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Lehigh Valley Business Coalition on Healthcare

Type 2 Diabetes Report 2013

LVBCH
Leadership & Value
The Business Coalition on Healthcare

SANOFI

CONTENTS

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Introduction

Sanofi US (Sanofi) and the Lehigh Valley Business Coalition on Healthcare (LVBCH) are pleased to present the **Type 2 Diabetes Report for 2013**, an overview of key demographic, financial, utilization, pharmacotherapy and health outcomes measures for Type 2 diabetes patients in Allentown, Harrisburg, Reading and Scranton. The report also provides IMS Health's state and national benchmarks, which help providers and employers identify better opportunities to serve the needs of their patients. All data are drawn from the Sanofi **Managed Care Digest Series®**.

Sanofi, as sponsor of this report, maintains an arm's-length relationship with the organizations that prepare this report and carry out the research. The desire of Sanofi is that the information in this report be completely independent and objective. The **Type 2 Diabetes Report** helps LVBCH to fulfill its mission of providing leadership and knowledge to employers to promote value-based, market-driven health care.

This report features a number of examples of the kinds of patient-level, disease-specific data on Type 2 diabetes (high blood glucose levels caused by either a lack of insulin or the body's inability to use insulin efficiently) that can be provided by LVBCH using the **Managed Care Digest Series®**. LVBCH chose to include data on Type 2 diabetes as a common secondary diagnosis of many cardiovascular diseases and the associated charges of such complications.

All data in this report (covering 2010 through 2012) were gathered by IMS Health, Parsippany, NJ, a leading provider of innovative health care data products and analytic services. The data provide employers with independent, third-party information against which they benchmark their own data on patient demographics, professional (provider) and facility (hospital) charges, service utilization and pharmacotherapy.

Methodology

IMS Health generated data for this **Managed Care Digest Series®** database using mostly health care professional and institutional insurance claims, representing more than 7.1 million unique Type 2 diabetes patients nationally in 2012 with a diagnosis in the 250.00–250.92 range. Data from physicians of all specialties and from all hospital types are included.

Per-case average length of stay and inpatient charge data come from IMS Health's Hospital Procedure/Diagnosis (HPD) Database. This database contains an extensive set of hospital inpatient and outpatient discharge records, including actual diagnoses and procedures for about 75% of discharges nationwide (including 100% of Medicare-reimbursed discharges).

IMS Health also gathers data on prescription activity from the National Council for Prescription Drug Programs (NCPDP). These data represent some 2 billion prescription claims annually, or more than 50% of the prescription universe. These 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 IMS Health 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.

Through its patient encryption methods, IMS Health creates a unique, random numerical identifier for each patient, then strips away all patient-specific health information that is protected under the Health Insurance Portability and Accountability Act (HIPAA). The identifier allows IMS Health to track disease-specific diagnosis and procedure activity across the various settings where patient care is provided.

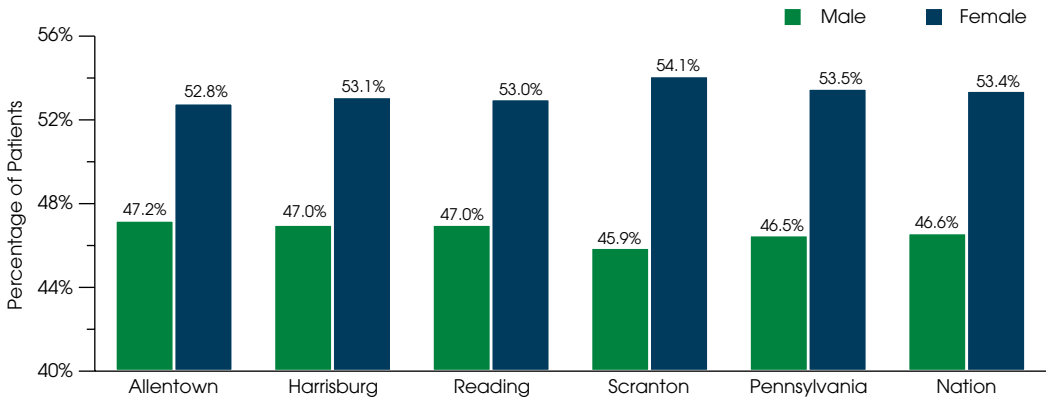
PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY AGE

	0–17		18–35		36–64		65–79		80+	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	0.5%	0.5%	2.6%	2.5%	42.9%	41.4%	36.5%	37.8%	17.4%	17.8%
Harrisburg	0.2	0.2	1.9	2.1	42.1	41.0	38.2	39.7	17.7	17.1
Reading	0.2	0.3	2.1	2.2	42.9	42.0	37.6	37.5	17.3	18.0
Scranton	0.2	0.2	1.8	2.0	37.7	37.4	39.1	39.9	21.2	20.5
Pennsylvania	0.6	0.6	2.8	2.9	43.5	42.7	36.5	37.3	16.7	16.6
NATION	**0.4%**	**0.4%**	**2.9%**	**2.9%**	**47.8%**	**46.4%**	**36.1%**	**37.2%**	**12.8%**	**13.1%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY DIAGNOSING SPECIALIST

	Location of Patient's Type 2 Diabetes Diagnosis							
	Primary Care[1]		Internal Medicine		Endocrinology		Cardiology	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	12.8%	11.9%	14.1%	13.0%	1.5%	1.7%	9.0%	8.3%
Harrisburg	19.6	17.3	14.6	14.0	1.4	1.9	9.6	10.6
Reading	21.2	18.9	20.3	17.5	0.8	2.1	12.1	10.3
Scranton	17.2	16.0	12.9	13.1	5.6	5.6	12.9	12.3
Pennsylvania	15.4	15.1	14.3	14.0	4.3	3.8	11.1	10.5
NATION	**15.8%**	**15.5%**	**15.7%**	**15.2%**	**3.6%**	**3.4%**	**10.3%**	**10.2%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY GENDER, 2012



Data source: IMS Health © 2013

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. Unless otherwise noted, tables and graphs throughout this report represent data for all payer types.

WORKING AGE PORTION OF TYPE 2 DIABETES PATIENTS FALLS IN PA MARKETS

In each of the five profiled Pennsylvania markets, the percentages of Type 2 diabetes patients who were of working age (between 18 and 64 years old) fell between 2011 and 2012. Type 2 diabetes patients in each of the five featured Pennsylvania markets were less apt than their national counterparts (49.3%) to be in this age group in 2012.

PRIMARY CARE PHYSICIANS DIAGNOSE LARGEST SHARES OF PA TYPE 2 PATIENTS

In Harrisburg (17.3%), Reading (18.9%), Scranton (16.0%) and across Pennsylvania (15.1%), patients with Type 2 diabetes were most likely, by specialist, to have received their diagnosis from a primary care physician in 2012. However, in all four of these markets, these portions declined between 2011 and 2012. Meanwhile, growing shares of Type 2 diabetes patients in Allentown, Harrisburg and Reading received their diagnosis from an endocrinologist in 2012.

[1] "Primary care" consists of both general and family practitioners.

NOTE: Throughout this Report, the Allentown market includes Bethlehem and Easton, the Harrisburg market includes Lebanon and Carlisle, and the Scranton market includes Wilkes-Barre and Hazleton. For a list of the counties included in each of the markets in this report, please visit http://www.census.gov/population/metro/

PATIENT DEMOGRAPHICS

COMMERCIAL INSURERS COVER FALLING SHARES OF PA TYPE 2 DIABETES PATIENTS

Coinciding with a decline in the shares of Type 2 diabetes patients aged 18 to 64, the portions of Type 2 diabetes patients covered by commercial insurers also declined between 2011 and 2012 for all five Pennsylvania markets profiled. This decline was most notable in Reading, where the commercially insured portion of Type 2 diabetes patients dropped by 2.3 percentage points.

MULTIPLE COMPLICATIONS BESET A LARGE SHARE OF PA TYPE 2 DIABETES PATIENTS

Patients with Type 2 diabetes who resided in Reading (33.7%), Scranton (36.4%) or across Pennsylvania (29.8%) were more prone than their national peers (28.0%) to be diagnosed with multiple complications in 2012. Additionally, the percentages of such patients expanded between 2011 and 2012 for three of the five Pennsylvania markets listed (Allentown and Scranton excepted).

[1] Includes HMOs, PPOs, point-of-service plans and exclusive provider organizations.

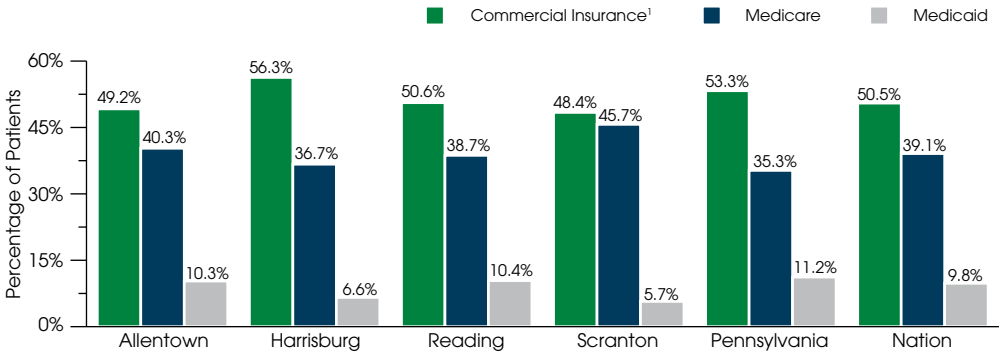
[2] A complication is defined as a patient condition caused by the Type 2 diabetes of the patient. These conditions are a direct result of having Type 2 diabetes.

[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.

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY PAYER

	Commercial Insurance[1]		Medicare		Medicaid	
MARKET	2011	2012	2011	2012	2011	2012
Allentown	49.8%	49.2%	37.9%	40.3%	12.1%	10.3%
Harrisburg	57.0	56.3	36.5	36.7	6.0	6.6
Reading	52.9	50.6	37.7	38.7	9.1	10.4
Scranton	48.8	48.4	45.8	45.7	5.3	5.7
Pennsylvania	54.5	53.3	33.8	35.3	11.4	11.2
NATION	**51.4%**	**50.5%**	**38.1%**	**39.1%**	**9.7%**	**9.8%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY PAYER, 2012



PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY NUMBER OF COMPLICATIONS[2]

	0		1		2		>2	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	55.0%	56.7%	16.7%	16.5%	9.7%	9.1%	18.6%	17.7%
Harrisburg	61.0	58.1	15.4	16.1	8.0	8.5	15.7	17.3
Reading	53.2	49.6	16.3	16.8	9.0	10.3	21.4	23.4
Scranton	44.1	44.9	19.1	18.7	11.2	10.7	25.7	25.7
Pennsylvania	54.8	54.2	16.4	16.1	9.1	9.0	19.7	20.8
NATION	**56.2%**	**56.1%**	**16.1%**	**15.9%**	**8.8%**	**8.7%**	**19.0%**	**19.3%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY NUMBER OF COMORBIDITIES[3]

	0		1		2		>2	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	51.0%	52.6%	11.3%	11.3%	9.6%	9.2%	28.1%	26.9%
Harrisburg	43.6	44.6	12.0	12.4	10.6	10.4	33.8	32.6
Reading	21.5	23.0	11.5	11.1	13.8	13.2	53.2	52.7
Scranton	41.1	40.3	10.5	10.8	9.7	9.8	38.8	39.1
Pennsylvania	40.1	40.9	12.4	11.6	11.5	10.8	36.1	36.6
NATION	**37.0%**	**38.2%**	**13.7%**	**13.2%**	**12.4%**	**12.1%**	**37.0%**	**36.6%**

Data source: IMS Health © 2013

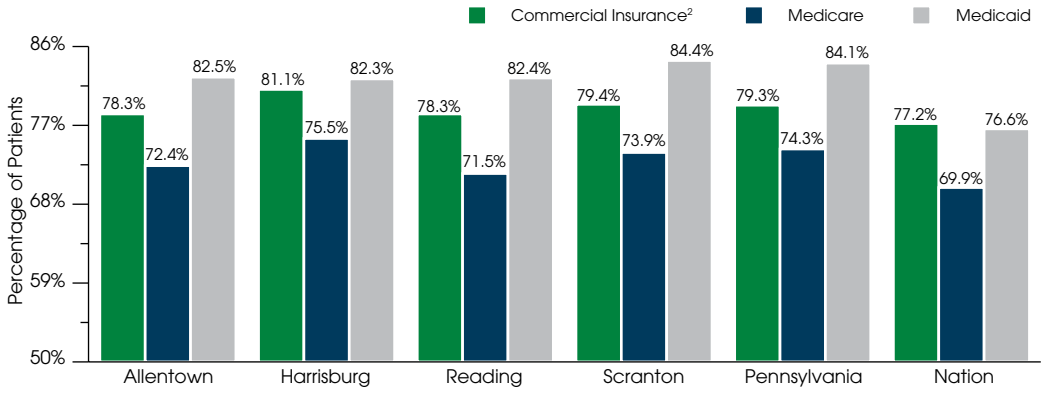
PERCENTAGE OF TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS SERVICES, BY PAYER, 2012

MARKET	A1c Test[1]			Blood Glucose Test			Serum Cholesterol Test			Eye Exam			Urine Glucose Test		
	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid
Allentown	78.3%	72.4%	82.5%	86.3%	87.5%	88.0%	85.3%	86.2%	87.2%	72.4%	76.4%	63.8%	85.9%	88.0%	85.6%
Harrisburg	81.1	75.5	82.3	87.8	90.2	90.6	87.8	88.6	85.9	68.0	73.8	63.5	86.8	88.1	86.8
Reading	78.3	71.5	82.4	86.2	88.5	91.7	85.2	88.5	86.4	69.0	75.6	60.5	84.6	87.9	88.0
Scranton	79.4	73.9	84.4	87.3	88.3	87.2	85.7	86.7	87.1	67.2	74.4	66.8	85.6	87.7	85.9
Pennsylvania	79.3	74.3	84.1	87.3	89.1	90.1	86.2	87.5	87.7	67.6	70.7	64.7	85.7	88.1	86.8
NATION	**77.2%**	**69.9%**	**76.6%**	**86.7%**	**86.7%**	**87.2%**	**84.3%**	**84.5%**	**83.7%**	**66.8%**	**73.8%**	**65.2%**	**83.0%**	**85.1%**	**83.9%**

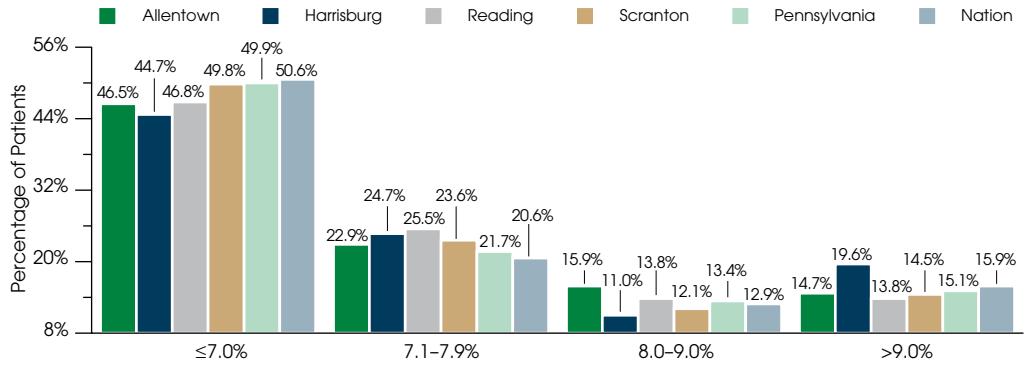
PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY SERVICE: TOP PERFORMING STATE, 2012

	A1c Test[1]	Blood Glucose Test	Serum Cholesterol Test	Eye Exam	Urine Glucose Test
TOP PERFORMING STATE	87.3%	93.5%	91.8%	78.9%	94.9%

PERCENTAGE OF TYPE 2 DIABETES PATIENTS RECEIVING A1c TESTS, BY PAYER, 2012[1]



PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY A1c LEVEL RANGE, 2012[1]



PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY A1c LEVEL RANGE: TOP PERFORMING STATE, 2012[1]

	≤7.0%	7.1–7.9%	8.0–9.0%	>9.0%
TOP PERFORMING STATE	60.1%	17.5%	9.1%	9.0%

Data source: IMS Health © 2013

LARGE SHARE OF PA TYPE 2 PATIENTS ON MEDICAID RECEIVES A1c TESTS

In each of the five Pennsylvania markets shown, Type 2 diabetes patients covered by Medicaid were most likely, by payer, to receive an A1c test in 2012. Across Pennsylvania, 84.1% of Type 2 diabetes patients covered by Medicaid received an A1c test in 2012, above the U.S. rate of 76.6%.

NEARLY 20% OF HARRISBURG TYPE 2 DIABETES PATIENTS HAVE A1c LEVELS >9.0%

Nearly one of every five Type 2 diabetes patients in Harrisburg recorded an A1c level greater than 9.0% on their last exam in 2012, a portion well above both the Pennsylvania (15.1%) and national means (15.9%) that year, and the highest share, by Pennsylvania market.

[1] The A1c test measures the amount of glucose present in the blood during the past 2–3 months. Figures reflect the percentage of Type 2 diabetes patients who have had at least one A1c test in a given year.

[2] Includes HMOs, PPOs, point-of-service plans and exclusive provider organizations.

ALOS/INPATIENT CHARGES

PA LOCAL MARKETS RECORD LONGER ALOS VS. PA AND NATIONAL BENCHMARKS

In each of the four featured Pennsylvania local markets, average length of stay (ALOS) per diabetes mellitus inpatient case exceeded the Pennsylvania (4.2 days) and national (4.3) means in 2011. Scranton hospitals recorded the longest ALOS, by Pennsylvania local market, in 2012, at 6.5 days.

CHARGES PER DIABETES MELLITUS CASE TOP NATIONAL AVERAGE IN PENNSYLVANIA

Hospitals in Allentown and across the Commonwealth of Pennsylvania recorded higher charges per inpatient diabetes mellitus case in 2011 compared with the national benchmark of $40,177. In Pennsylvania, average charges for diabetes mellitus cases reached $49,889 in 2011, 24.2% above the national average that year.

[1] Data reflect the charges generated for diabetes patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

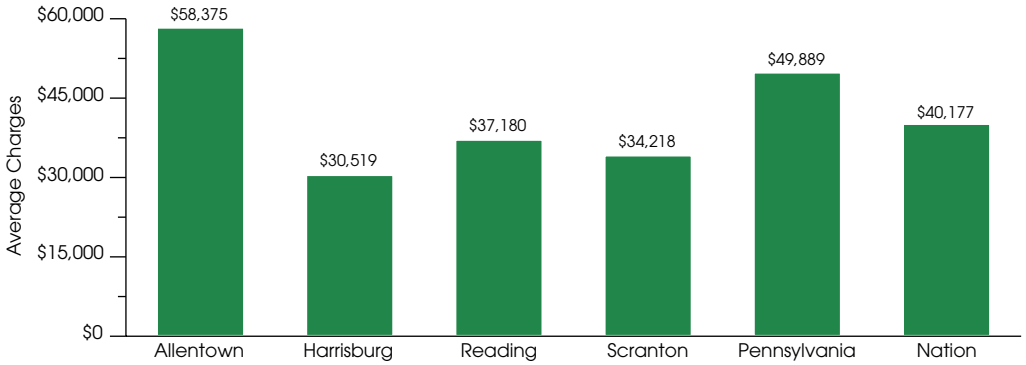
NOTE: Average length of stay (ALOS) and hospital inpatient charge data come from IMS Health's *Hospital Procedure/Diagnosis (HPD)* database and are current as of calendar year 2011.

AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER INPATIENT DIABETES MELLITUS CASE, 2011

MARKET	Average Length of Stay	Average Charges[1]
Allentown	4.5	$58,375
Harrisburg	4.7	30,519
Reading	5.9	37,180
Scranton	6.5	34,218
Pennsylvania	4.2	49,889
NATION	**4.3**	**$40,177**

AVERAGE LENGTH OF STAY (DAYS) PER INPATIENT DIABETES MELLITUS CASE, 2011

CHARGES PER INPATIENT DIABETES MELLITUS CASE, 2011[1]



Data source: IMS Health © 2013

PROFESSIONAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS: COMMERCIAL INSURANCE[1,2]

	Ambulatory Surgery Center		Emergency Room		Hospital Inpatient		Hospital Outpatient		Office/ Clinic	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	$2,338	$2,102	$697	$714	$3,113	$3,360	$1,580	$1,436	$1,063	$1,197
Harrisburg	1,415	1,528	819	869	2,079	2,107	1,030	1,075	1,147	1,136
Reading	1,691	1,741	574	511	1,766	1,997	772	622	1,217	1,397
Scranton	1,905	2,111	440	495	2,292	2,157	755	782	1,243	1,307
Pennsylvania	1,705	1,813	549	566	2,208	2,273	907	925	1,161	1,208
NATION	**$2,020**	**$2,061**	**$838**	**$861**	**$2,597**	**$2,570**	**$1,061**	**$1,060**	**$1,645**	**$1,611**

PROFESSIONAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS: MEDICARE[1]

	Ambulatory Surgery Center		Emergency Room		Hospital Inpatient		Hospital Outpatient		Office/ Clinic	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	$2,368	$2,548	$447	$545	$2,835	$2,614	$1,736	$1,171	$1,011	$1,146
Harrisburg	2,768	2,469	640	945	1,706	1,469	793	728	879	912
Reading	2,156	2,842	287	378	1,895	2,804	885	691	1,294	1,508
Scranton	2,526	3,088	234	349	2,041	2,074	656	790	1,487	1,365
Pennsylvania	2,268	2,514	658	705	2,465	2,505	1,001	957	1,327	1,395
NATION	**$2,701**	**$2,762**	**$627**	**$752**	**$2,348**	**$2,311**	**$988**	**$973**	**$1,704**	**$1,684**

PROFESSIONAL CHARGES PER YEAR FOR TYPE 2 DIABETES PATIENTS: MEDICAID[1]

	Ambulatory Surgery Center		Emergency Room		Hospital Inpatient		Hospital Outpatient		Office/ Clinic	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	$1,660	$2,024	$1,290	$1,324	$2,172	$2,040	$1,282	$1,143	$84	$929
Harrisburg	1,366	1,208	1,064	1,361	1,926	1,768	1,094	1,133	780	880
Reading	1,403	1,494	1,135	1,408	1,968	1,807	755	637	1,397	1,329
Scranton	1,894	1,822	497	359	1,583	1,256	423	484	835	839
Pennsylvania	1,801	1,887	1,050	1,118	2,958	3,108	1,098	1,157	1,279	1,366
NATION	**$2,220**	**$2,205**	**$1,085**	**$1,203**	**$2,523**	**$2,546**	**$1,035**	**$1,050**	**$1,563**	**$1,561**

Data source: IMS Health © 2013

IP PROVIDER CHARGES RISE FOR PA TYPE 2 PATIENTS WITH COMMERCIAL INSURANCE

Between 2011 and 2012, average annual inpatient provider charges increased for Type 2 diabetes patients with commercial insurance coverage in four of the five Pennsylvania markets shown (Scranton excepted). The commonwealth recorded a 2.9% gain in this measure during this period, to $2,273 from $2,208, but still fell shy of the U.S. mean of $2,570 in 2012.

SURGERY CENTER PROVIDER CHARGES ARE HIGHEST FOR PA MEDICARE TYPE 2 PATIENTS

In four of the five profiled Pennsylvania markets (Allentown excluded), Type 2 diabetes patients covered by Medicare recorded the highest professional charges, by setting, in ambulatory surgery centers in 2012. For example, such patients in Scranton generated $3,088 in ambulatory surgery center provider charges in 2012, higher than those generated in the emergency room, inpatient, outpatient or office/clinic settings that year.

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

[2] Includes HMOs, PPOs, point-of-service plans and exclusive provider organizations.

PERCENTAGE OF TYPE 2 DIABETES PATIENTS USING VARIOUS INSULIN THERAPIES, BY PAYER TYPE, 2012

MARKET	Any Insulin Product			Long-Acting Insulin			Short-Acting Insulin			Rapid-Acting Insulin			Intermediate-Acting Insulin		
	Comm. Ins.[1]	Medicare	Medicaid	Comm. Ins.[1]	Medicare	Medicaid	Comm. Ins.[1]	Medicare	Medicaid	Comm. Ins.[1]	Medicare	Medicaid	Comm. Ins.[1]	Medicare	Medicaid
Allentown	33.0%	39.5%	57.3%	22.3%	28.2%	44.9%	17.3%	16.5%	34.2%	16.3%	15.3%	32.8%	1.5%	2.2%	1.8%
Harrisburg	32.7	35.5	56.8	24.8	28.8	46.9	17.8	18.0	36.3	16.8	17.0	35.2	1.1	1.7	3.5
Reading	30.6	35.3	50.5	21.7	26.1	36.6	17.1	18.6	30.0	16.3	17.3	28.6	1.1	2.0	2.8
Scranton	29.7	34.9	58.4	20.2	25.2	45.3	17.7	18.9	44.1	16.7	17.8	42.1	1.3	2.6	2.5
Pennsylvania	32.6	35.2	52.3	22.7	24.9	37.5	17.7	16.7	28.7	16.7	15.3	26.6	1.7	2.2	2.8
NATION	**31.1%**	**36.3%**	**48.1%**	**22.4%**	**26.3%**	**35.7%**	**16.7%**	**17.0%**	**27.4%**	**15.5%**	**15.1%**	**24.5%**	**1.6%**	**2.4%**	**3.5%**

INSULIN FILL RATES FOR PA TYPE 2 PATIENTS ON COMM. INS. OR MEDICAID TOP U.S.

In 2012, Pennsylvania patients diagnosed with Type 2 diabetes and covered by either commercial insurance (32.6%) or Medicaid (52.3%) were more apt than their national peers to fill prescriptions for any insulin products. However, a lower percentage of Pennsylvania Type 2 diabetes patients on Medicare received any insulin: 35.2% vs. 36.3% nationally.

NON-INSULIN RX USE AMONG PA TYPE 2 PATIENTS TRAILS NATIONAL BENCHMARK

Compared with the national average of 84.6% in 2012, Type 2 diabetes patients in each of the five Pennsylvania markets were less likely to fill prescriptions for non-insulin antidiabetic products. Even still, the percentages of such Type 2 diabetes patients who received DPP-4 inhibitors grew in all five Pennsylvania markets listed and topped the 2012 U.S. average of 12.8% in four.

PERCENTAGE OF TYPE 2 DIABETES PATIENTS USING VARIOUS INSULIN THERAPIES, 2012

MARKET	Long-Acting Insulin		Rapid-Acting Insulin		Short-Acting Insulin		Intermediate-Acting Insulin	
	Pens	Vials	Pens	Vials	Pens	Vials	Pens	Vials
Allentown	18.3%	11.8%	10.0%	9.0%	10.0%	10.2%	0.3%	1.7%
Harrisburg	20.0	10.4	12.6	7.4	12.6	8.6	0.2	1.4
Reading	16.9	10.3	11.4	7.6	11.4	8.8	0.2	1.6
Scranton	13.8	12.3	9.3	10.7	9.3	11.9	0.2	1.9
Pennsylvania	15.5	10.8	9.7	8.0	9.7	9.4	0.4	1.7
NATION	**15.3%**	**11.3%**	**9.2%**	**8.0%**	**9.2%**	**9.8%**	**0.3%**	**1.8%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS USING VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES

MARKET	Any Non-Insulin Antidiabetic Product		DPP-4 Inhibitors		GLP-1 Receptor Agonists		Insulin Sensitizing Agents	
	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	81.7%	81.4%	16.4%	17.5%	3.4%	3.8%	9.3%	5.1%
Harrisburg	83.8	82.3	11.3	12.5	3.3	3.5	12.1	7.1
Reading	83.5	83.9	12.0	14.3	2.4	2.6	9.5	5.5
Scranton	82.9	82.8	13.2	14.3	2.4	2.8	9.7	6.3
Pennsylvania	83.8	83.7	11.7	13.4	2.8	3.3	10.5	6.3
NATION	**84.6%**	**84.6%**	**11.5%**	**12.8%**	**4.4%**	**4.9%**	**12.1%**	**7.1%**

Data source: IMS Health © 2013

[1] Includes HMOs, PPOs, point-of-service plans and exclusive provider organizations.

Dipeptidyl Peptidase 4 (DPP-4) Inhibitors
Inhibit DPP-4 enzymes and slow inactivation of incretin hormones, helping to regulate glucose homeostasis through increased insulin release and decreased glucagon levels.

GLP-1 Receptor Agonists
Used in conjunction with oral agents; increase glucose-dependent insulin secretion and pancreatic beta-cell sensitivity, reduce glucagon production, slow rate of absorption of glucose in the digestive tract by slowing gastric emptying, and suppress appetite.

Insulin Sensitizing Agents
Increase insulin sensitivity by improving 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.

ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT USING VARIOUS INSULIN THERAPIES, BY PAYER TYPE, 2012[1]

MARKET	Any Insulin Product			Long-Acting Insulin			Short-Acting Insulin			Rapid-Acting Insulin			Intermediate-Acting Insulin		
	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid	Comm. Ins.[2]	Medicare	Medicaid
Allentown	$1,695	$2,015	$2,679	$1,144	$1,340	$1,509	$1,254	$1,384	$1,878	$1,241	$1,375	$1,834	$602	$779	$1,381
Harrisburg	1,718	2,052	2,519	1,223	1,401	1,627	1,200	1,284	1,513	1,197	1,299	1,500	705	1,145	743
Reading	1,741	2,007	2,513	1,151	1,241	1,411	1,239	1,253	1,577	1,275	1,259	1,613	562	1,049	793
Scranton	2,198	2,240	2,783	1,335	1,335	1,476	1,630	1,418	1,733	1,617	1,427	1,622	964	1,112	910
Pennsylvania	1,902	1,959	2,285	1,219	1,292	1,408	1,401	1,236	1,488	1,417	1,264	1,508	830	913	830
NATION	**$1,970**	**$1,889**	**$1,996**	**$1,305**	**$1,311**	**$1,244**	**$1,467**	**$1,186**	**$1,299**	**$1,487**	**$1,230**	**$1,346**	**$781**	**$851**	**$673**

ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT USING VARIOUS INSULIN THERAPIES, 2012[1]

MARKET	Long-Acting Insulin		Short-Acting Insulin		Rapid-Acting Insulin		Intermediate-Acting Insulin	
	Pens	Vials	Pens	Vials	Pens	Vials	Pens	Vials
Allentown	$1,403	$1,237	$1,334	$1,534	$1,334	$1,519	$852	$821
Harrisburg	1,473	1,367	1,369	1,245	1,369	1,262	1,595	954
Reading	1,221	1,299	1,360	1,256	1,360	1,286	1,547	880
Scranton	1,343	1,365	1,435	1,616	1,435	1,593	1,592	1,078
Pennsylvania	1,311	1,243	1,327	1,324	1,327	1,382	1,310	826
NATION	**$1,334**	**$1,256**	**$1,303**	**$1,333**	**$1,303**	**$1,413**	**$1,164**	**$782**

ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT USING VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES[1]

MARKET	Any Non-Insulin Antidiabetic Product		DPP-4 Inhibitors		GLP-1 Receptor Agonists		Insulin Sensitizing Agents	
	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	$803	$860	$1,310	$1,513	$1,647	$1,950	$1,529	$1,613
Harrisburg	683	662	1,389	1,544	1,726	1,773	1,668	1,791
Reading	691	700	1,376	1,536	1,801	1,982	1,565	1,768
Scranton	750	766	1,480	1,643	1,811	2,108	1,681	1,799
Pennsylvania	701	710	1,389	1,572	1,696	1,960	1,647	1,759
NATION	**$721**	**$745**	**$1,296**	**$1,525**	**$1,681**	**$1,964**	**$1,533**	**$1,650**

Data source: IMS Health © 2013

Dipeptidyl Peptidase 4 (DPP-4) Inhibitors
Inhibit DPP-4 enzymes and slow inactivation of incretin hormones, helping to regulate glucose homeostasis through increased insulin release and decreased glucagon levels.

GLP-1 Receptor Agonists
Used in conjunction with oral agents; increase glucose-dependent insulin secretion and pancreatic beta-cell sensitivity, reduce glucagon production, slow rate of absorption of glucose in the digestive tract by slowing gastric emptying, and suppress appetite.

Insulin Sensitizing Agents
Increase insulin sensitivity by improving 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.

PAYMENTS FOR INSULIN ARE LOW FOR COMMERCIALLY INSURED PA TYPE 2 PATIENTS

Commercially insured Type 2 diabetes patients in four of the five featured Pennsylvania markets (Scranton excepted) paid less to fill prescriptions for insulin products in 2012 than did their national peers. The reverse was true for Pennsylvania Type 2 diabetes patients covered by either Medicare or Medicaid in 2012.

PA TYPE 2 PATIENTS SEE RISE IN NON-INSULIN RX PAYMENTS

Type 2 diabetes patients in Allentown, Reading, Scranton and across Pennsylvania paid more to fill their prescriptions for a non-insulin antidiabetic product in 2012 than they did in 2011. In Allentown, payments for such products grew by 7.1% over this time.

[1] Figures reflect the per-patient yearly payments for Type 2 diabetes patients receiving a particular type of therapy. Prescription costs are based on the total amount paid for each prescription (insurance + patient amounts paid).

[2] Includes HMOs, PPOs, point-of-service plans and exclusive provider organizations.

PERCENTAGE OF TYPE 2 DIABETES PATIENTS USING VARIOUS THERAPIES

	Use of 1 Product		Use of 2 Products						Use of 3 Products							
	Use of 1 Non-Insulin Product		Use of 2 Non-Insulin Products		Use of 2 Products: 1 Insulin, 1 Non-Insulin		Use of 2 Insulin Products		Use of 3 Non-Insulin Products		Use of 3 Products: 1 Insulin, 2 Non-Insulins		Use of 3 Products: 2 Insulin, 1 Non-Insulin		Use of 3 Insulin Products	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	35.0%	36.2%	18.9%	17.7%	5.8%	6.4%	7.1%	7.5%	7.3%	7.1%	6.5%	5.9%	6.3%	6.5%	4.0%	3.3%
Harrisburg	38.5	37.8	20.9	19.9	4.7	5.1	7.0	8.4	7.5	6.9	5.0	4.9	5.8	6.7	3.1	3.1
Reading	37.6	38.3	20.7	20.7	5.2	5.2	7.7	7.9	7.5	6.5	5.5	4.9	5.9	6.7	2.7	3.2
Scranton	38.0	37.8	20.7	20.5	4.5	4.1	8.0	8.2	8.2	7.8	4.8	4.7	5.4	6.6	3.1	3.1
Pennsylvania	37.9	38.5	20.8	20.5	5.2	5.4	7.2	7.4	7.6	6.7	5.2	5.3	5.7	6.1	3.3	3.3
NATION	**38.4%**	**39.4%**	**20.3%**	**19.7%**	**5.2%**	**5.4%**	**6.7%**	**6.9%**	**8.1%**	**7.0%**	**5.4%**	**5.4%**	**5.8%**	**6.1%**	**3.1%**	**3.2%**

ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT USING VARIOUS THERAPIES[1]

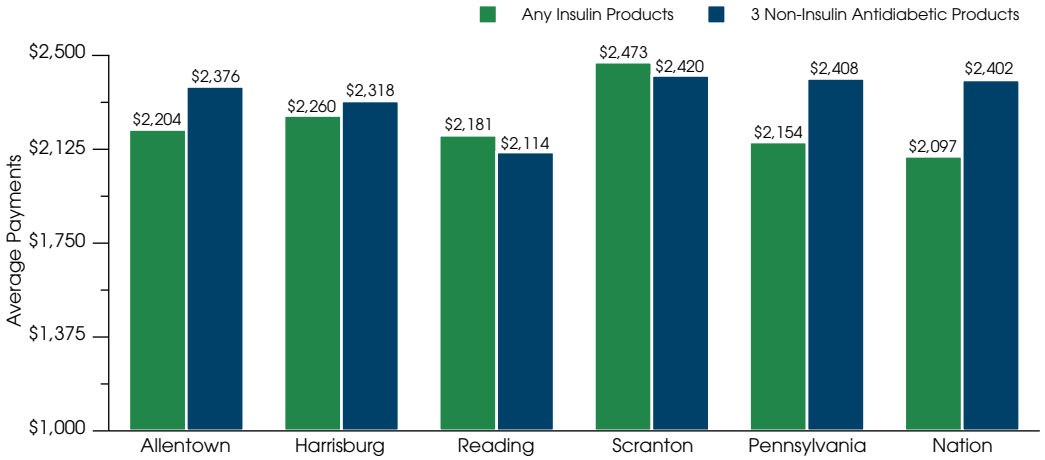
	Use of 1 Product		Use of 2 Products						Use of 3 Products							
	Use of 1 Non-Insulin Product		Use of 2 Non-Insulin Products		Use of 2 Products: 1 Insulin, 1 Non-Insulin		Use of 2 Insulin Products		Use of 3 Non-Insulin Products		Use of 3 Products: 1 Insulin, 2 Non-Insulins		Use of 3 Products: 2 Insulin, 1 Non-Insulin		Use of 3 Insulin Products	
MARKET	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Allentown	$303	$359	$863	$1,014	$2,040	$2,229	$2,240	$2,789	$2,327	$2,376	$2,737	$3,075	$3,440	$3,945	$3,608	$4,234
Harrisburg	262	260	753	728	1,660	1,700	2,647	2,986	2,381	2,318	2,371	2,617	3,203	4,023	3,290	3,612
Reading	270	284	855	943	1,677	1,884	2,416	2,789	2,144	2,114	2,397	2,718	3,001	3,451	3,238	3,673
Scranton	256	259	878	897	1,912	2,010	2,637	3,260	2,321	2,420	2,570	2,863	3,503	3,997	3,481	3,706
Pennsylvania	247	257	798	832	1,670	1,871	2,387	2,830	2,303	2,408	2,461	2,751	3,154	3,619	3,126	3,709
NATION	**$272**	**$287**	**$858**	**$912**	**$1,558**	**$1,838**	**$2,286**	**$2,750**	**$2,220**	**$2,402**	**$2,438**	**$2,772**	**$3,085**	**$3,641**	**$3,042**	**$3,601**

INSULIN PRODUCT PAYMENTS ARE LOWER THAN THREE NON-INSULINS FOR PA TYPE 2s

Patients with Type 2 diabetes in Allentown, Harrisburg and Pennsylvania reported lower payments for insulin prescriptions in 2012 than such patients who received three non-insulin antidiabetic therapies. Across Pennsylvania, this gap reached a notable 11.8%: $2,154 vs. $2,408 in 2012.

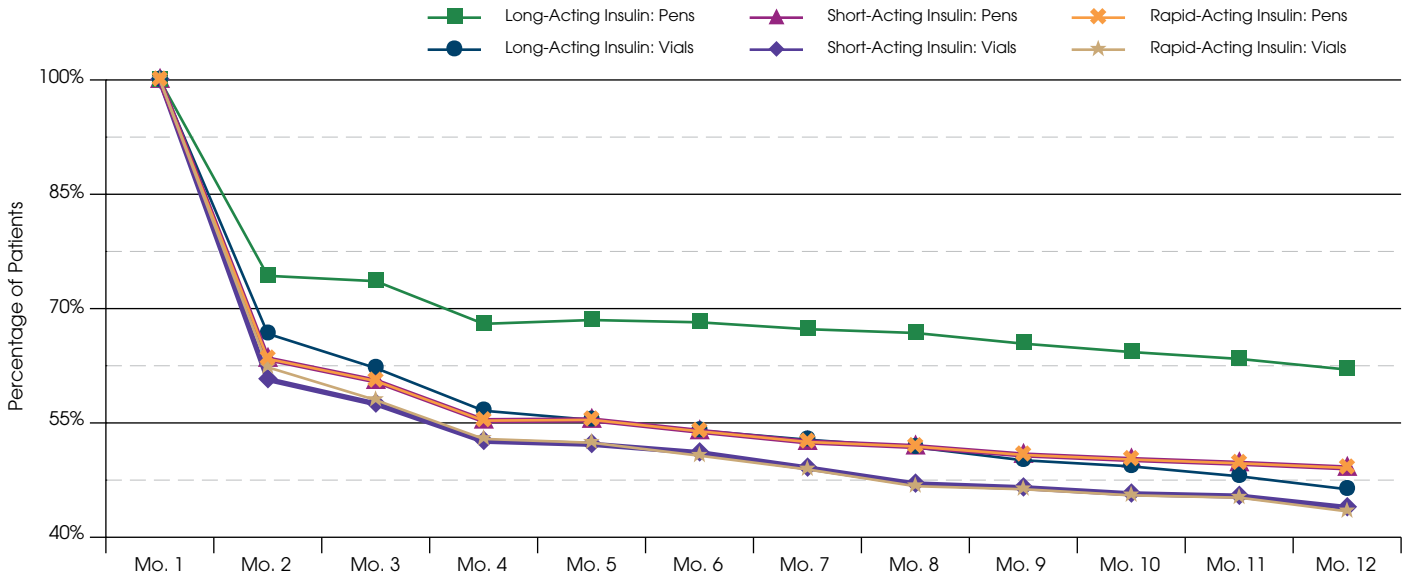
[1] Figures reflect the per-patient yearly costs for Type 2 diabetes patients receiving a particular type of therapy.

ANNUAL PAYMENTS PER TYPE 2 DIABETES PATIENT, BY TYPE OF THERAPY, 2012[1]

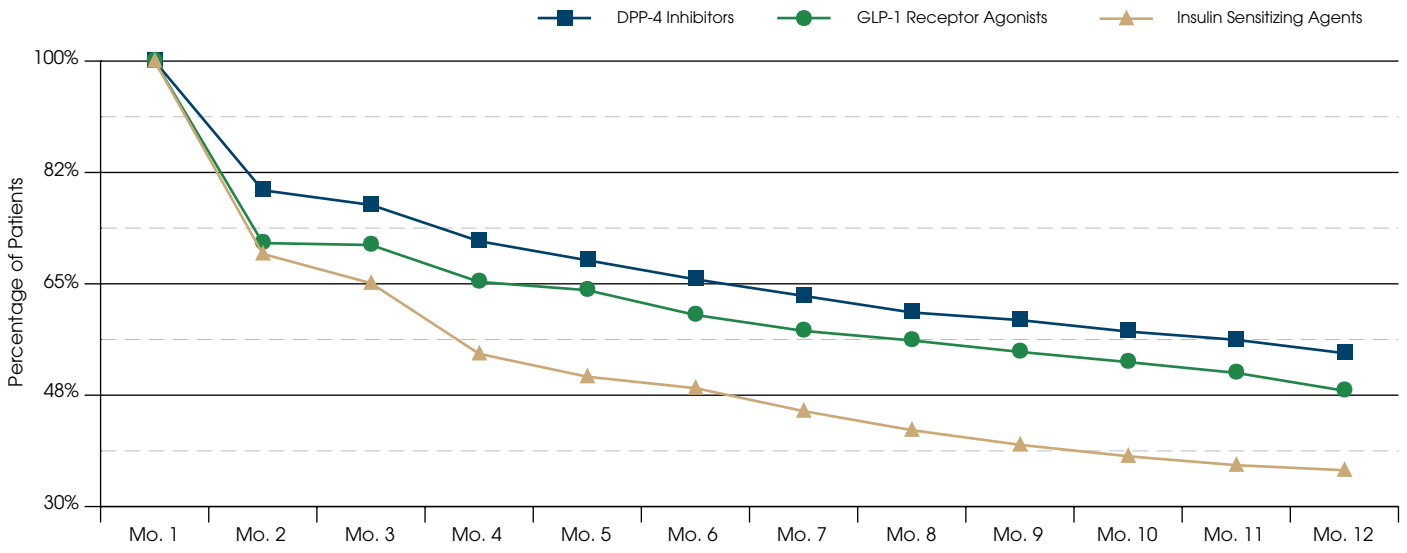


Data source: IMS Health © 2013

PERSISTENCY: TYPE 2 DIABETES PATIENTS USING VARIOUS INSULIN PRODUCTS, PENNSYLVANIA, 2012



PERSISTENCY: TYPE 2 DIABETES PATIENTS USING VARIOUS NON-INSULIN ANTIDIABETIC PRODUCTS, PENNSYLVANIA, 2012



Data source: IMS Health © 2013

NOTE: "Persistency" measures whether patients maintain their prescribed therapy. It is calculated by identifying patients who filled a prescription for the reported drug class in the four months prior to the reported year, and then tracking prescription fills for those same patients in each of the months in the current reported year. If patients fill a prescription in a month, they are reported among the patients who have continued or restarted on therapy. Continued means that the patient has filled the drug group in each of the preceding months. Restarted means that the patient did not fill in one or more of the preceding months. Continuing and restarting patients are reported together. All patients tracked are "New-to-Brand," meaning they have not filled a prescription for their cohort product during the six months prior to initiation of therapy on that product.

DIABETES AFFECTS LARGE PORTIONS OF PRIMARY CV CASES IN PENNSYLVANIA

Notable percentages of patients admitted to Pennsylvania hospitals being treated for any of the six featured primary cardiovascular diagnoses had diabetes mellitus as a secondary diagnosis in 2011. In fact, nearly 20% of patients admitted to Pennsylvania hospitals with a primary diagnosis of hypertension likewise had a secondary diagnosis of diabetes in 2011.

ONE IN 10 PA PATIENTS WITH A PRIMARY DIABETES DX GETS VENOUS CATHETERIZATION

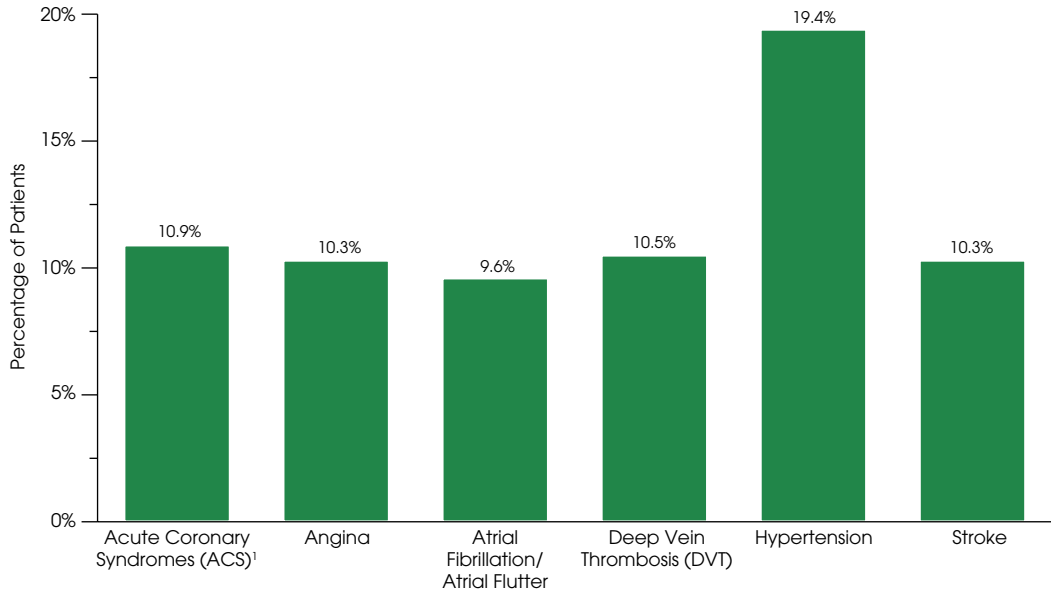
Among patients admitted to Pennsylvania hospitals with a primary diagnosis of diabetes mellitus, 10.4% underwent a venous catheterization procedure in 2011. Nearly 6% underwent hemodialysis that year, while 3.1% received a transfusion of packed cells.

[1] Acute coronary syndromes (ACS) comprises three diseases that involve the coronary arteries: ST-elevation myocardial infarction, non-ST-elevation myocardial infarction, or unstable angina.

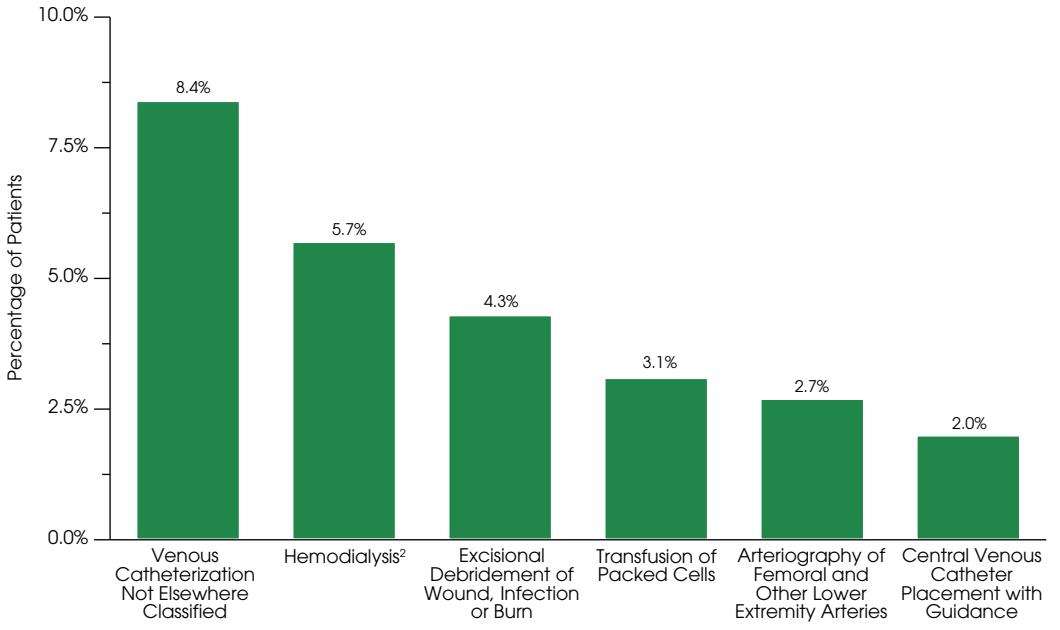
[2] Hemodialysis is a procedure for removing metabolic waste products or toxic substances from the bloodstream by dialysis.

NOTE: Secondary diagnoses and procedures data come from IMS Health's *Hospital Procedure/Diagnoses (HPD)* database and are current as of calendar year 2011.

PERCENTAGE OF PATIENTS WITH A SECONDARY DIAGNOSIS OF DIABETES MELLITUS, BY SIX PRIMARY CARDIOVASCULAR DIAGNOSES, PENNSYLVANIA, 2011



MOST COMMON PROCEDURES FOR PATIENTS WITH A PRIMARY DIAGNOSIS OF DIABETES MELLITUS, PENNSYLVANIA, 2011

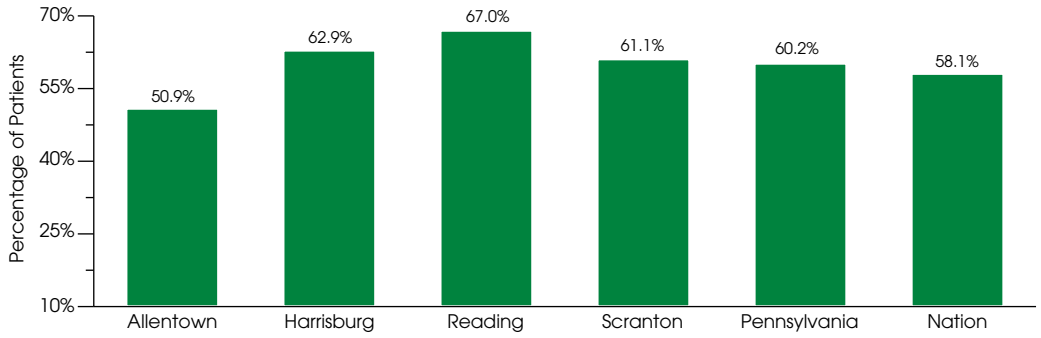


Data source: IMS Health © 2013

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY TYPE OF COMPLICATION, 2012[1]

MARKET	Cardiovascular Disease	Neuropathy	Nephropathy	Retinopathy	Hypoglycemia
Allentown	50.9%	27.6%	26.4%	30.5%	5.3%
Harrisburg	62.9	30.2	23.6	17.2	6.2
Reading	67.0	25.2	22.8	24.6	9.0
Scranton	61.1	26.8	24.9	34.4	5.2
Pennsylvania	60.2	31.4	26.1	20.9	7.8
NATION	**58.1%**	**31.3%**	**29.6%**	**18.5%**	**7.3%**

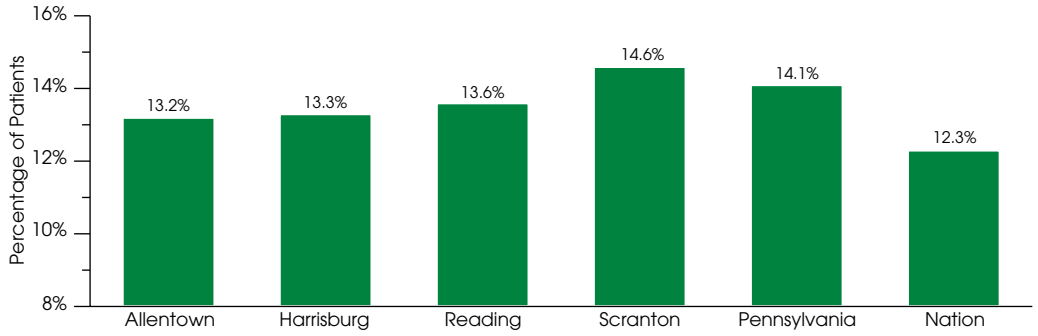
PERCENTAGE OF TYPE 2 DIABETES PATIENTS WITH CARDIOVASCULAR DISEASE, 2012[1]



PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY TYPE OF COMORBIDITY, 2012[2]

MARKET	Hypertension	Hyperlipidemia	Congestive Heart Failure	Obesity	Dysmetabolic Syndrome
Allentown	78.8%	58.3%	13.2%	13.7%	0.5%
Harrisburg	77.4	63.0	13.3	13.5	0.4
Reading	83.7	70.9	13.6	12.7	1.7
Scranton	81.1	67.1	14.6	17.2	0.4
Pennsylvania	79.3	63.4	14.1	13.6	0.9
NATION	**79.6%**	**63.3%**	**12.3%**	**12.8%**	**0.8%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS WITH CONGESTIVE HEART FAILURE, 2011[2]



Data source: IMS Health © 2013

OVER 60% OF PA TYPE 2 DIABETES PATIENTS HAVE A CV DISEASE COMPLICATION

In 2012, Pennsylvania Type 2 diabetes patients suffered from a complication of cardiovascular disease at a higher rate than their national peers: 60.2% vs. 58.1%. This portion was even higher in three of the four Pennsylvania local markets, especially Reading, where more than two out of three (67.0%) Type 2 diabetes patients had cardiovascular disease as a complication in 2012.

CHF AFFECTS PA TYPE 2 PATIENTS AT A GREATER RATE THAN THE U.S. AVERAGE

In each of the five Pennsylvania markets shown, Type 2 diabetes patients were more prone than similar patients nationally to have congestive heart failure (CHF) as a comorbidity. In Scranton, where this portion was highest, by Pennsylvania market, 14.6% of Type 2 diabetes patients had CHF in 2012; the U.S. average was 12.3%.

[1] 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, cardiovascular disease, hypoglycemia, nephropathy, neuropathy and retinopathy.

[2] 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 may include, but are not limited to, congestive heart failure, dysmetabolic syndrome, hyperlipidemia, hypertension and obesity.

IP FACILITY CHARGES RISE FOR PA TYPE 2 DIABETES PATIENTS WITH CV DISEASE

Between 2011 and 2012, inpatient facility charges generated in the care of Pennsylvania Type 2 diabetes patients with cardiovascular disease grew by 4.1%, to $50,711 from $48,695. Although such charges across the commonwealth fell shy of the national benchmark, Type 2 diabetes patients in Allentown ($64,409) recorded inpatient facility charges that were 9.4% higher than the national mark in 2012.

OP FACILITY CHARGES FOR PA TYPE 2 DIABETES PATIENTS GROW BY MORE THAN 9%

Outpatient facility charges for Type 2 diabetes patients rose 9.7% across the Commonwealth of Pennsylvania between 2011 ($11,576) and 2012 ($12,703), but still fell shy of the national average of $13,484 in 2012. Of the five Pennsylvania markets shown, only Scranton recorded above-average annual outpatient facility charges for Type 2 diabetes patients in 2012, at $16,194.

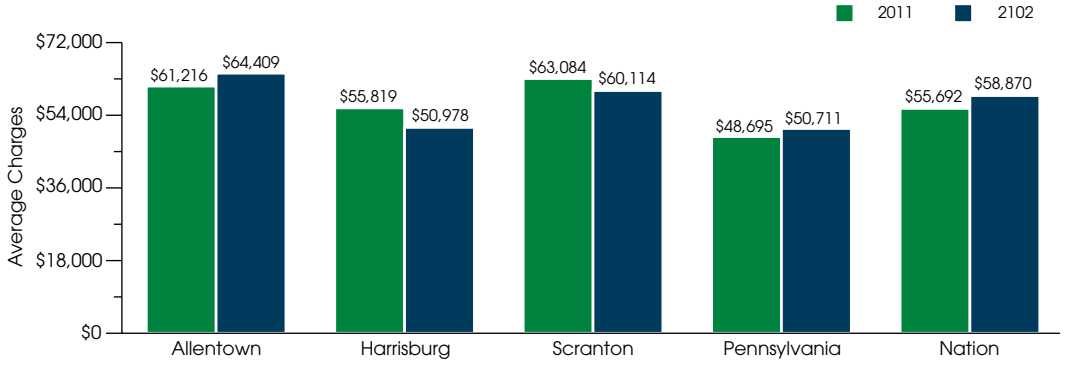
[1] Data reflect the charges generated for Type 2 diabetes patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

NOTE: Some facility charge data were unavailable for Reading.

INPATIENT CHARGES[1] PER YEAR FOR TYPE 2 DIABETES PATIENTS WITH A COMPLICATION OF CARDIOVASCULAR DISEASE

MARKET	2011	2012
Allentown	$61,216	$64,409
Harrisburg	55,819	50,978
Scranton	63,084	60,114
Pennsylvania	48,695	50,711
NATION	**$55,692**	**$58,870**

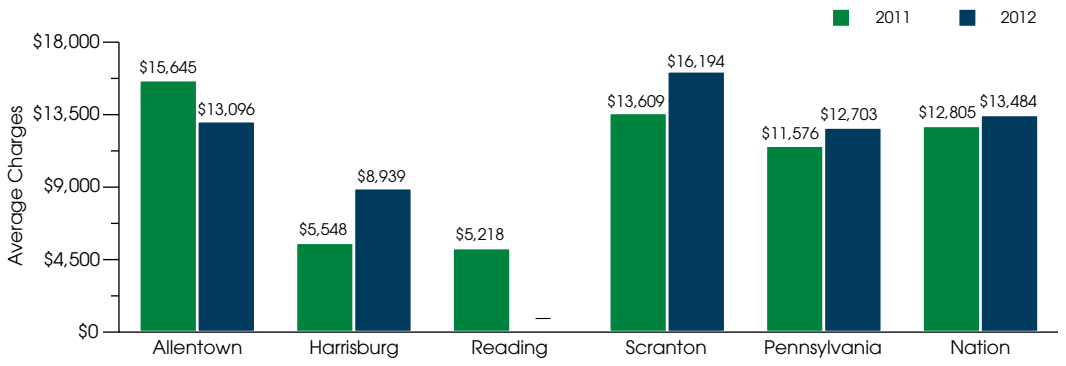
INPATIENT CHARGES[1] PER YEAR FOR TYPE 2 DIABETES PATIENTS WITH A COMPLICATION OF CARDIOVASCULAR DISEASE



OUTPATIENT CHARGES[1] PER YEAR FOR TYPE 2 DIABETES PATIENTS WITH A COMPLICATION OF CARDIOVASCULAR DISEASE

MARKET	2011	2012
Allentown	$15,645	$13,096
Harrisburg	5,548	8,939
Reading	5,218	—
Scranton	13,609	16,194
Pennsylvania	11,576	12,703
NATION	**$12,805**	**$13,484**

OUTPATIENT CHARGES[1] PER YEAR FOR TYPE 2 DIABETES PATIENTS WITH A COMPLICATION OF CARDIOVASCULAR DISEASE

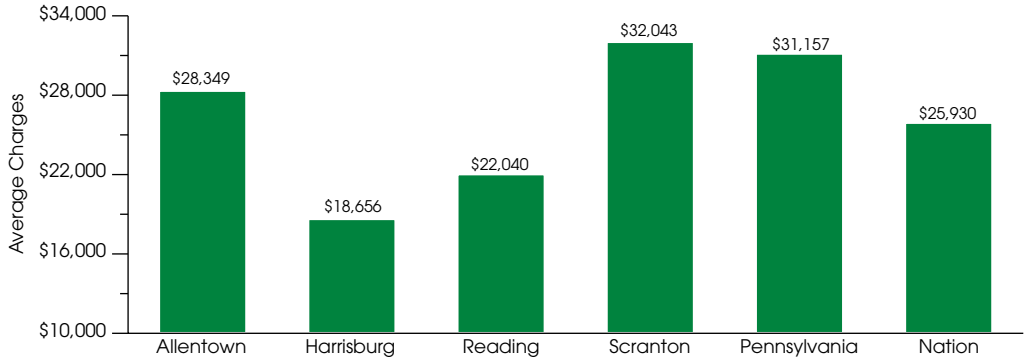


Data source: IMS Health © 2013

AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER INPATIENT ACUTE CORONARY SYNDROMES CASE, 2011

MARKET	Average Length of Stay	Average Charges[1]
Allentown	1.8	$28,349
Harrisburg	1.7	18,656
Reading	3.0	22,040
Scranton	2.1	32,043
Pennsylvania	2.0	31,157
NATION	**1.9**	**$25,930**

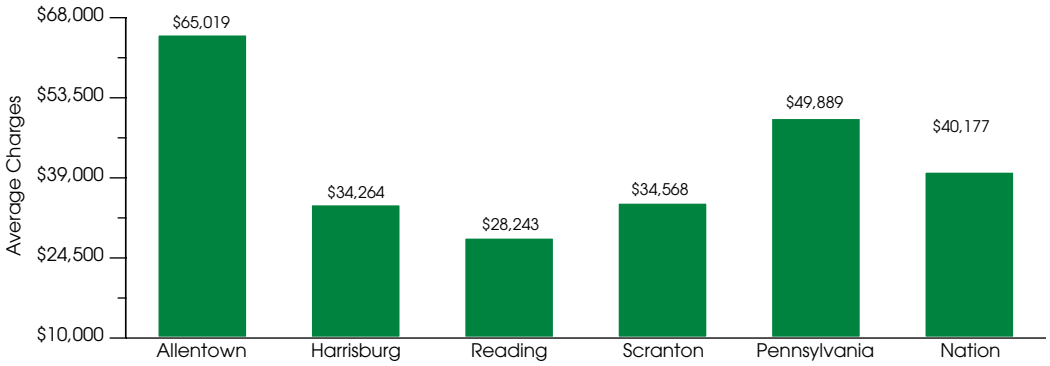
CHARGES PER INPATIENT ACUTE CORONARY SYNDROMES CASE, 2011[1]



AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER INPATIENT STROKE CASE, 2011

MARKET	Average Length of Stay	Average Charges[1]
Allentown	4.0	$65,019
Harrisburg	4.3	34,264
Reading	3.8	28,243
Scranton	4.1	34,568
Pennsylvania	4.2	49,889
NATION	**4.3**	**$40,177**

CHARGES PER INPATIENT ACUTE STROKE CASE, 2011[1]



Data source: IMS Health © 2013

ALOS, CHARGES TOP NATIONAL MEANS FOR INPATIENT ACS CASES IN PA

In 2011, average length of stay (ALOS) per Pennsylvania acute coronary syndromes (ACS) inpatient case exceeded the national benchmark: 2.0 days vs. 1.9. Similarly, charges for such cases topped the U.S. average in Allentown ($28,349), Scranton ($32,043) and Pennsylvania ($31,157).

DESPITE LOW ALOS, CHARGES FOR IP STROKE CASES IN PA STILL SURPASS U.S. AVERAGE

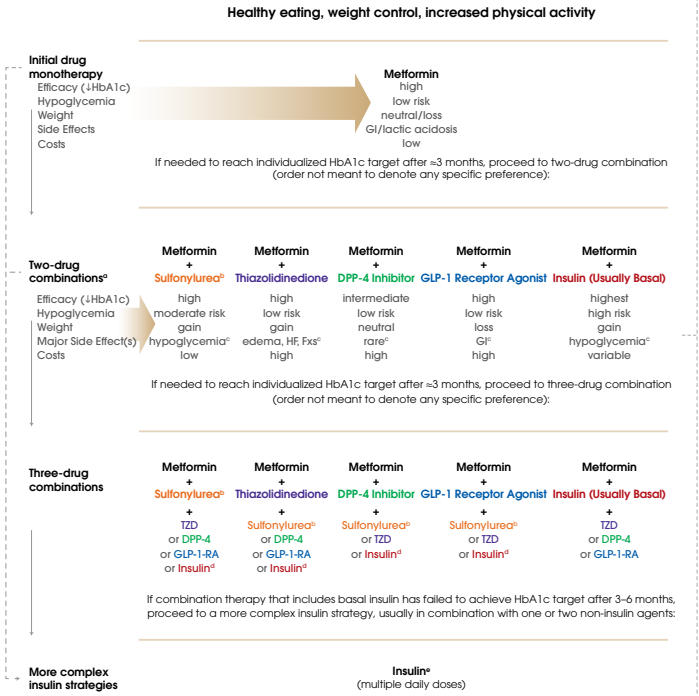
Hospitals in four of the five Pennsylvania markets (Harrisburg excepted) recorded ALOS for inpatient stroke cases that were below the corresponding U.S. mark of 4.3 days in 2011. However, charges for inpatient stroke cases still far exceeded the national average of $40,177 in Allentown ($65,019) and across the Commonwealth of Pennsylvania ($49,889).

[1] Data reflect the charges generated for ACS/stroke patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

NOTE: Average length of stay (ALOS) and hospital inpatient charge data come from IMS Health's *Hospital Procedure/Diagnosis (HPD)* database and are current as of end-of-year 2011.

Lehigh Valley Business Coalition on Healthcare
60 West Broad St., Ste. 105
Bethlehem, Pennsylvania 18018

Adapted from the 2012 ADA/EASD Position Statement



Inzucchi, S. E., et al. (2012). Management of Hyperglycemia in Type 2 Diabetes: A Patient-Centered Approach: Position Statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care*. Retrieved from http://care.diabetesjournals.org/content/early/2012/04/17/dc12-0413.full.pdf+html

Antihyperglycemic therapy in Type 2 diabetes: general recommendations. Moving from the top to the bottom of the figure, potential sequences of antihyperglycemic therapy. In most patients, begin with lifestyle changes; metformin monotherapy is added at, or soon after, diagnosis (unless there are explicit contraindications). If the HbA1c target is not achieved after approximately 3 months, consider one of the five treatment options combined with metformin: a sulfonylurea, TZD, DPP-4 inhibitor, GLP-1 receptor agonist, or basal insulin. (The order in the chart is determined by historical introduction and route of administration and is not meant to denote any specific preference.) Choice is based on patient and drug characteristics, with the overriding goal of improving glycemic control while minimizing side effects. Shared decision making with the patient may help in the selection of therapeutic options. The figure displays drugs commonly used both in the U.S. and/or Europe. Rapid-acting secretagogues (meglitinides) may be used in place of sulfonylureas. Other drugs not shown (α-glucosidase inhibitors, colesevelam, dopamine agonists, pramlintide) may be used where available in selected patients but have modest efficacy and/or limiting side effects. In patients intolerant of, or with contraindications for, metformin, select initial drug from other classes depicted and proceed accordingly. In this circumstance, while published trials are generally lacking, it is reasonable to consider three-drug combinations other than metformin. Insulin is likely to be more effective than most other agents as a third-line therapy, especially when HbA1c is very high (e.g., ≥9.0%). The therapeutic regimen should include some basal insulin before moving to more complex insulin strategies. Dashed arrow line on the left-hand side of the figure denotes the option of a more rapid progression from a two-drug combination directly to multiple daily insulin doses, in those patients with severe hyperglycemia (e.g., HbA1c ≥10.0–12.0%).

[a] Consider beginning at this stage in patients with very high HbA1c (e.g., ≥9.0%).
[b] Consider rapid-acting, non-sulfonylurea secretagogues (meglitinides) in patients with irregular meal schedules or who develop late postprandial hypoglycemia on sulfonylureas.
[c] See Table 1 of the Position Statement for additional potential adverse effects and risks.
[d] Usually a basal insulin in combination with non-insulin agents.
[e] Certain non-insulin agents may be continued with insulin. Consider beginning at this stage if patient presents with severe hyperglycemia (≥16.7–19.4 mmol/L [≥300–350 mg/dL]; HbA1c ≥10.0–12.0%) with or without catabolic features (weight loss, ketosis, etc.).

Key: DPP-4=DPP-4 inhibitor; Fxs=bone fractures; GI=gastrointestinal; GLP-1-RA=GLP-1 receptor agonist; HF=heart failure; TZD=thiazolidinedione.

LVBCH TYPE 2 DIABETES REPORT 2013

The Lehigh Valley Business Coalition on Healthcare (LVBCH), in conjunction with Sanofi, is pleased to bring you the **LVBCH Type 2 Diabetes Report.**

The report features key national, state and local patient-level, Type 2 diabetes (and cardiovascular) data from the Sanofi **Managed Care Digest Series®**.

- Demographics
- Utilization
- Hospital and Professional Charges
- Pharmacotherapy
- Persistency