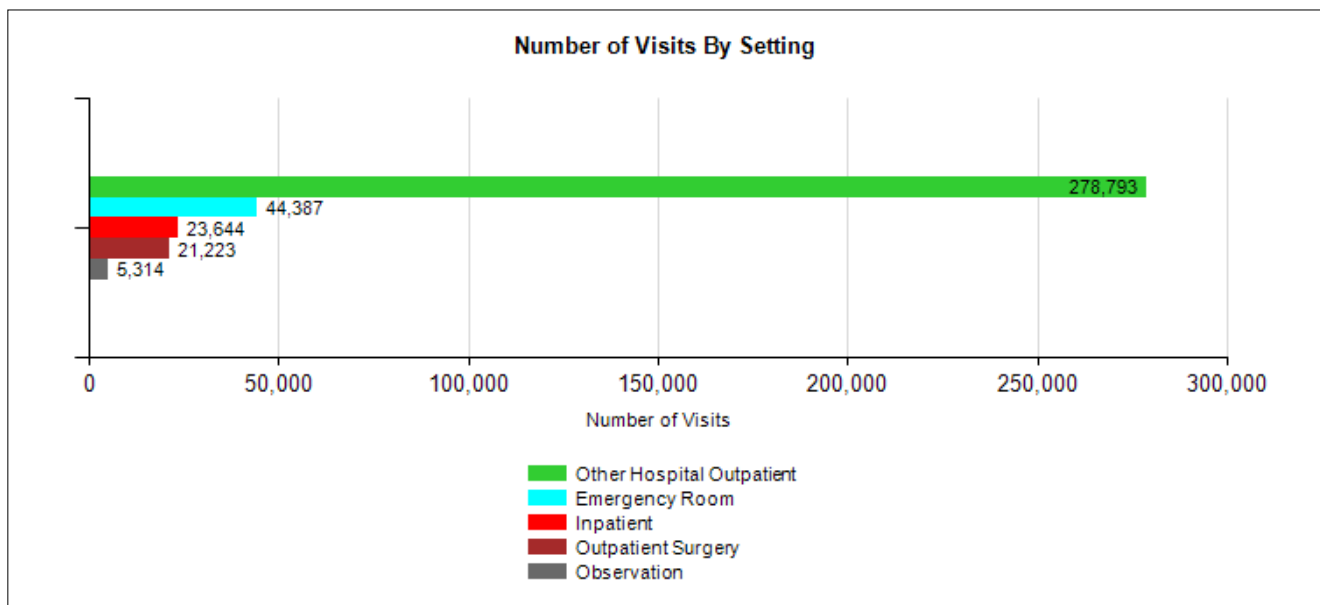
WHA
Information Center LLC
The Respected Source for Health Care Data

Treatment

Number of visits by setting where patients with Depression and Diabetes age 18-64 are treated



Number of visits by setting where patients with Diabetes and Hypertension age 18-64 are treated



Hospitalization/Readmission Rates

Hospital Encounters by Race	Depression with Diabetes, Age 18-64, M&F	WHA Population	Diabetes with Hypertension, Age 18-64 M&F
Total Number of ER Visits that lead to Inpatient <i>(all races)</i>	10,323	503,641	15,534
<i>White</i>	7,517	421,846	9,789
<i>Black</i>	2,363	59,770	5,034
<i>Hispanic</i>	668	20,366	940
Total Number of ER Visits for the Condition* that lead to Inpatient <i>(all races)</i>	2,965		3,435
<i>White</i>	2,257		2,071
<i>Black</i>	565		1,196
<i>Hispanic</i>	173		210
Readmission Rate - All Causes** <i>(all races)</i>	30.2%	9.7%	21.8%
<i>White</i>	28.7%	9.7%	20.3%
<i>Black</i>	36.2%	12.8%	26.3%
<i>Hispanic</i>	36.4%	7.6%	21.3%
Readmission Rate- Admitted and readmitted for the condition <i>(all races)</i>	12.1%		7.9%
<i>White</i>	10.8%		6.2%
<i>Black</i>	18.7%		13.1%
<i>Hispanic</i>	10.1%		6.3%
* The condition is depression with diabetes			
** Inpatient only, uses readmission formula employed by WHAIC, based on CMS rules.			

Hospital Encounters by Payer	Depression with Diabetes, Age 18-64, M&F	WHA Population	Diabetes with Hypertension Age 18-64 M&F
Number of ER Visits that lead to Inpatient (all payers)	10,323	503,641	15,534
Medicare	4,353	281,807	5,970
Medicaid	3,347	78,368	4,620
Private/Commercial	1,781	112,284	3,521
Self-Pay	607	22,539	1,117
Other	235	8,643	306
Number of ER Visits for the Condition* that lead to Inpatient (all payers)	2,965		3,435
Medicare	1,012		900
Medicaid	1,014		1,124
Private/Commercial	668		906
Self-Pay	210		425
Other	61		80
Readmission Rate - All Causes** (all payers)	30.2%	9.7%	21.8%
Medicare	31.7%	14.2%	24.8%
Medicaid	33.6%	7.6%	24.8%
Private/Commercial	21.1%	5.4%	15.7%
Self-Pay	32.2%	7.6%	18.8%
Other	24.8%	8.3%	14.5%
Readmission Rate- Admitted and readmitted for the condition (all payers)	12.1%		7.9%
Medicare	11.9%		9.6%
Medicaid	16.1%		12.7%
Private/Commercial	6.5%		2.9%
Self-Pay	14.7%		5.7%
Other	14.5%		4.8%
* The condition is depression with diabetes			
** Inpatient only, uses readmission formula employed by WHAIC, based on CMS rules.			

Average length of stay for patients admitted to the hospital			
	Diabetes and Hypertension	WHA Population	Depression and Diabetes
Average length of stay in days for patients admitted to the hospital	5.0	4.5	5.1
Average length of stay for patients admitted to with a chief complaint of the diagnosis	4.2	N/A	4.9
Average length of stay for patients admitted to the hospital with a chief complaint of suicide ideation and/or attempted suicide	5.4	4.8	4.8

Average length of stay for patients admitted to the hospital by Payer Type			
	Diabetes and Hypertension	WHA Population	Depression and Diabetes
Average length of stay in days for patients admitted to the hospital (<i>all payers</i>)	5	4.5	5.1
<i>Medicare</i>	5.4	5.1	5.4
<i>Medicaid</i>	4.9	4.4	4.8
<i>Private/Commercial</i>	4.8	3.7	4.9
<i>Self-Pay</i>	4.3	6.8	4.3
<i>Other</i>	4.9	6.1	5.9
Average length of stay for patients admitted to with a chief complaint of the diagnosis (<i>all payers</i>)	4.2	N/A	4.9
<i>Medicare</i>	4.5		5.4
<i>Medicaid</i>	4.2		4.6
<i>Private/Commercial</i>	4.2		4.6
<i>Self-Pay</i>	3.4		4.2
<i>Other</i>	4.2		5.7
Average length of stay for patients admitted to the hospital with a chief complaint of suicide ideation and/or attempted suicide (<i>all payers</i>)	5.4	4.8	4.8
<i>Medicare</i>	5.6	5.7	4.9
<i>Medicaid</i>	5.1	4.7	4.4
<i>Private/Commercial</i>	5.4	4.5	5
<i>Self-Pay</i>	5	4.2	5.1
<i>Other</i>	5.3	4.7	7.8

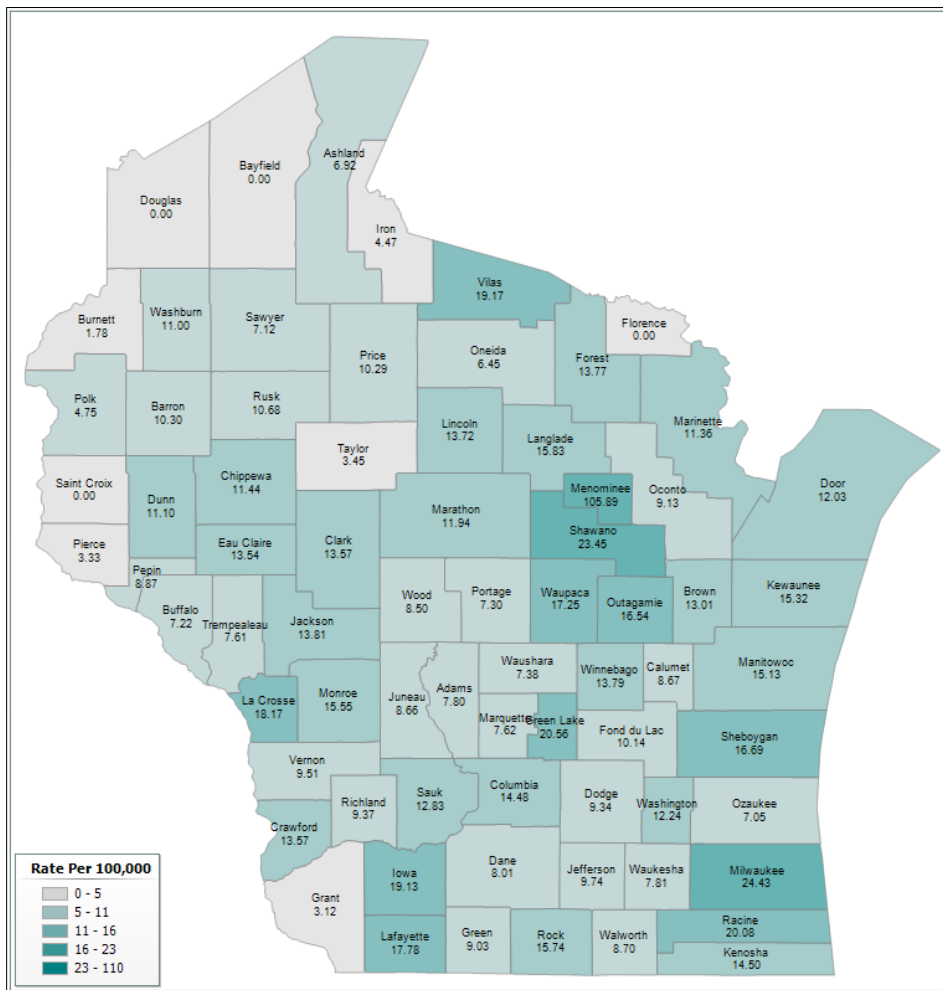
Average length of stay for patients admitted to the hospital by Race			
	Diabetes and Hypertension	WHA Population	Depression and Diabetes
Average length of stay in days for patients admitted to the hospital (<i>all races</i>)	5	4.5	7.5
<i>White</i>	5	5.8	5
<i>Black</i>	4.9	5.3	5.1
<i>Hispanic</i>	4.7	5.1	5.2
Average length of stay for patients admitted to with a chief complaint of the diagnosis (<i>all races</i>)	4.2	N/A	3.9
<i>White</i>	4.5		5
<i>Black</i>	3.5		4.7
<i>Hispanic</i>	4.7		5.1
Average length of stay for patients admitted to the hospital with a chief complaint of suicide ideation and/or attempted suicide (<i>all races</i>)	5.4	4.8	2.8
<i>White</i>	5.5	4.9	5
<i>Black</i>	5.1	4.4	4.3
<i>Hispanic</i>	4.6	3.9	4.7

Adverse Events

Rates for Inpatient Quality Measures				
Measure	Diabetes and Hypertension	WI Population	Depression and Diabetes	Per n Visits
Adverse Drug Events- Insulin	2.030	0.244	1.680	1,000
Deep Vein Thrombosis/ Pulmonary Embolism	0.237	0.203	0.162	100
Patient Falls	0.254	0.268	0.452	1,000
Pressure Ulcers	1.692	0.810	1.292	1,000

WI Population with Diabetes: Lower-Extremity Amputation- Area-Level Rate

Rates by county of patient residence. Denominators under 50 are not reported. The statewide risk-adjusted rate is 13.55 per 100,000 population. No report filters are applied.



Emergency Room Utilization

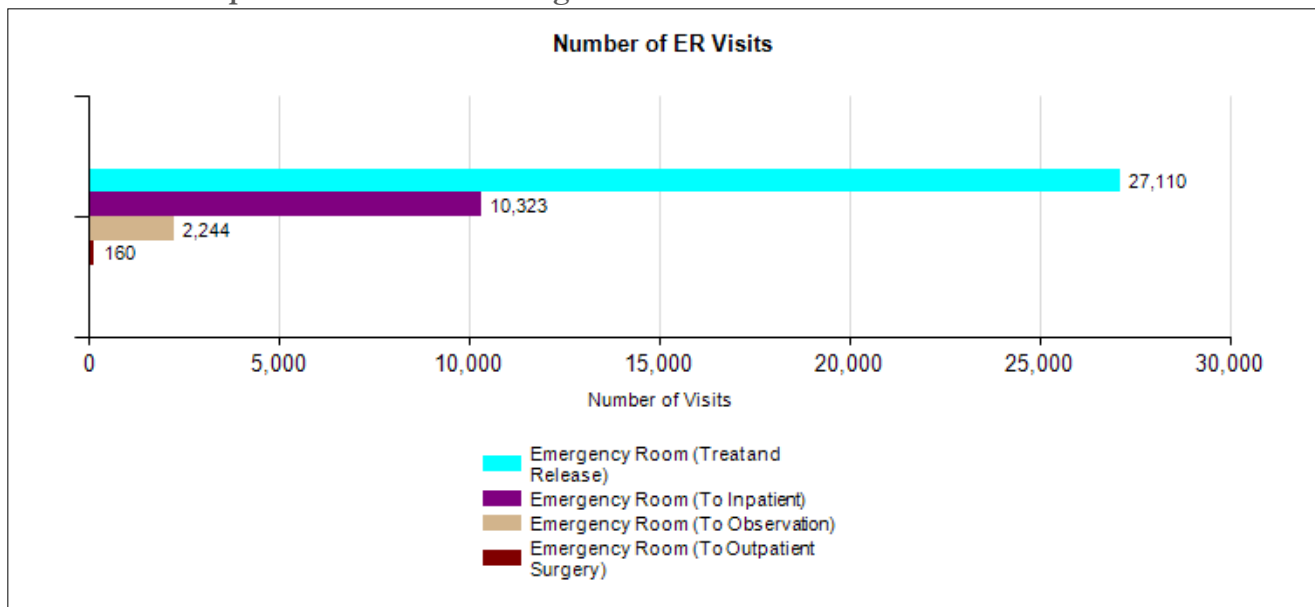
Emergency Room Utilization per 1,000 population

	Population n	# of Encounters	Encounters per 1,000 Population
Statewide - all			
Current (10/13 - 9/14) Total	1,943,666	570,447	355
Prior (10/12 - 9/13) Total	1,811,889	548,344	350
Diabetes & Hypertension			
Current (10/13 - 9/14) Total	37,572	41,765	1,204
Diabetes-related ER		9,651	278
Hypertension-related ER		1,149	33
Prior (10/12 - 9/13) Total	35,886	40,814	1,186
Diabetes-related ER		9,906	288
Hypertension-related ER		1,167	34
Diabetes & Depression			
Current (10/13 - 9/14)	20,329	28,147	1,500
Diabetes-related ER		6,050	322
Depression-related ER		2,593	138
Prior (10/12 - 9/13)	18,630	27,152	1,515
Diabetes-related ER		6,084	339
Depression-related ER		2,257	126

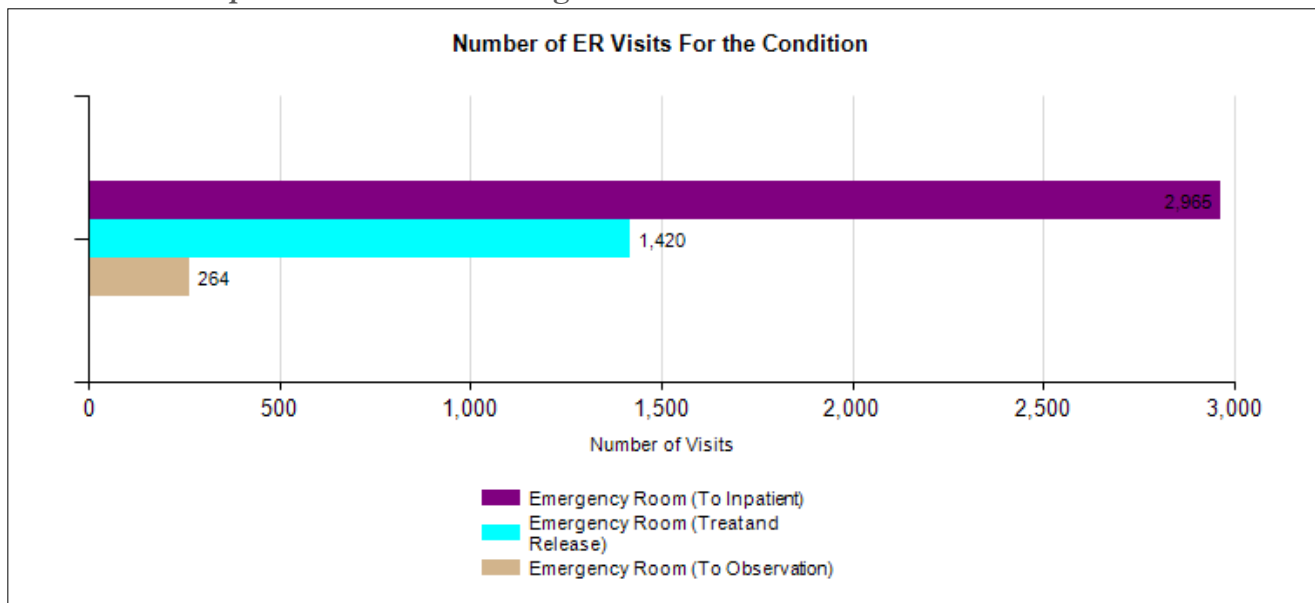


- No significant change in encounters between the prior and current years
- In both of the selected populations Diabetes related ER encounters are significantly higher than hypertension and depression

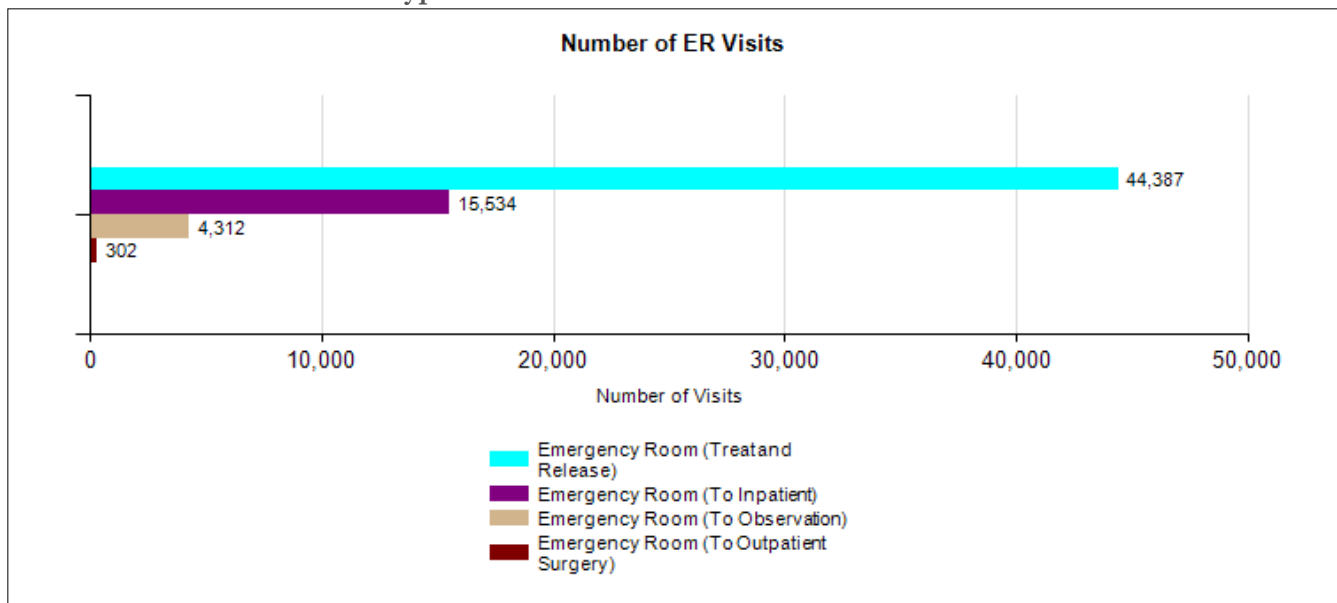
**Total Number of ER visits (any chief complaint) for
Patients with Depression and Diabetes age 18-64**



**Total Number of ER visits (chief complaint of diabetes or depression) for
Patients with Depression and Diabetes age 18-64**

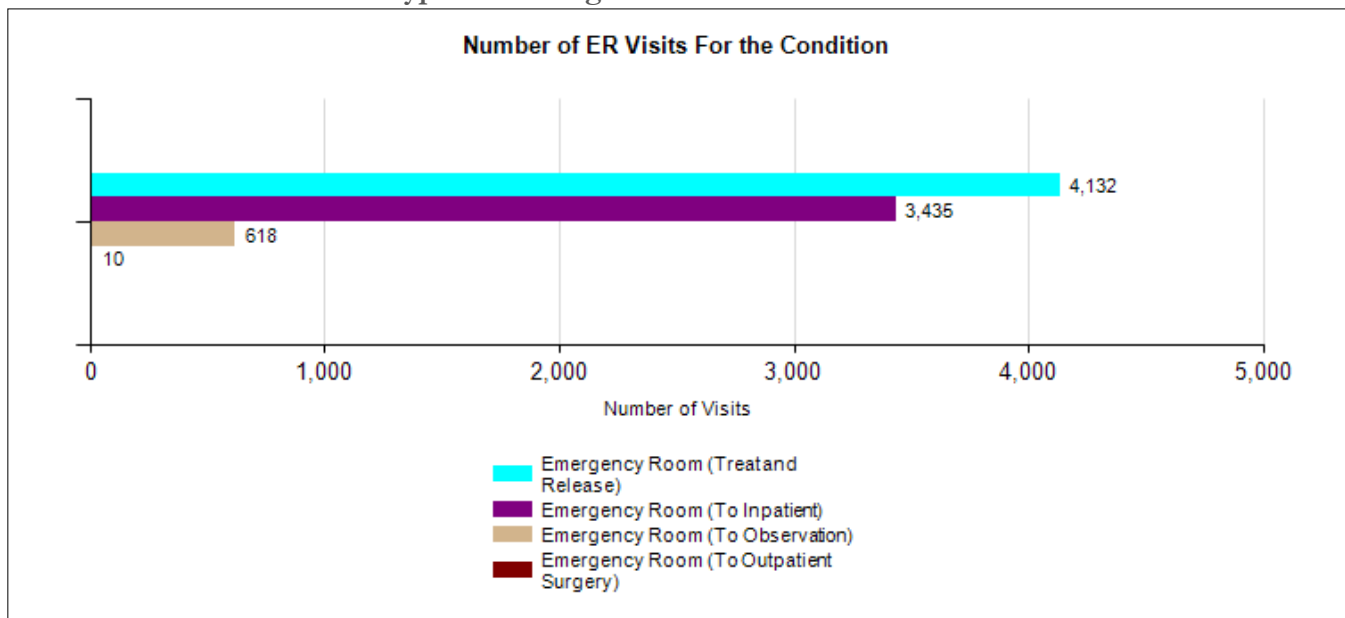


**Total Number of ER visits (any chief complaint) for
Patients with Diabetes and Hypertension 18-64**



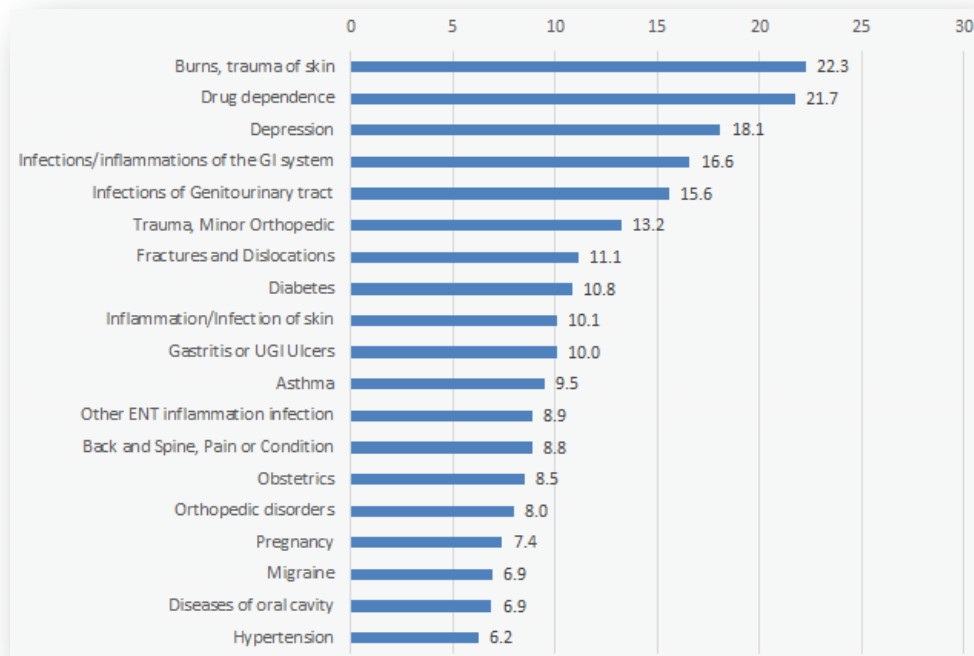
WHA
Information Center
THE REGIONAL HEALTH INFORMATION CENTER

**Total Number of ER visits (chief complaint of diabetes or hypertension) for
Patients with Diabetes and Hypertension age 18-64**



WHA
Information Center
THE REGIONAL HEALTH INFORMATION CENTER

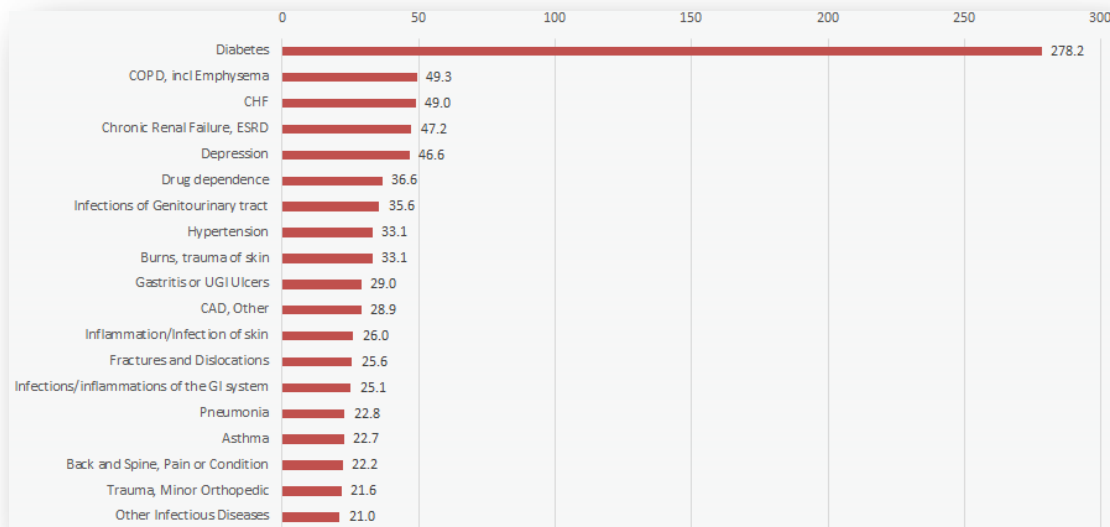
ER Encounters- Top 20 Conditions
WHIO Wisconsin Population age 18-64
Per 1,000 Members Oct 13-Sept 14



- Number 1 statewide condition for ER encounters is Burns, trauma of skin
- Depression is #3 statewide
- Diabetes is #8 statewide
- Hypertension is #20 statewide

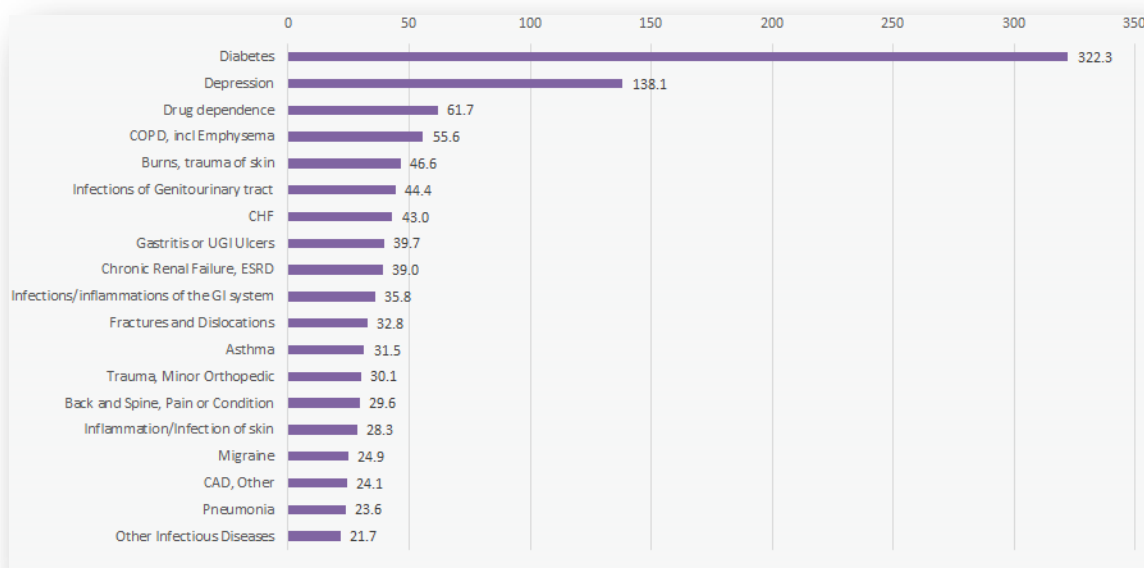


ER Encounters- Top 20 Conditions
WHIO Diabetes & Hypertension Population age 18-64
Per 1,000 Members Oct 13-Sept 14



- ER utilization is drastically increased for this population compared to the general WI population
- Diabetes is the most seen condition in this population

ER Encounters- Top 20 Conditions
WHIO Depression and Diabetes Population age 18-64
Per 1,000 Members Oct 13-Sept 14



Primary Care...

Patient Satisfaction

The analysis of Family Health Survey (2009-2011) shows population satisfaction with available health care between 67-79%

Number and percent estimates of the Population overall satisfaction level with health care available using FHS data (2009-2011), Office of Health Informatics, Division of Public Health, Department of Health Services

Population Overall Satisfaction Level with Health Care Available			
Populations	Satisfied	Neither Satisfied or Dissatisfied	Dissatisfied
Diabetes	164,000 (75%)	5,000 (2%)	50,000 (23%)
Hypertension	512,000 (79%)	15,000 (2%)	124,000 (19%)
Depression	271,000 (67%)	18,000 (4%)	114,000 (28%)
Diabetes and Hypertension	92,000 (77%)	3,000 (2%)	24,000 (20%)

Pharmacy

Patients with Diabetes and Depression age 18-64

Prescription Drugs for All Conditions- Displaying Top 90% billed amount

Top 10 Conditions for Prescription use

All Conditions	# of Scripts	Billed Charges	Resource Use
Diabetes	275,709	\$54,714,600	39,866,125
Depression	243,275	\$35,306,818	17,744,502
Hypertension	106,423	\$6,456,123	3,410,523
Back and Spine, Pain or Condition	47,515	\$4,674,028	2,613,092
Other	40,732	\$5,580,619	3,720,133
Endocrine disorder	36,779	\$3,956,657	3,041,699
Hyperlipidemia	30,846	\$4,761,966	2,558,598
Asthma	27,143	\$4,209,507	3,070,215
Gastritis or UGI Ulcers	25,532	\$3,727,678	1,619,404
Diseases of Thyroid	25,076	\$1,870,987	1,127,550



Top 10 Prescription Drugs for Patients with Diabetes and Depression age 18-64

Pharmacologic Class	# of Scripts	Billed Charges	Resource Use
Insulin	61,312	\$29,374,499	24,201,828
Antipsychotics	26,545	\$13,000,811	6,817,237
HMG & CoA reductase inhibitors (statins)	55,241	\$8,187,307	3,120,495
Antidepressants, miscellaneous	53,413	\$7,907,757	4,278,534
Proton pump inhibitors (PPI)	46,065	\$7,679,523	3,107,959
Anticonvulsants, miscellaneous	45,015	\$7,469,861	2,724,997
Selective serotonin reuptake inhibitor (SSRI) antidepressants	87,142	\$7,379,991	3,125,285
Diabetic supplies	69,251	\$6,780,271	5,390,426
Narcotic agonist analgesics	25,331	\$4,236,872	2,881,961
Antidiabetic agents, biguanides	57,641	\$4,084,572	1,448,968
Immunologics, immunomodulator	1,447	\$3,897,525	3,368,788
Inhaled respiratory agent combinations	11,207	\$3,540,285	2,698,550
Antidiabetic agents, dipeptidyl peptidase inhibitors	7,596	\$2,665,987	1,956,442



Number of Different Medication in a 12-month period for Patients with Depression & Diabetes age 18-64

Patients with Diabetes & Depression

of Different Medications in a 12-month period

Count of Patients

of Meds Related to Diabetes and/or Depression -->

# of Patients		# of Meds related to Diabetes and/or Depression																				Grand	
	# of other Medications	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
All other Rx (not related to Diabetes/ Depression)	no other rx																						233
	1 to 5 other	111	381	901	1,100	925	650	408	233	123	56	24	10	4	4	2						1	4,933
	6 to 10 other	85	403	823	1,100	1,088	812	594	339	229	110	65	30	15	7	4	3						5,708
	11 to 20 other	82	298	583	882	976	912	665	468	350	251	115	81	35	19	12	11			1	1	1	5,743
	more than 20 other	18	66	139	233	340	372	362	316	237	201	115	98	51	39	17	10	2	2			1	2,620
	Grand Total	301	1,168	2,493	3,374	3,367	2,777	2,045	1,365	943	621	319	219	105	70	35	24	2	4	1	2	2	2

% of Population taking Multiple Medications

of Meds Related to Diabetes and/or Depression -->

		% of Patients																						
# of other Medications		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	
All other Rx (not related to Diabetes/ Depression)	no other rx	0.0%	0.1%	0.2%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	100.0%
	1 to 5 other	0.6%	2.0%	4.7%	5.7%	4.6%	3.4%	2.1%	1.2%	0.6%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.6%	98.8%
	6 to 10 other	0.4%	2.1%	4.3%	5.7%	5.7%	4.2%	3.1%	1.8%	1.2%	0.6%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.7%	73.1%
	11 to 20 other	0.4%	1.5%	3.0%	4.6%	5.1%	4.7%	3.5%	2.4%	1.8%	1.3%	0.6%	0.4%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	29.9%	43.5%
	more than 20 other	0.1%	0.3%	0.7%	1.2%	1.8%	1.9%	1.9%	1.6%	1.2%	1.0%	0.6%	0.5%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	13.6%	13.6%
Grand Total		1.6%	6.1%	13.0%	17.5%	17.5%	14.4%	10.6%	7.1%	4.9%	3.2%	1.7%	1.1%	0.5%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

100.0% 98.4% 92.4% **79.4%** 61.9% 44.4% 29.9% 19.3% 12.2% 7.3% 4.1% 2.4% 1.3% 0.7% 0.4% 0.2% 0.1% 0.0% 0.0% 0.0% 0.0%

In 12 month period:

79.4% % of Patients taking 3 or more Diabetes and/or Depression medications

73.1% % of Patients taking 6 or more other medications

60.20% % of Patients taking 3 or more Diab/Dep AND 6 or more other



Patients with Diabetes and Hypertension age 18-64
Prescription Drugs for All Conditions- Displaying Top 90% billed amount
Top 10 Conditions for Prescription use

All Conditions	# of Scripts	Billed Charges	Resource Use
Diabetes	441,620	\$89,876,407	66,251,721
Hypertension	274,309	\$16,799,653	9,070,645
Depression	120,306	\$18,132,226	8,926,744
Hyperlipidemia	63,136	\$9,841,622	5,605,589
Back and Spine, Pain or Condition	49,357	\$4,644,580	2,616,204
Endocrine disorder	44,261	\$4,765,649	4,121,993
Other	43,916	\$6,770,759	4,533,814
CAD, Other	32,294	\$3,364,040	1,969,188
Gastritis or UGI Ulcers	31,912	\$5,476,378	1,934,242
Inflammation/Infection of skin	31,751	\$4,301,894	3,169,449



Top 10 Prescription Drugs for Patients with Diabetes and Depression age 18-64

Pharmacologic Class	# of Scripts	Billed Charges	Resource Use
Insulin	94,653	\$47,228,347	39,136,084
HMG & CoA reductase inhibitors (statins)	100,812	\$14,525,883	5,914,417
Diabetic supplies	110,141	\$10,382,885	8,366,375
Antipsychotics	17,885	\$8,777,500	4,423,417
Proton pump inhibitors (PPI)	53,628	\$8,528,766	3,404,887
Antidiabetic agents, biguanides	92,793	\$6,789,736	2,410,444
Anticonvulsants, miscellaneous	40,861	\$6,364,707	2,319,114
Antidepressants, miscellaneous	38,922	\$6,134,030	3,382,184
Antidiabetic agents, dipeptidyl peptidase inhibitors	14,159	\$5,134,428	3,854,633



Number of Different Medication in a 12-month period for
Patients with Diabetes & Hypertension age 18-64

Patients with Diabetes & Hypertension

of Different Medications in a 12-month period

Count of Patients

of Meds Related to Diabetes and/or Hypertension -->

Count of patient # of other medications		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Grand Total
All other Rx (not related to Diabetes/ HTN)	no other rx	28	59	129	184	158	136	83	51	24	14	5	1					872
	1 to 5	277	581	1,395	1,944	1,850	1,473	892	553	262	120	56	21	8	3		2	9,437
	6 to 10	78	352	863	1,273	1,324	1,113	795	497	306	164	66	32	12	8	1	1	6,885
	11 to 20	87	292	649	999	1,110	1,038	778	552	277	170	88	47	28	6	6	1	6,128
	> 20	30	118	260	419	435	461	345	266	169	115	56	45	15	12	3	3	2,752
Grand Total		500	1,402	3,296	4,819	4,877	4,221	2,893	1,919	1,038	583	271	146	63	29	10	7	26,074

% of Population taking Multiple Medications

of Meds Related to Diabetes and/or Hypertension -->

Count of patient # of other medications		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Grand Total
All other Rx (not related to Diabetes/ HTN)	no other rx	0.1%	0.2%	0.5%	0.7%	0.6%	0.5%	0.3%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%
	1 to 5	1.1%	2.2%	5.4%	7.5%	7.1%	5.6%	3.4%	2.1%	1.0%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	36.2%
	6 to 10	0.3%	1.4%	3.3%	4.9%	5.1%	4.3%	3.0%	1.9%	1.2%	0.6%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	26.4%
	11 to 20	0.3%	1.1%	2.5%	3.8%	4.3%	4.0%	3.0%	2.1%	1.1%	0.7%	0.3%	0.2%	0.1%	0.0%	0.0%	0.0%	23.5%
	> 20	0.1%	0.5%	1.0%	1.6%	1.7%	1.8%	1.3%	1.0%	0.6%	0.4%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	10.6%
Grand Total		1.9%	5.4%	12.6%	18.5%	18.7%	16.2%	11.1%	7.4%	4.0%	2.2%	1.0%	0.6%	0.2%	0.1%	0.0%	0.0%	100.0%

100.0% 98.1% 92.7% 80.1% 61.6% 42.9% 26.7% 15.6% 8.2% 4.3% 2.0% 1.0% 0.4% 0.2% 0.1% 0.0%

In 12 month period:

80.1% % of Patients taking 3 or more Diabetes and/or Depression medications

60.5% % of Patients taking 6 or more other medications

50.0% % of Patients taking 3 or more Diab/Dep AND 6 or more other



Prescription Adherence Selected Populations

Diabetes Mellitus Medication Adherence (Minimum compliance 80%)

- 9000014 Patient(s) compliant with prescribed ACE-inhibitor-containing medication.
- 9000015 Patient(s) compliant with prescribed angiotensin II receptor antagonist-containing medication.
- 9000016 Patient(s) compliant with prescribed biguanide-containing medication (e.g. metformin).
- 9000017 Patient(s) compliant with prescribed thiazolidinedione-containing medication (e.g. pioglitazone, rosiglitazone).
- 9000018 Patient(s) compliant with prescribed alpha-glucosidase inhibitor (e.g. acarbose, miglitol).
- 9000019 Patient(s) compliant with prescribed sulfonylurea (e.g. glipizide, glyburide, glimepiride).
- 9000042 Patient(s) compliant with prescribed exenatide (e.g. Byetta).
- 9000046 Patient(s) compliant with prescribed sitagliptin (e.g. Januvia).
- 9000033 Patient(s) compliant with prescribed statin-containing medication.

Hypertension Medication Adherence (Minimum compliance 80%)

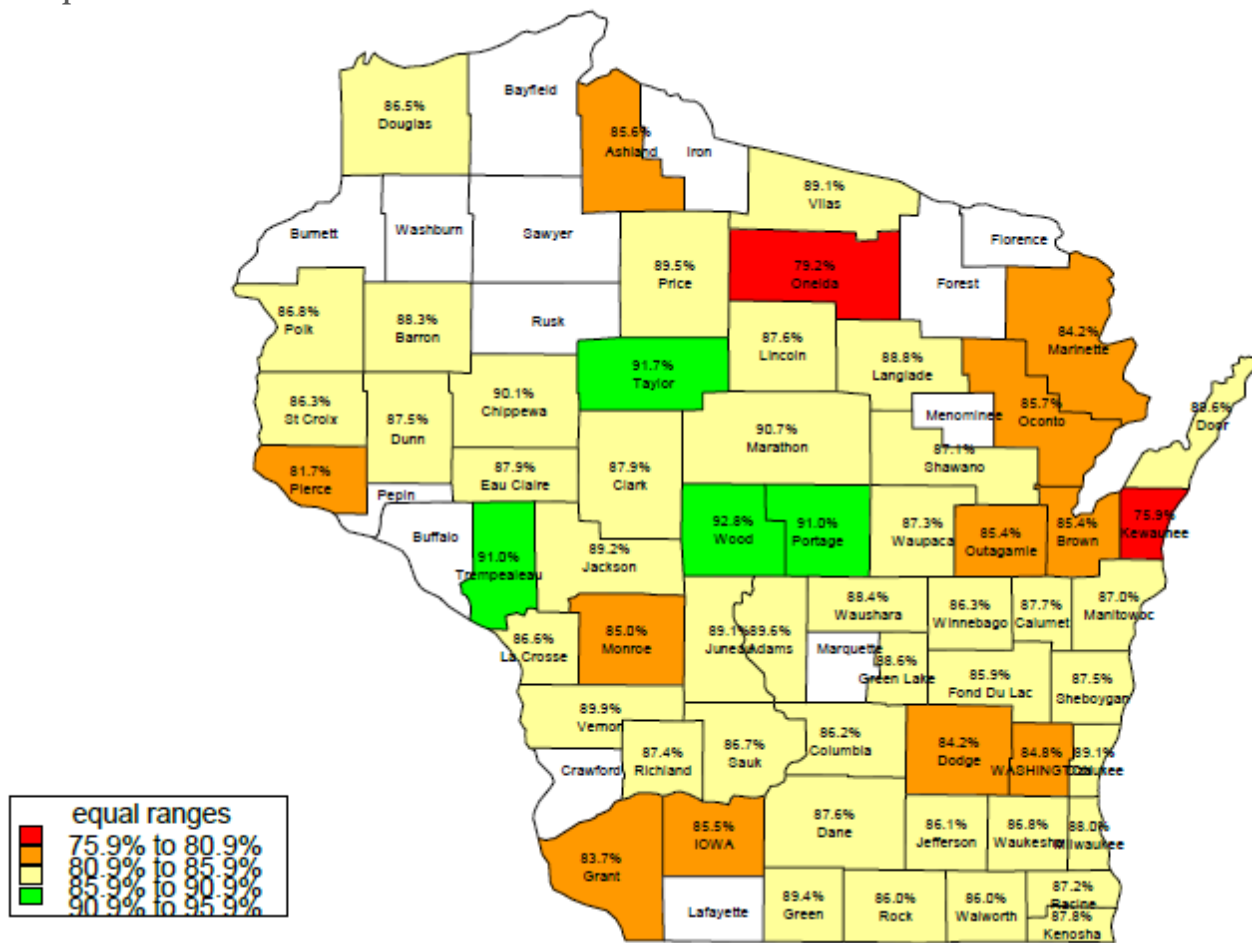
- 9000001 Patient(s) compliant with prescribed ACE-inhibitor-containing medication.
- 9000002 Patient(s) compliant with prescribed angiotensin II receptor antagonist-containing medication.
- 9000003 Patient(s) compliant with prescribed diuretic-containing medication.
- 9000004 Patient(s) compliant with prescribed calcium channel blocker-containing medication.
- 9000005 Patient(s) compliant with prescribed beta-blocker-containing medication.
- 9000006 Patient(s) compliant with prescribed alpha-adrenergic blocker-containing medication.
- 9000007 Patient(s) compliant with prescribed central alpha-adrenergic agonist-containing medication.
- 9000008 Patient(s) compliant with prescribed direct vasodilator-containing medication.
- 9000009 Patient(s) compliant with prescribed peripheral adrenergic neuron antagonist-containing medication.
- 9000014 Patient(s) compliant with prescribed aldosterone receptor antagonist-containing medication.
- 9000018 Patient(s) compliant with prescribed direct renin inhibitor.

Depression Medication Adherence (Minimum compliance 80%)

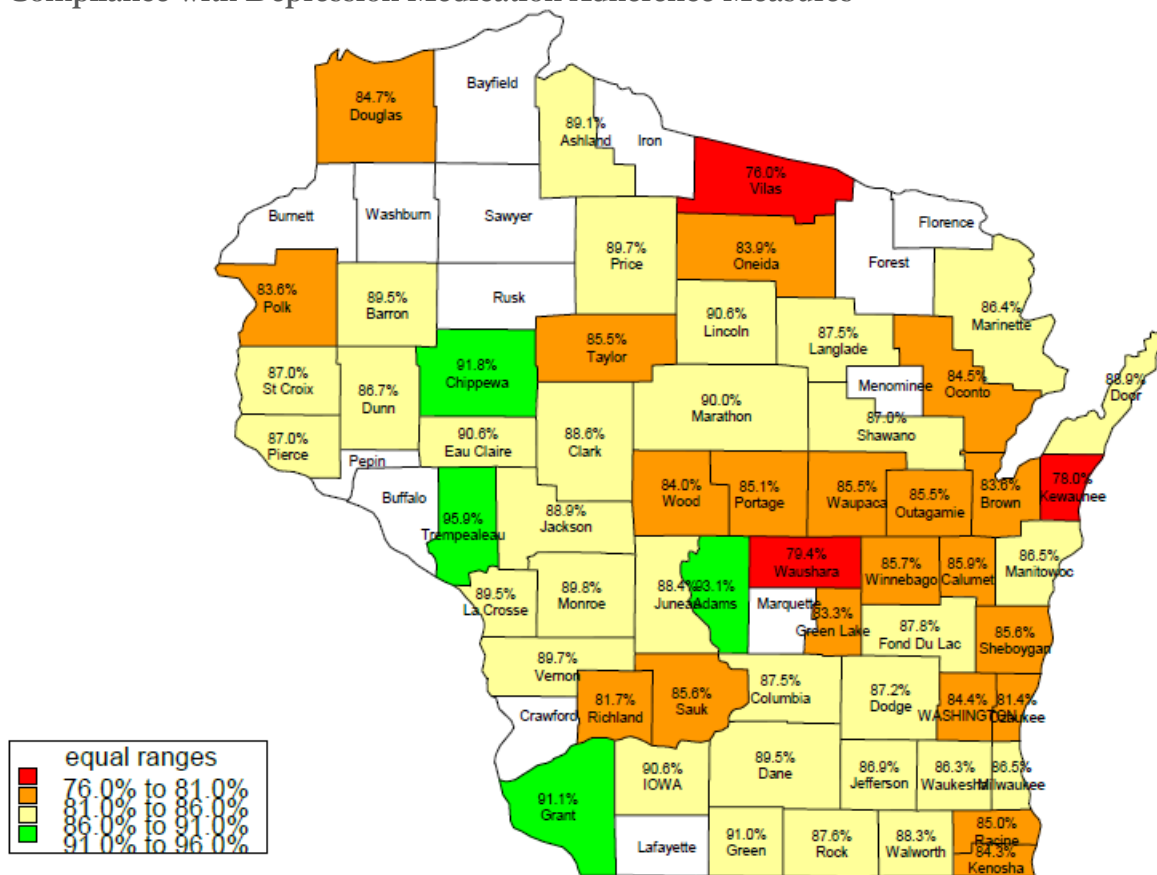
- 9000001 Patient(s) compliant with prescribed tricyclic antidepressant.
- 9000002 Patient(s) compliant with prescribed selective serotonin reuptake inhibitor.
- 9000004 Patient(s) compliant with prescribed bupropion.
- 9000005 Patient(s) compliant with prescribed serotonin norepinephrine reuptake inhibitor (e.g., venlafaxine [Effexor] or duloxetine [Cymbalta]).
- 9000006 Patient(s) compliant with prescribed nefazodone (Serzone).
- 9000007 Patient(s) compliant with prescribed mirtazapine (Remeron).
- 9000008 Patient(s) compliant with prescribed antipsychotic-containing medication.
- 9000009 Patient(s) compliant with prescribed lithium.



Depression & Diabetes Patients age 18-64
Compliance with Diabetes Medication Adherence Measures

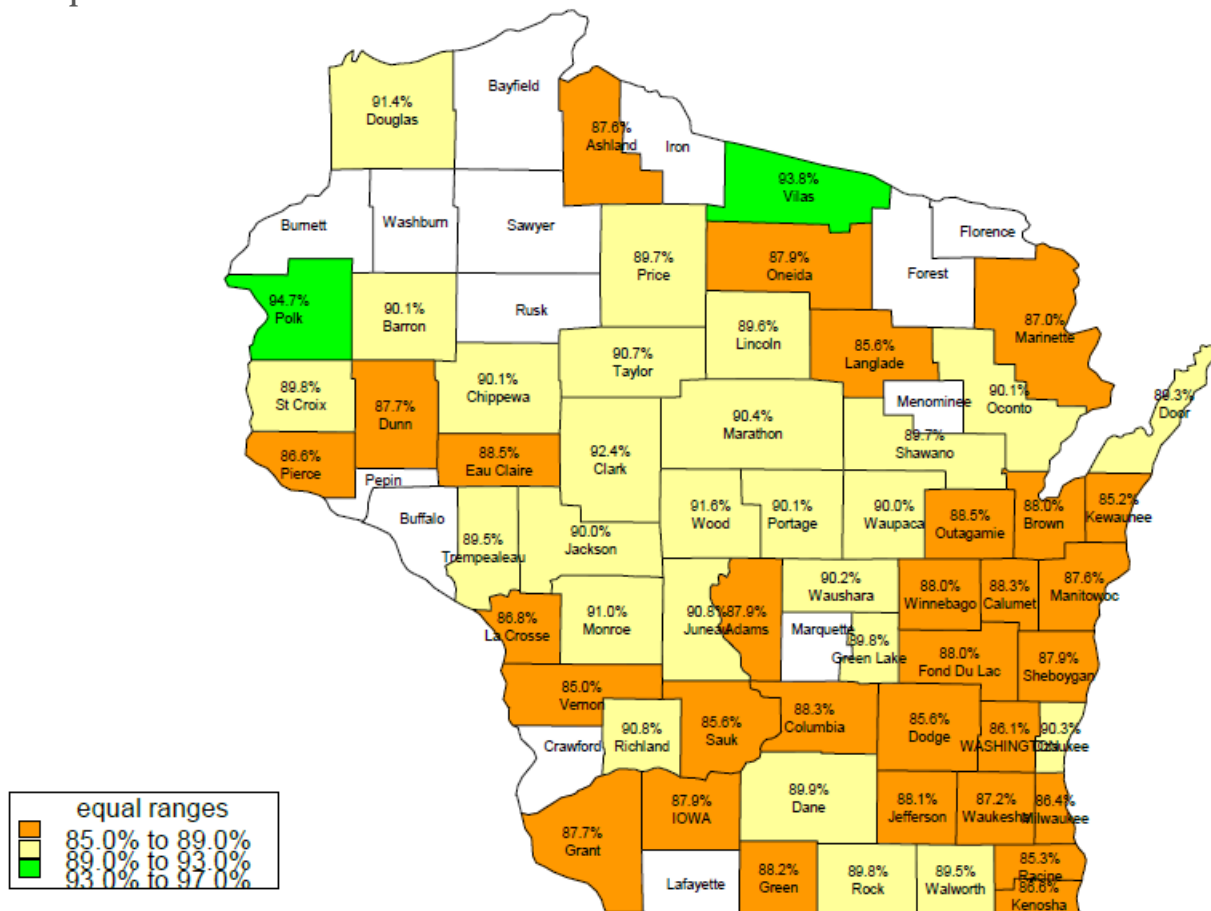


Depression & Diabetes Patients age 18-64 Compliance with Depression Medication Adherence Measures

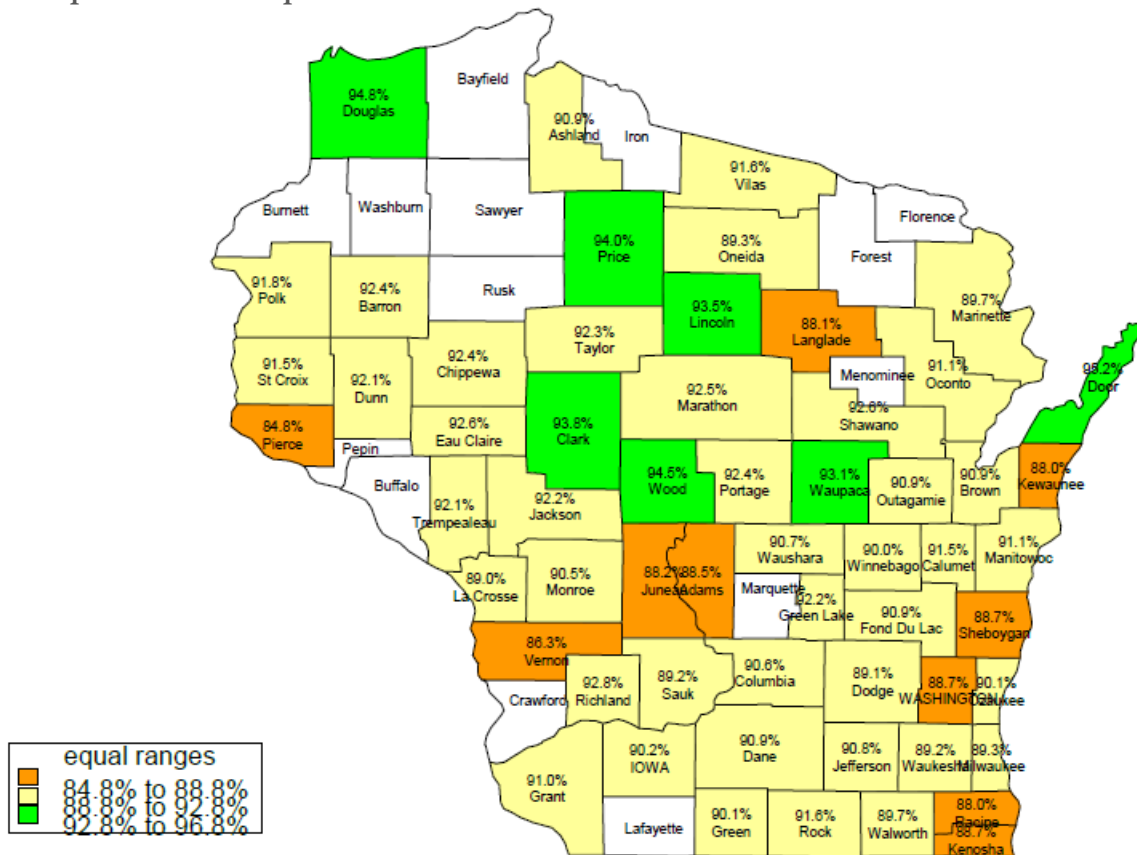


Diabetes & Hypertension Patients age 18-64

Compliance with Diabetes Medication Adherence Measures



Diabetes & Hypertension Patients age 18-64 Compliance with Depression Medications Adherence Measures



Disease History

Overall

Depression symptoms lead to a significant burden of disease from both mortality and morbidity as assessed by Quality Adjusted Life Expectancy (QALE) losses. The 28.9-year QALE loss at age 18 associated with depression markedly exceeds estimates reported elsewhere for stroke (12.4-year loss), heart disease (10.3-year loss), diabetes mellitus (11.1-year loss), hypertension (6.3-year loss), asthma (7.0-year loss), smoking (11.0-year loss), and physical inactivity (8.0-year loss).^{iv}

Suicide

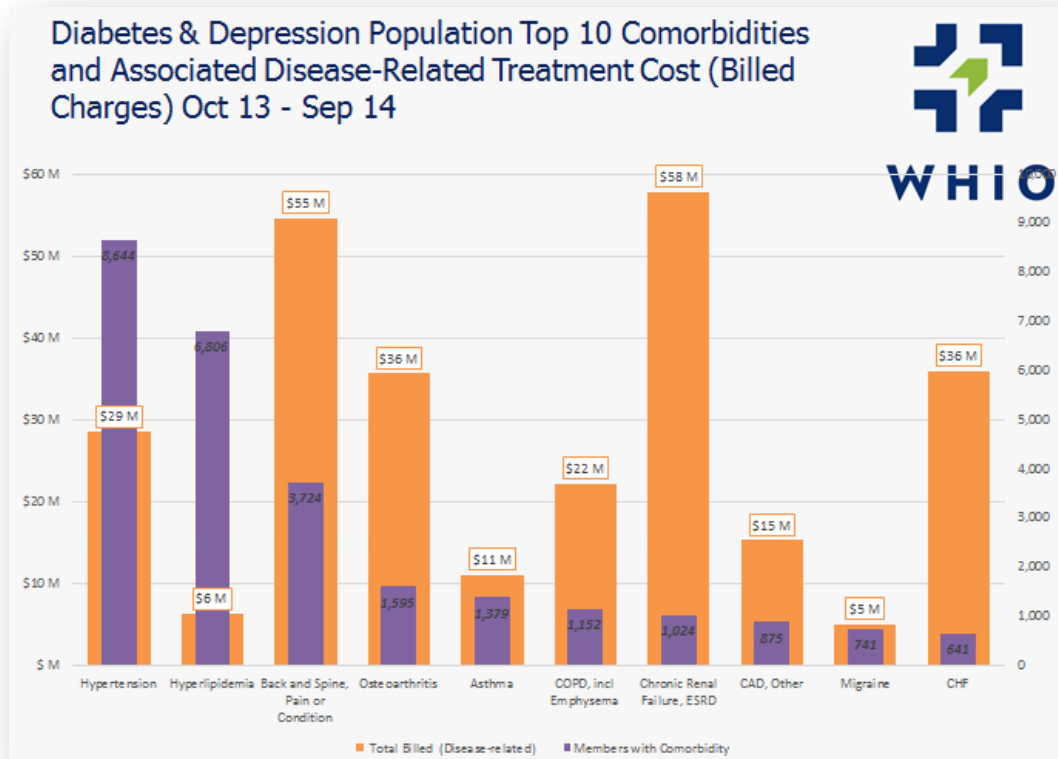
Meta-analysis research indicated that patients with Diabetes Mellitus- type 1 are at an increased risk for suicide, although no clear consensus exists regarding the level of the increased risk.^v Research also linked chronic disease such as cancer, COPD, hypertension and diabetes with increased adjusted odds of suicide attempts.^{vi}

Results from: Survey of the Health of Wisconsin (SHOW) 2008-2013, Adults age 21-64*[show](#)

	Total	Diabetes and Hypertension (N=173)	Diabetes and Depression (N=91)	SHIP #
DASS Depression Symptoms (%)				68
None	82.9%	76.2%	42.5%	
Mild	6.4%	11.9%	26.2%	
Moderate	6.6%	7.5%	18.6%	
Severe	2.5%	3.7%	8.4%	
Extremely Severe	1.6%	0.6%	4.2%	

Comorbidities

Depression is highly prevalent in patients with chronic physical illnesses. A promising intervention for this group of patients is the collaborative care treatment as developed in the US. The presence of comorbid depression has a negative influence on quality of life, health care costs, self-care, morbidity, and mortality. Early diagnosis and well-organized treatment of depression has a positive influence on these aspects.^{vii}

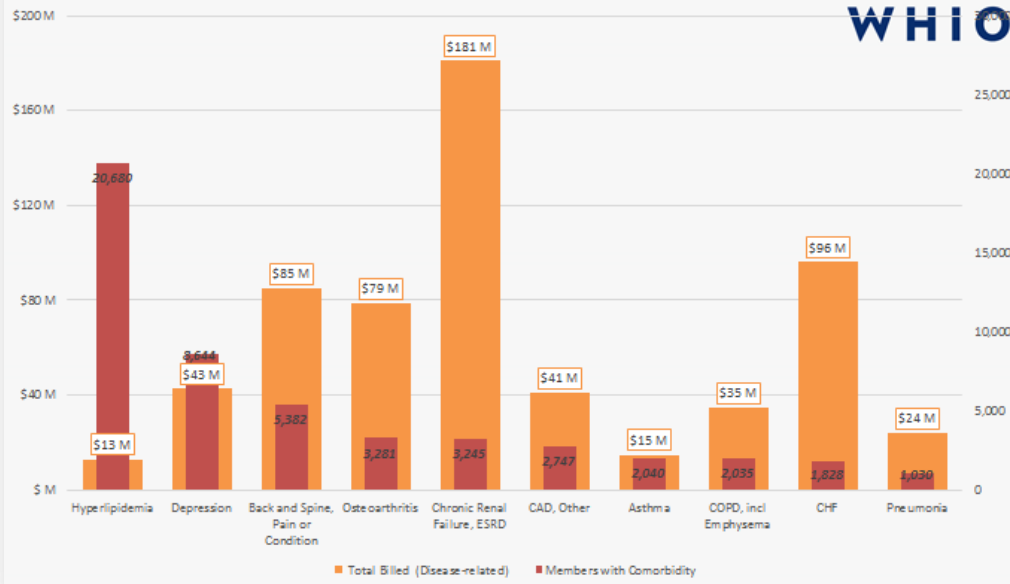


- In purple are the number of patients age 18-64 with Depression & Diabetes that have that comorbidity and in orange is the cost/ billed charges for that comorbidity

Top 10 Comorbidities for Patients with Depression & Diabetes age 18-64

Disease Related	Members with Comorbidity	% of Members with Condition	Total Billed (Disease-related) <i>Total = \$465,377,113</i>	Inpatient Admits per 1,000
Diabetes	20,239	100%	\$127,763,689	40.92
Depression	20,239	100%	\$78,315,826	42.68
Hypertension	8,644	43%	\$15,649,593	8.58
Hyperlipidemia	6,806	33%	\$6,258,955	0.05
Back and Spine Pain or Condition	3,724	18%	\$54,614,417	10.44
Osteoarthritis	1,595	8%	\$35,597,229	20.78
Asthma	1,379	7%	\$11,011,573	3.62
COPD, Emphysema	1,152	6%	\$22,135,706	21.52
Chronic Renal Failure, ESRD	1,024	5%	\$57,793,115	11.08
CAD, Other	875	4%	\$15,241,597	6.34
Migraine	741	4%	\$5,040,244	1.33
CHF	641	3%	\$35,955,169	22.48

Diabetes & Hypertension Population Top 10 Comorbidities and Associated Disease-Related Treatment Cost (Billed Charges) Oct 13 - Sep 14



- In maroon are the number of patients age 18-64 with Diabetes and Hypertension that have that comorbidity and in orange is the cost/billed charges for that comorbidity

Top 10 Comorbidities for Patients with Diabetes & Hypertension age 18-64

Disease Related	Members with Comorbidity	% of Members with Condition	Total Billed (Disease-related)	Inpatient Admits per 1,000
Diabetes	37,572	100	\$229,236,884	34.8521
Hypertension	37,572	100	\$82,075,809	10.5219
Hyperlipidemia	20,680	55	\$12,899,099	0.0865
Depression	8,644	23	\$42,613,759	14.356
Back and Spine Pain or Condition	5,382	14	\$85,062,676	10.7814
Osteoarthritis	3,281	9	\$78,529,858	27.4435
Chronic Renal Failure, ESRD	3,245	9	\$180,845,935	13.2317
CAD, Other	2,040	7	\$40,933,822	8.4464
Asthma	1,828	5	\$14,827,874	3.1998
COPD, Emphysema	1,030	5	\$34,641,863	18.6512
CHF	626	5	\$96,031,872	29.6056
Pneumonia	573	3	\$23,999,995	13.52



Overall cost experience/ current trends

- **Depression with Diabetes Population age 18-64**
 - Compared to the general population there is a decreased usage and billing in Professional Services 23% compared to 30%
 - Increased use in pharmacy all though not by much, increased billed by pharmacies by 5%
 - Ancillary use and billing are the same as the general population
 - Facility inpatient use and billing are increased by 9% for the selected population
 - The Facility Outpatient use and billing are both decreased in the selected population
- **Diabetes with Hypertension Population age 18-64**
 - Compared to the general population there is a decreased usage and billing in Professional Services 24% compared to 30% and 28% compared to 36% respectively
 - Decreased use in pharmacy all though not by much, 2%
 - Ancillary use and billing are the same as the general population
 - Facility inpatient use and billing are increased by 9% and 10% for the selected population
 - The Facility Outpatient use and billing are roughly the same

Results from: Survey of the Health of Wisconsin (SHOW) 2008-2013, Adults age 21-64*

DASS Depression Symptoms (%)	Total	Diabetes + hypertension (N= 173)	Diabetes + Depression (N=91)
None	82.9%	76.2%	42.5%
Mild	6.4%	11.9%	26.2%
Moderate	6.6%	7.5%	18.6%
Severe	2.5%	3.7%	8.4%
Extremely Severe	1.6%	0.6%	4.2%

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ⁱ Rodolfo Valdez et Al. Family History and Prevalence of Diabetes in the U.S. Population, Diabetes Care 30:2517–2522, 2007; Martha Rodriguez-Moran et al. Family History of Hypertension and Cardiovascular Risk Factors in Prepubertal Children. Am J Hypertens (2010) 23 (3): 299-304

Vasan RS, Beiser A, Seshadri S, et al. Residual lifetime risk for developing hypertension in middle-aged women and men: the Framingham Heart Study. JAMA. 2002;287(10):1003–1010

Haggerty, J. (2013). Risk Factors for Depression. Psych Central. Retrieved on May 19, 2015, from <http://psychcentral.com/lib/risk-factors-for-depression>

ⁱⁱ Brown DS & McBride TD. Impact of the Affordable Care Act on Access to Care for US Adults with Diabetes, 2011-2012. *Prev Chronic Dis.* 2015 May 7;12

ⁱⁱⁱ McWilliams JM. Health consequences of uninsurance among adults in the United States: recent evidence and implications. *Milbank Q.* 2009 Jun; 87(2):443-94]

^{iv} Jia H et al. Impact of depression on quality-adjusted life expectancy (QALE) directly as well as indirectly through suicide. *Soc Psychiatry Psychiatr Epidemiol.* 2015 Feb 7.]

Butwicka A. et al. Risks of psychiatric disorders and suicide attempts in children and adolescents with type 1 diabetes: a population-based cohort study. *Diabetes Care* 2015 Mar;38(3):453-9

^v Pompili M. et al. Suicide risk in type 1 diabetes mellitus: A systematic review. *J Psychosom Res.* 2014 May;76(5):352-60.]

^{vi} Bolton JM et al. Risk of suicide and suicide attempts associated with physical disorders: a population-based, balancing score-matched analysis. *Psychol Med.* 2014 Jul 17:1-10.

^{vii} van Steenbergen-Weijenburg KM et al. Collaborative care for co-morbid major depressive disorder in chronically ill outpatients in a general hospital. *Tijdschr Psychiatr.* 2015;57(4):248-57.

Horn EK et al. Cost-effectiveness of collaborative care for chronically ill patients with comorbid depressive disorder in the general hospital setting, a randomized controlled trial. *BMC Health Serv Res.* 2007 Feb 26;7:28