2008 TEXAS TYPE 2 DIABETES REPORT

Featuring Demographic, Charges, Utilization, and Pharmacotherapy Data

Texas Business Group on Health

Presented by
sanofi aventis
in conjunction with
Texas Business Group on Health
Introduction

The Texas Business Group on Health (TBGH) is pleased to present the Texas Type 2 Diabetes Report for 2008, an overview of demographic, financial, utilization and pharmacotherapy measures for Type 2 diabetes patients in key local markets in the state of Texas. The report, intended to help providers and employers identify better opportunities to serve the needs of their patients, organizes Type 2 diabetes benchmarks into six local Texas markets and across Texas as a whole. All data are drawn from the Managed Care Digest Series®.

The 2008 Texas Type 2 Diabetes Report helps TBGH fulfill its mission to help Texas employers play an active and enthusiastic role in collaboration with health plans, providers and purchasers; and be a catalyst in promoting cost-effective delivery of quality health care to the benefit of the community.

This third edition features examples of the kinds of patient-level, disease-specific data on Type 2 diabetes that can be provided by TBGH using the Managed Care Digest Series® as a resource. Its focus on Texas locales allows for heightened scrutiny of community progress with Type 2 diabetes patient populations. TBGH chose Type 2 diabetes (high blood glucose levels caused by either a lack of insulin or the body’s inability to use insulin efficiently) as the focus of this resource because the Centers for Disease Control estimate that 90% to 95% of all Americans with diabetes—translating to 5.7% of the U.S. population—have the Type 2 variety.

The data in this report (covering 2005 through 2007) were gathered by Verispan LLC, Yardley, Pa., a recognized leader in the health care information industry. The data provides employers with independent, third-party information against which they can benchmark their own data. Please see the back page for information on the data methodology.

A1: TOTAL NUMBER OF TYPE 2 DIABETES PATIENT CLAIMS, BY MSA

<table>
<thead>
<tr>
<th>MSA</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin</td>
<td>75,575</td>
<td>82,083</td>
</tr>
<tr>
<td>Dallas</td>
<td>118,734</td>
<td>119,924</td>
</tr>
<tr>
<td>El Paso</td>
<td>4,067</td>
<td>5,037</td>
</tr>
<tr>
<td>Ft. Worth/Arlington</td>
<td>49,809</td>
<td>52,612</td>
</tr>
<tr>
<td>Houston</td>
<td>45,598</td>
<td>60,185</td>
</tr>
<tr>
<td>San Antonio</td>
<td>27,206</td>
<td>27,617</td>
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</table>
B1: DEMOGRAPHICS: AGE AND GENDER

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–17</td>
<td>0.5%</td>
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<tr>
<td>18–35</td>
<td>4.7%</td>
</tr>
<tr>
<td>36–64</td>
<td>60.0%</td>
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<tr>
<td>65–79</td>
<td>27.5%</td>
</tr>
<tr>
<td>80+</td>
<td>7.3%</td>
</tr>
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</table>

GENDER

<table>
<thead>
<tr>
<th></th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>40.9%</td>
</tr>
<tr>
<td>Female</td>
<td>59.1%</td>
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</table>

B2: DEMOGRAPHICS: COMORBIDITIES AND COMPLICATIONS

<table>
<thead>
<tr>
<th>COMORBIDITIES</th>
<th>Percentage of Patients</th>
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<tbody>
<tr>
<td>0</td>
<td>31.0%</td>
</tr>
<tr>
<td>1</td>
<td>24.6%</td>
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<tr>
<td>2</td>
<td>33.4%</td>
</tr>
<tr>
<td>&gt;2</td>
<td>11.0%</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>COMPLICATIONS</th>
<th>Percentage of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>58.8%</td>
</tr>
<tr>
<td>1</td>
<td>28.8%</td>
</tr>
<tr>
<td>2</td>
<td>9.5%</td>
</tr>
<tr>
<td>&gt;2</td>
<td>3.0%</td>
</tr>
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</table>

B3: HOSPITAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS, COMMERCIAL INSURANCE PAYERS

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>INPATIENT</td>
<td>$40,050</td>
<td>$47,290</td>
<td>$43,606</td>
<td>$44,000</td>
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<tr>
<td>OUTPATIENT</td>
<td>$3,688</td>
<td>$4,488</td>
<td>$3,277</td>
<td>$4,030</td>
</tr>
<tr>
<td>EMERGENCY ROOM</td>
<td>$1,004</td>
<td>$1,347</td>
<td>$1,037</td>
<td>$1,331</td>
</tr>
</tbody>
</table>

B4: PROFESSIONAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS, COMMERCIAL INSURANCE PAYERS

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Office/ Clinic</td>
<td>$2,466</td>
<td>$2,229</td>
<td>$2,454</td>
<td>$2,581</td>
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<tr>
<td>Hospital Inpatient</td>
<td>$2,795</td>
<td>$1,655</td>
<td>$1,797</td>
<td>$1,645</td>
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<tr>
<td>Hospital Outpatient</td>
<td>$3,688</td>
<td>$4,488</td>
<td>$3,277</td>
<td>$4,030</td>
</tr>
<tr>
<td>Ambulatory Surgery Center</td>
<td>$635</td>
<td>$1,037</td>
<td>$1,037</td>
<td>$1,331</td>
</tr>
</tbody>
</table>

Data source: Verispan LLC © 2008

1 On all pages, the percentages are representative of the universe of Type 2 diabetes patients on whom claims data have been collected in a given year.
2 A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes. Complications of Type 2 diabetes include, but are not limited to, coronary artery disease, hypoglycemia, nephropathy, neuropathy and retinopathy.
3 A comorbidity is a condition a Type 2 diabetes patient may also have, which is not directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with Type 2 diabetes. Comorbidities of Type 2 diabetes include, but are not limited to, congestive heart failure, coronary artery disease, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.
4 Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
5 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.
6 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.

NO COMPLICATIONS TEXAS PATIENT SHARE DECLINES

The share of patients across the state of Texas who were diagnosed with Type 2 diabetes and had no complications from the disease dropped moderately in 2007, to 59.1% from 61.6% in 2006. As a consequence, the percentage gap between the Texas share and the corresponding national rate (62.5%) rose to 3.4 percentage points. Meanwhile, the share of Texas patients diagnosed with Type 2 diabetes and more than two complications from the disease increased to 3.0%, notably higher than the corresponding national rate (2.0%).
TEXAS UTILIZATION MEASURES LAG BEHIND THE NATION

Patients diagnosed with Type 2 diabetes in Texas reported lower shares than their national counterparts in all six utilization categories profiled in 2007 (see graph B5). For example, just 63.2% of these Texas patients underwent urine microalbumin testing in 2007, notably lower than the 71.1% share of patients nationally. The Texas patient share for blood glucose testing (84.0%) was likewise lower than the national percentage (86.6%) in 2007.

TEXAS INSULIN AND NON-INSULIN PATIENT SHARES ARE LOWER

In 2007, the shares of Texas Type 2 diabetes patients using insulin and non-insulin therapies alike were smaller than the national shares in each of the four insulin and non-insulin categories profiled. Of Texas Type 2 diabetes patients, 34.4% used any insulin product, for example, compared with 35.6% nationally. Similarly, the share of Texas Type 2 diabetes patients using any non-insulin antidiabetic product was 83.5% in 2007, slightly less than the national average of 84.8%.

NOTE: A1c tests measure how much glucose has been in the blood during the past 3-4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

B5: UTILIZATION: PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY SERVICE, 2007

B6: PHARMACOTHERAPY: AVERAGE ANNUAL PAYMENTS, BY TYPE OF DRUG THERAPY, 2007

B7: % OF AND AVG. PAYMENTS FOR TYPE 2 DIABETES PATIENT USING INSULIN THERAPIES, 2007

B8: % OF AND AVG. PAYMENTS FOR TYPE 2 DIABETES PATIENT USING NON-INSULIN THERAPIES, 2007

DATA SOURCE: Verispan LLC © 2008

Biguainides

Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

Sulfonylureas

Stimulate the release of insulin in the pancreas.

Insulin Sensitizing Agents

Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.
After averaging the highest profiled annual hospital inpatient charges for Type 2 diabetes patients in 2006 ($62,971), the Houston MSA saw such charges fall notably in 2007, to $55,531 (see table C1). The other three Texas MSAs profiled in this table each saw such charges increase, most notably Ft. Worth/Arlington, in which hospital inpatient charges rose to $57,434 in 2007 from $46,483 in 2006.

EMERGENCY ROOM CHARGES ARE HIGH THROUGHOUT TEXAS
Of the four Texas MSAs reporting average annual professional charges for emergency room (ER) care for Type 2 diabetes patients in 2007, three observed charges well above the national average of $647. Most notable of these was Dallas, with average ER professional charges of $905, substantially higher than the national average. In contrast, patients diagnosed with Type 2 diabetes in San Antonio paid an average of $596 for ER care in 2007, lowest of the markets listed.

1 Hospital charges reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
2 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.
3 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.
4 Figures reflect the per-patient yearly payments for Type 2 diabetes patients receiving a particular type of therapy.

NOTE: Facility and professional charges data were unavailable for the El Paso and Austin MSAs.
SHARE OF EL PASO PATIENTS WITH POOR A1C RESULTS IS HIGH
Of patients diagnosed with Type 2 diabetes in the El Paso MSA, a noteworthy 14.5% had A1c test results greater than 9.0%, highest of the eight markets listed (L1). By comparison, the share of such patients across the state of Texas who had A1c test results in that range was 11.8%. The share of Type 2 diabetes patients in the Dallas MSA with A1c test results in this highest range was 11.0%, lowest of the Texas markets.

LOW A1C RESULTS SHARE IS HIGHER IN TEXAS THAN NATION
In 2007, the share of patients diagnosed with Type 2 diabetes who had A1c test results of 7.0% or less was slightly higher in the state of Texas (63.7%) than nationally (61.1%). Such patients diagnosed with Type 2 diabetes in the Dallas MSA were most likely, by Texas market, to be in that lowest A1c test results range (64.9%), while patients in the El Paso MSA were least likely (60.3%).

NOTE: A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.
**EL PASO PATIENTS HAVE HIGHEST A1C TEST RESULTS SHARE**

In 2007, the share of patients diagnosed with Type 2 diabetes who had A1c test results greater than 8.0% was highest, at 24.3% (up from 22.6% in 2006), in the El Paso MSA (L4). The percentage of Type 2 diabetes patients across the state of Texas with A1c test results in that range was a comparatively small 20.9% (down moderately from 22.7% the previous year).

**HOUSTON PATIENT SHARE WITH LOW A1C TEST RESULTS RISES**

Of patients with Type 2 diabetes who were diagnosed in the Houston MSA in 2007, 64.0% had A1c test results in the 7.0% or less range, up from 61.4% in 2006. Of the Texas markets profiled, only the El Paso MSA accounted for an annual decrease (to 60.3% from 61.6% the previous year) in the share of Type 2 diabetes patients with A1c test results in this lowest range. In the state of Texas, the Type 2 diabetes patient share in this range rose to 61.1% from 58.3% in 2006.

**NOTE:** A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.
DALLAS UTILIZATION SHARES ARE LOW ACROSS THE BOARD

For each of the four services profiled in the report, Type 2 diabetes patients in the Dallas MSA had the lowest percentages of use among the various MSAs profiled (see table D1). For example, just 62.6% of such patients in Dallas had at least one urine microalbumin test in 2007, down from 62.9% in 2006, lowest by far of the listed MSAs. Meanwhile, Denver had the second lowest urine microalbumin patient share in 2007, at 71.4%, still nearly nine percentage points higher than the patient share in Dallas.

DALLAS TYPE 2 DIABETES EYE EXAM PATIENT SHARE RISES

In 2007, 62.9% of diabetes patients diagnosed with Type 2 diabetes in the Dallas MSA had an ophthalmologic examination, up from 62.1% in 2006, and the only utilization measure listed with an annual increase. By comparison, this percentage decreased in Minneapolis/St. Paul, to 77.8% from 78.1% in 2006, still the highest share of the profiled markets. Overall, 69.2% of Type 2 diabetes patients nationally had at least one ophthalmologic examinations in 2007.

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<table>
<thead>
<tr>
<th>MARKET</th>
<th>A1c Test*</th>
<th>Serum Cholesterol Test</th>
<th>Ophthalmologic Exam</th>
<th>Urine Microalbumin Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas</td>
<td>68.4%</td>
<td>67.5%</td>
<td>79.0%</td>
<td>78.5%</td>
</tr>
<tr>
<td>Denver</td>
<td>77.9%</td>
<td>78.7%</td>
<td>83.3%</td>
<td>83.7%</td>
</tr>
<tr>
<td>Minneapolis/St. Paul</td>
<td>86.1%</td>
<td>85.9%</td>
<td>87.7%</td>
<td>88.3%</td>
</tr>
<tr>
<td>Boston</td>
<td>75.2%</td>
<td>75.2%</td>
<td>89.2%</td>
<td>89.2%</td>
</tr>
<tr>
<td>Seattle</td>
<td>81.6%</td>
<td>81.7%</td>
<td>83.6%</td>
<td>84.4%</td>
</tr>
<tr>
<td>NATION</td>
<td>73.9%</td>
<td>73.8%</td>
<td>83.7%</td>
<td>83.8%</td>
</tr>
</tbody>
</table>

* A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

NOTE: The Seattle MSA also includes Bellevue and Everett, WA.
SHARE OF DALLAS PATIENTS WITH LOW A1C LEVELS GROWS

In 2007, 64.9% of patients in Dallas diagnosed with Type 2 diabetes had A1c test levels at or below 7.0%, up from 61.8% in 2006 (see table D4). This share was well above the national percentage of 61.1%. Of the remaining four MSAs listed, only Denver (63.4%) reported a lower Type 2 diabetes patient share for this measure than that of Dallas.

DALLAS PATIENT SHARE WITH HIGHEST A1C LEVELS SHRINKS

The share of Dallas Type 2 diabetes patients with A1c levels above 9.0% fell to 11.0% in 2007 from 11.9% in 2006. In spite of this decrease, Dallas Type 2 diabetes patients were most likely, by MSA, to fall within this highest A1c level range. Minneapolis/St. Paul’s share of Type 2 diabetes patients with very high A1c levels was 10.3%, down from 11.4% the year before, lowest of the five MSAs profiled. Each of the MSAs reported shares lower than the 2007 national share of 11.7%.
DALLAS ER CHARGES ARE BELOW THE NATIONAL AVERAGE
Hospital charges per year for emergency room care delivered to Type 2 diabetes patients in 2007 were $1,448 in the Dallas MSA, up 17.5% from $1,232 in 2006 (see table E1). Despite the increase, such charges were 12.3% lower than average charges for the nation ($1,651) in 2007.

OUTPATIENT CHARGES ARE HIGH AT DALLAS HOSPITALS IN 2007
Dallas patients diagnosed with Type 2 diabetes paid an average of $5,406 in hospital outpatient charges in 2007, up nearly $1,000 from $4,440 in 2006 and the highest of the markets profiled. In contrast, such charges were just $3,350 in Denver in 2007, the lowest of all the listed markets.

HOSPITAL INPATIENT CHARGES INCREASE ACROSS THE BOARD
Average hospital inpatient charges per year for Type 2 diabetes patients increased between 2006 and 2007 for each of the four markets reporting data for both years. For example, Dallas’s average annual hospital inpatient charges grew more than 10%, to $54,061 in 2007 from $47,658 in 2006.

* Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
INPATIENT CHARGES RISE SHARPLY FOR MEDICAID PATIENTS
Between 2006 and 2007, average hospital inpatient charges generated by Type 2 patients with Medicaid coverage in the Dallas MSA jumped, to $55,165 per year from $40,027. Nationally, inpatient charges for Medicaid recipients increased 24.1% during this time, to $47,039 from $37,917. Meanwhile, average hospital outpatient charges generated by Dallas Type 2 diabetes patients with Medicaid coverage grew by a comparatively slight 4.8%, to $4,449 from $4,247 the previous year.

ER CHARGES IN DALLAS AREA TRAIL NATIONAL AVERAGES
In 2007, ER charges per Type 2 diabetes patient in the Dallas MSA were lower than the national averages, regardless of payer type. For such patients covered by a commercial health plan, for example, such charges were significantly lower in Dallas ($1,097) than nationally ($1,331). For Medicaid recipients, charges for ER care in Dallas ($1,545) were 15.5% lower than the national average ($1,828) in 2007.

* Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
** Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.
GROWING SHARE OF PATIENTS HAS NO COMORBIDITIES

The percentage of Austin-area Type 2 diabetes patients who had no comorbidities edged up to 28.8% in 2007 from 27.3% in 2006. In spite of this rise, the Austin patient share remained 10 percentage points less than the overall Texas share of patients with no comorbidities (37.5%).

PROFESSIONAL CHARGES REMAIN LOW IN AUSTIN MSA

In 2007, average professional charges for care delivered to Type 2 patients with commercial health plan coverage were sharply lower in Austin than statewide across all facility types profiled. For example, 2007 average professional charges for office/clinic services for such patients were 40% lower in Austin ($1,458) than in Texas ($2,466).

NOTE: Hospital charge data were unavailable for the Austin MSA in 2006 and 2007.

1 On all pages, the percentages are representative of the universe of Type 2 diabetes patients on whom claims data have been collected in a given year.

2 A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes. Complications of Type 2 diabetes include, but are not limited to, coronary artery disease, hypoglycemia, nephropathy, neuropathy and retinopathy.

3 A comorbidity is a condition a Type 2 diabetes patient may also have, which is not directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with Type 2 diabetes. Comorbidities of Type 2 diabetes include, but are not limited to, congestive heart failure, coronary artery disease, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.

4 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.

5 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.
SHARE OF AUSTIN PATIENTS RECEIVING A1C TEST DECLINES

In 2007, 79.1% of Type 2 diabetes patients in the Austin MSA were administered an A1c test, down from 80.3% the year before. Despite the moderate decrease, the Austin A1c rate exceeded the statewide A1c rate (69.9%) by nearly 10 percentage points.

USE OF LONG-ACTING INSULIN INCREASES

The percentage of Type 2 diabetes patients in the Austin MSA who used a long-acting insulin product increased slightly in 2007, to 19.4% from 18.1% in 2006. However, overall insulin use among Type 2 diabetes patients in Austin fell in 2007, to 34.3% of Type 2 patients from 34.8% in 2006. Statewide, 34.4% of Type 2 diabetes patients used any insulin product in 2007, and 17.1% used a long-acting insulin product.

NOTE: A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

Bigenides

Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

Sulfonylureas

Stimulate the release of insulin in the pancreas.

Insulin Sensitizing Agents

Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.

**F5: UTILIZATION: PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY SERVICE**

**F6: PHARMACOTHERAPY: AVERAGE ANNUAL PAYMENTS, BY TYPE OF DRUG THERAPY**

**F7: % OF AND AVG. PAYMENTS FOR TYPE 2 DIABETES PATIENTS USING INSULIN THERAPIES**

**F8: % OF AND AVG. PAYMENTS FOR TYPE 2 DIABETES PATIENT USING NON-INSULIN THERAPIES**

Data source: Verispan LLC © 2008
LARGER SHARE OF DALLAS PATIENTS IS COMORBIDITY-FREE

Of all Type 2 diabetes patients in the Dallas MSA, 39.6% were without a diagnosed comorbidity in 2007, up from 35.8% in 2006 and from 29.3% in 2005 (see table G2). A higher percentage of Type 2 diabetes patients in Dallas (13.9%) had two or more complications from this disease than did such patients in Texas (12.6%).

HOSPITAL INPATIENT CHARGES CLIMB FOR DALLAS PATIENTS

Average annual hospital inpatient charges for Type 2 diabetes patients in Dallas with commercial insurance grew 14.1%, to $42,746 from $37,462 in 2006. Still, these charges were notably lower than the statewide average ($47,290) in 2007. Average professional office charges for commercially insured Type 2 diabetes patients were nearly twice as high in Dallas ($4,904) as in Texas ($2,466).

1 On all pages, the percentages are representative of the universe of Type 2 diabetes patients on whom claims data have been collected in a given year.
2 A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes. Complications of Type 2 diabetes include, but are not limited to, coronary artery disease, hypoglycemia, nephropathy, neuropathy and retinopathy.
3 A comorbidity is a condition a Type 2 diabetes patient may also have, which is not directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with Type 2 diabetes. Comorbidities of Type 2 diabetes include, but are not limited to, congestive heart failure, coronary artery disease, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.
4 Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
5 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.
6 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.
In 2007, the share of Type 2 diabetes patients in Dallas who received an A1c test was 67.5%, down slightly from 68.4% in 2006 (G5). Statewide, 69.9% of Type 2 diabetes patients were administered at least one A1c test, down fractionally from 70.1% the year before.

## NON-INSULIN COSTS DECLINE FOR DALLAS TYPE 2 PATIENTS

Average costs per Type 2 diabetes patient per year in the Dallas MSA for any non-insulin antidiabetic product fell slightly in 2007, to $455 from $463 in 2006. During the same period, any insulin product costs for these Type 2 diabetes patients climbed, to $833 from $714 the prior year. In spite of this increase, insulin costs remained higher for Type 2 diabetes patients statewide ($855) in 2007.

### NOTE: A1c tests measure how much glucose has been in the blood during the past 3-4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

**Biguanides**

Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

**Sulfonylureas**

Stimulate the release of insulin in the pancreas.

**Insulin Sensitizing Agents**

Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.
The percentage of Type 2 diabetes patients in the El Paso MSA with two or more diagnosed comorbidities grew to 34.5% in 2007 from 30.6% in 2006 (H3). By comparison, a moderately larger share of Type 2 diabetes patients in the state of Texas (38.9%) were diagnosed with at least two comorbidities in 2007.

**OFFICE PROVIDER COSTS ARE LOW FOR EL PASO PATIENTS**

Average professional office charges for care delivered to Type 2 diabetes patients in El Paso with commercial insurance coverage dropped notably in 2007, to $714 from $1,000 in 2006. Such charges were substantially less than the statewide average of $2,466 in 2007.

**NOTE:** Hospital charge data were unavailable for the El Paso MSA in 2006 and 2007.
The share of El Paso Type 2 diabetes patients receiving ophthalmologic exams rose moderately in 2007, to 57.1% from 55.6% in 2006 (H5), but still trailed the statewide average (63.1%) by six percentage points. With the exception of urine glucose tests, the shares of Type 2 diabetes patients receiving at least one test per year was lower in El Paso than in Texas in every utilization category profiled.

PER-PATIENT INSULIN COSTS ARE LOW IN THE EL PASO MSA
Insulin treatment costs per Type 2 diabetes patient per year in the El Paso MSA were $722, up notably from $618 in 2006. However, these patients paid considerably less for insulin therapy, on average, than their counterparts across the state of Texas ($855, up from $736 the previous year).

NOTE: A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

**Bigenides**
Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

**Sulfonylureas**
Stimulate the release of insulin in the pancreas.

**Insulin Sensitizing Agents**
Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.
COMPLICATION-FREE FT. WORTH PATIENT SHARE DECREASES

The share of patients in the Ft. Worth/Arlington MSA diagnosed with Type 2 diabetes and no complications from the disease dropped in 2007, to 55.2% from 57.4% in 2006 (I2). Conversely, the share of these same Type 2 diabetes patients with two or more diagnosed complications from the disease was 15.7%, notably higher than the Texas mark (12.6%).

FT. WORTH HOSPITAL INPATIENT CHARGES DECLINE SHARPLY

Average professional inpatient charges for Type 2 diabetes patients in the Ft. Worth/Arlington MSA with commercial insurance decreased in 2007, to $4,888 from $5,371 in 2006 and from $5,572 in 2005. However, these charges continued to exceed the statewide average (to $4,662 from $4,448 the previous year) by more than $200.

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1 On all pages, the percentages are representative of the universe of Type 2 diabetes patients on whom claims data have been collected in a given year.
2 A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes. Complications of Type 2 diabetes include, but are not limited to, coronary artery disease, hypoglycemia, nephropathy, neuropathy and retinopathy.
3 A comorbidity is a condition a Type 2 diabetes patient may also have, which is not directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with Type 2 diabetes. Comorbidities of Type 2 diabetes include, but are not limited to, congestive heart failure, coronary artery disease, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.
4 Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.
5 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.
6 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.
FT. WORTH/ARLINGTON

FT. WORTH PATIENTS ARE LESS LIKELY TO RECEIVE SERVICES

Patients diagnosed with Type 2 diabetes in the Ft. Worth/Arlington MSA were less likely than Type 2 diabetes patients across the state of Texas to receive any of six profiled services (15). For example, 68.7% of Type 2 diabetes patients in the Ft. Worth/Arlington MSA underwent A1c testing in 2007, compared with 69.9% of such patients statewide.

PER-PATIENT INSULIN COSTS CLIMB IN FT. WORTH/ARLINGTON

Type 2 diabetes patients in the Ft. Worth/Arlington MSA paid on average $904 per year for insulin therapy in 2007, up considerably from $783 in 2006. Non-insulin costs also increased for Type 2 diabetes patients in Ft. Worth/Arlington over this period, to $473 from $466 the previous year.

NOTE: A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

Biguanides
Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

Sulfonylureas
Stimulate the release of insulin in the pancreas.

Insulin Sensitizing Agents
Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.
HOUSTON WORKING AGE TYPE 2 DIABETES PATIENT SHARE FALLS
The share of patients diagnosed with Type 2 diabetes in the Houston MSA who were between 18 and 64 years of age declined in 2007, to 64.6% from 69.3% in 2006, yet still exceeded the corresponding rate across the state of Texas (60.4%) (J1). Meanwhile, the share of Houston Type 2 diabetes patients with two or more complications from the disease likewise exceeded the statewide average (13.3% vs. 12.6%).

PROFESSIONAL OFFICE CHARGES ARE HIGHEST IN HOUSTON
With the exception of office visits, professional charges are higher in Houston than in Texas for commercially insured Type 2 diabetes patients in every patient setting profiled in 2007. For example, hospital charges per Type 2 diabetes patient per year were higher in Houston than Dallas for inpatient and outpatient hospital settings alike.

1 On all pages, the percentages are representative of the universe of Type 2 diabetes patients on whom claims data have been collected in a given year.

2 A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes. Complications of Type 2 diabetes include, but are not limited to, coronary artery disease, hypoglycemia, nephropathy, neuropathy and retinopathy.

3 A comorbidity is a condition a Type 2 diabetes patient may also have, which is not directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with Type 2 diabetes. Comorbidities of Type 2 diabetes include, but are not limited to, congestive heart failure, coronary artery disease, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.

4 Figures reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care.

5 Includes commercial insurance companies, Blue Cross/Blue Shield, HMOs, PPOs, point-of-service plans and exclusive provider organizations.

6 Professional charges are those generated by the providers delivering care to Type 2 diabetes patients in various settings.

Data source: Verispan LLC © 2008
The shares of patients diagnosed with Type 2 diabetes who received various services for the disease in 2007 were lower in the Houston MSA than across the state of Texas for every service profiled, with one exception: State and Houston averages for patients receiving at least one urine glucose test were both at 76.1% (J5).

### Houston Diabetes Services Shares Trail State Average

Although average annual payments per Houston Type 2 diabetes patient per year for any insulin product rose, to $798 from $670 in 2006, the ratio still trailed the statewide average for this measure ($855) (J6). Type 2 diabetes patients across the state of Texas likewise had higher non-insulin antidiabetic product payments than than their Houston counterparts ($465 vs. $411).

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**J7: % of and Avg. Payments for Type 2 Diabetes Patients Using Insulin Therapies**

<table>
<thead>
<tr>
<th></th>
<th>Any Insulin Product</th>
<th>Intermediate-Acting Insulin</th>
<th>Long-Acting Insulin</th>
<th>Short-Acting Insulin</th>
<th>Mixed Insulin</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Pat.</td>
<td>$670</td>
<td>$272</td>
<td>$472</td>
<td>$501</td>
<td>$525</td>
</tr>
<tr>
<td>Avg. Costs</td>
<td>31.8%</td>
<td>4.5%</td>
<td>15.2%</td>
<td>11.3%</td>
<td>7.2%</td>
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</tbody>
</table>

**J8: % of and Avg. Payments for Type 2 Diabetes Patient Using Non-Insulin Therapies**

<table>
<thead>
<tr>
<th></th>
<th>Any Non-Insulin Antidiabetic Product</th>
<th>Biguanides</th>
<th>Sulfonylureas</th>
<th>Insulin Sensitizing Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Pat.</td>
<td>84.2%</td>
<td>46.1%</td>
<td>34.4%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Avg. Costs</td>
<td>$418</td>
<td>$118</td>
<td>$96</td>
<td>$710</td>
</tr>
</tbody>
</table>

### Pharmacotherapy: Average Annual Payments, by Type of Drug Therapy

**J6: Pharmacotherapy: Average Annual Payments, by Type of Drug Therapy**

<table>
<thead>
<tr>
<th></th>
<th>Any Insulin Product</th>
<th>Any Non-Insulin Antidiabetic Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Annual Payments per Patient</td>
<td>$418</td>
<td>$465</td>
</tr>
<tr>
<td>Houston 2006</td>
<td>$670</td>
<td>$418</td>
</tr>
<tr>
<td>Houston 2007</td>
<td>$798</td>
<td>$411</td>
</tr>
<tr>
<td>Texas 2007</td>
<td>$855</td>
<td>$465</td>
</tr>
</tbody>
</table>

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**Data source: Verispan LLC © 2008**

### Notes

- **Biguanides**
  - Improve insulin sensitivity; reduce the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

- **Sulfonylureas**
  - Stimulate the release of insulin in the pancreas.

- **Insulin Sensitizing Agents**
  - Improve response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.
SHARE OF OLDEST PATIENTS IN SAN ANTONIO INCREASES

The share of all patients diagnosed with Type 2 diabetes in the San Antonio MSA who were 65 years of age or older rose in 2007, to 44.2% from 42.8% in 2006, higher than their counterparts statewide (39.2%) (See table K1). Of the seven Texas markets listed, this San Antonio oldest Type 2 diabetes patient share was the highest.

HIGH COMPLICATION PATIENT SHARE FALLS IN SAN ANTONIO

Between 2006 and 2007, the share of patients diagnosed with Type 2 diabetes in San Antonio who had two or more comorbidities declined (to 37.6% from 40.6%). Conversely, the share of Type 2 diabetes patients in this MSA who had two or more complications from the disease increased during this period (to 14.6% from 13.3%), notably exceeding the statewide share (12.6%).
The share of San Antonio Type 2 diabetes patients who received at least one A1c test in 2007 declined, to 67.1% from 69.2% in 2006, more than two percentage points beneath the statewide average (69.9%) (K5). In 2007, the San Antonio patient share exceeded the statewide average in only one of six services profiled: ophthalmologic examinations (65.8% vs. 63.1%).

San Antonio per-Type 2 diabetes patient payments per year for any insulin product jumped, to $838 from $663 in 2006, yet still lagged behind the statewide average for this measure ($855). The San Antonio per-Type 2 diabetes patient average payment for any non-insulin antidiabetic product also trailed the state average ($435 vs. $465).

NOTE: A1c tests measure how much glucose has been in the blood during the past 3–4 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

Biguanides
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Data Methodology

Verispan generates data for this Managed Care Digest Series® newsletter using health care professional (837p) and institutional (837i) insurance claims, representing more than 5.5 million unique patients nationally in 2007 with a range of Type 2 diabetes diagnoses (250.00–250.92). Data from physicians of all specialties and from all hospital types are included.

Verispan also gathers data on prescription activity from the National Council for Prescription Drug Programs (NCPDP). Data for all disease states collected account for some 8 billion prescription claims annually, or more than 50% of the prescription universe. These prescription data represent the sampling of prescription activity from a variety of sources, including retail chains, mass merchandisers and pharmacy benefit managers, and come from a near census of more than 59,000 pharmacies in the U.S. Cash, mail-order, Medicaid, and third-party transactions are tracked.

DATA INTEGRITY

Data arriving into Verispan are put through a rigorous process to ensure that data elements match to valid references, such as product codes, ICD-9 (diagnosis) and CPT-4 (procedure) codes, and provider and facility data.

Claims undergo a careful de-duplication process to ensure that when multiple, voided, or adjusted claims are assigned to a patient encounter, they are applied to the database, but only for a single, unique patient.

Through its patient encryption methods, Verispan creates a unique, random numerical identifier for every patient, and then strips away all patient-specific health information that is protected under the Health Insurance Portability and Accountability Act (HIPAA). The identifier allows Verispan to track disease-specific diagnosis and procedure activity across the various settings where patient care is provided (hospital inpatient, hospital outpatient, emergency rooms, clinics, doctors’ offices and pharmacies), while protecting the privacy of each patient.