Broward County Health Plan

CHAPTER VII: THE HEALTH DATA WAREHOUSE

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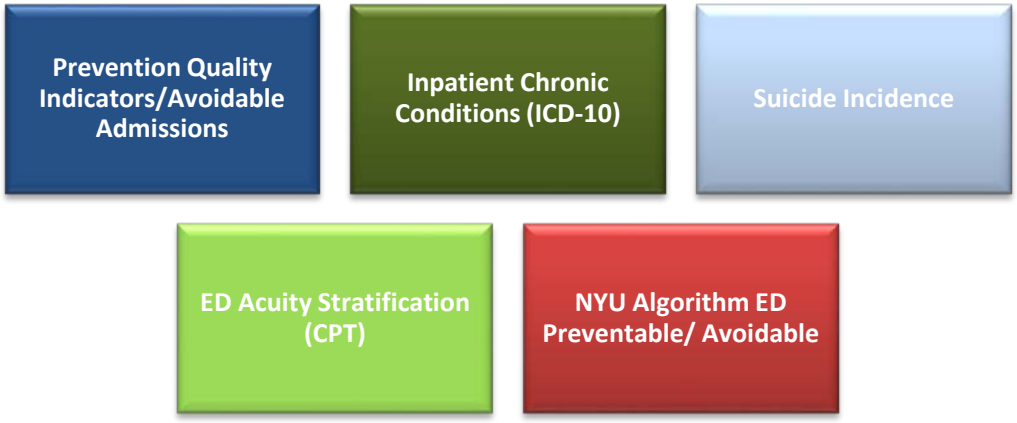
INTRODUCTION

BRHPC developed the Health Data Warehouse, a web-based data warehouse and analytical engine with the following five query functions:

Figure 1. Inpatient Versus Emergency Department Data Queries



ICD-9-CM to ICD-10-CM TRANSITION

According to the Centers for Disease Control and Prevention, the International Classification of Diseases (ICD) codes are the, "cornerstone of classifying diseases, injuries, health encounters and inpatient procedures in morbidity settings." ICD coding is utilized for the analysis of Prevention Quality Indicators, Chronic Conditions and Suicide Incidence modules. In October 2015, the World Health Organization (WHO) published the 10th revision of ICDs.

After being in use for thirty-six years, the change from ICD-9 to ICD-10 occurred in order to accommodate the healthcare needs of the future. The principal changes are:

- 19 times more procedure codes
- 5 times more diagnosis codes
- Alphanumeric values
- The ability to identify etiology, anatomic site, severity, and encounter
- The ability to add new procedures and diseases as they emerge
- The ability to code multiple diagnoses in one code

PREVENTION QUALITY INDICATORS

Prevention Quality Indicators (PQIs) are a set of measures used with hospital inpatient-**adult only** discharge data to identify "ambulatory care sensitive conditions" (ACSCs) in **adult** populations. ACSCs are conditions for which good outpatient care can potentially prevent the need for hospitalization, and early intervention can prevent complications and disease severity. PQIs consist of the 14 ACSCs, measured as hospital admission rates. PQI data is used to identify geographic high incidence areas and develop targeted community-based interventions to reduce these unnecessary hospitalizations.

Broward County's highest PQI observation rates have been for perforated appendicitis for the past 3 years (Table 1). When looking at the number of admissions, congestive heart failure was the highest (4,535) while

angina was the lowest (97). Despite having moderate admission numbers (1,283), low birth weight had the highest charges in 2015 at $256,733,138 (Figure 2). Of all payer sources, Medicare had the highest proportion of payments for the observed PQIs (Figure 3).

Table 1. Broward PQI Observation Rate per 100,000- 2013-2015			
	2013	2014	2015
01-Diabetes/short-term	65	64.3	63.4
02-Perf. appendicitis	30,091.7	29,641	31,704.8
03-Diabetes/long-term	156.2	147.2	139.3
05-Chronic obstructive PD	215.9	198.9	214.7
07-Hypertension	84.6	83.9	89.8
08-Congestive HF	326.1	281.6	308.5
09-Low birth weight	6,968.7	7,217.5	6,848.9
10-Dehydration	40.7	35.2	61.6
11-Bacterial pneumonia	240.9	224.5	213.5
12-Urinary infections	197.9	198.1	196.6
13-Angina w/o procedure	10.8	12.6	6.6
14-Uncontrolled diabetes	30.4	25.8	35.4
15-Adult asthma	146.6	131.1	109.7
16-Diabetes/LE amputations	36.9	35.3	33.5
Red = Increase from previous year			
Source: Broward Regional Health Planning Council			

Figure 2. PQI Admissions vs. Charges, 2015

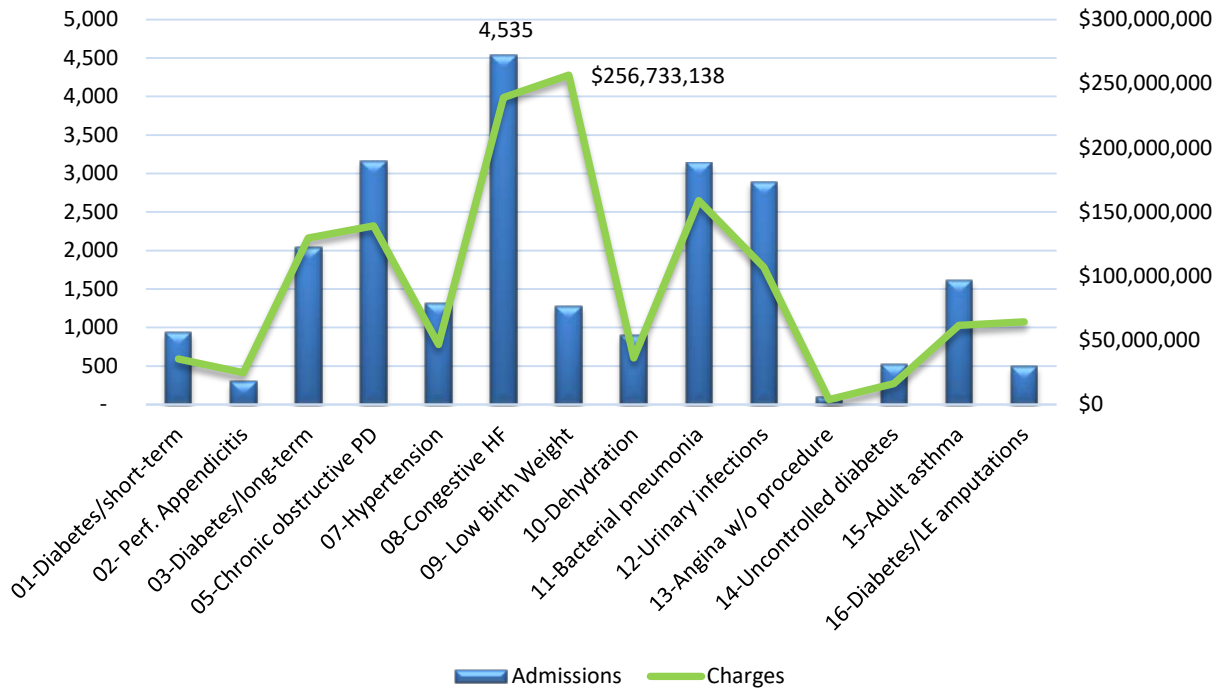
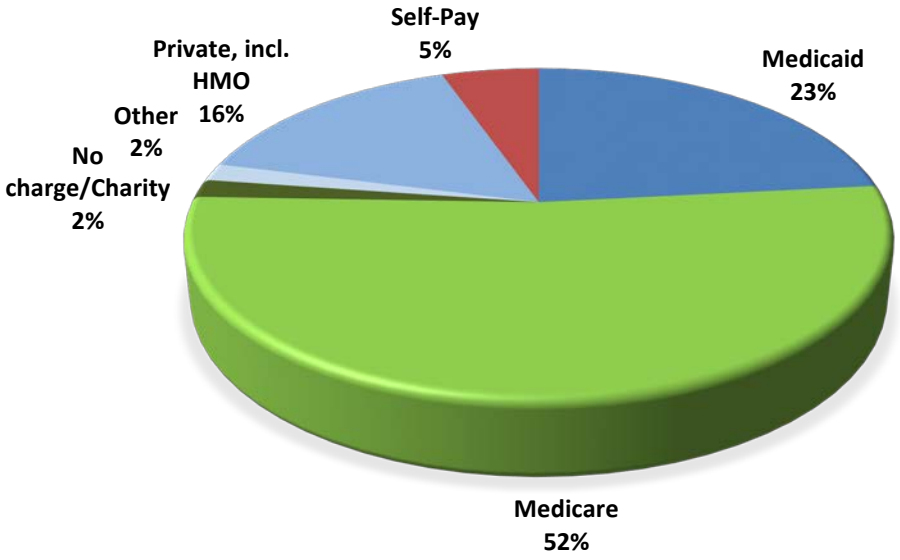


Figure 3. PQI Charges by Payer Source



PEDIATRIC QUALITY INDICATORS

Pediatric Quality Indicators (PDIs) are a set of measures used with hospital inpatient-**pediatric only** discharge data to identify "ambulatory care sensitive conditions" (ACSCs) in **pediatric** populations. PDIs consist of the five ACSCs, measured as hospital admission rates. They're also a set of measure used with hospital inpatient discharge data, specific to pediatric patients.

As with the PQIs among adults, perforated appendicitis had the highest PDI observation rate for the population between 1 to 17 years of age (Table 2). Despite having the highest number of admissions and charges (Figure 4), asthma was the only indicator for which the observation rate decreased from the previous year (153.2 to 119.8). Medicaid had the largest proportion of payments of the different payer sources (Figure 5).

Table 2. Broward PDI Observation Rate per 100,000- 2013-2015

	2013	2014	2015
14-Asthma	189	153.2	119.8
15-Diabetes Short-term	29.9	25.5	34.3
16-Gastroenteritis	52.6	39.4	40.1
17-Perforated Appendix	32,057.4	33,333.3	39,351.2
18-Urinary Tract Infection	21.4	18.8	20.3
Red = Increase from previous year			
Source: Broward Regional Health Planning Council			

Figure 4. PDI Admissions vs. Charges

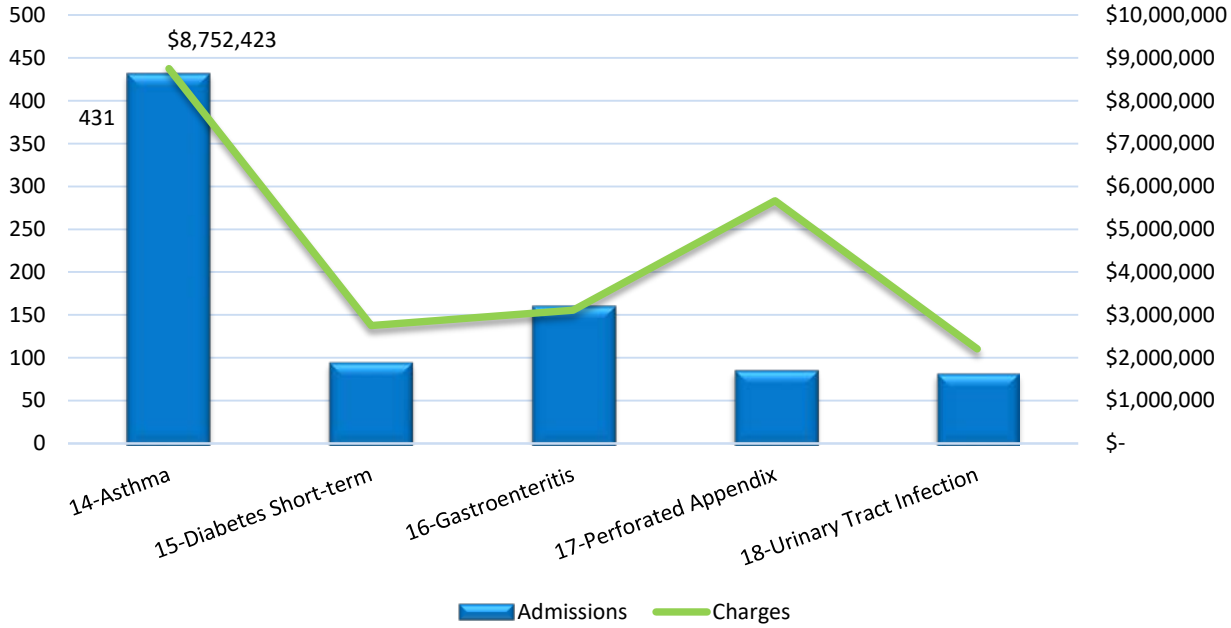
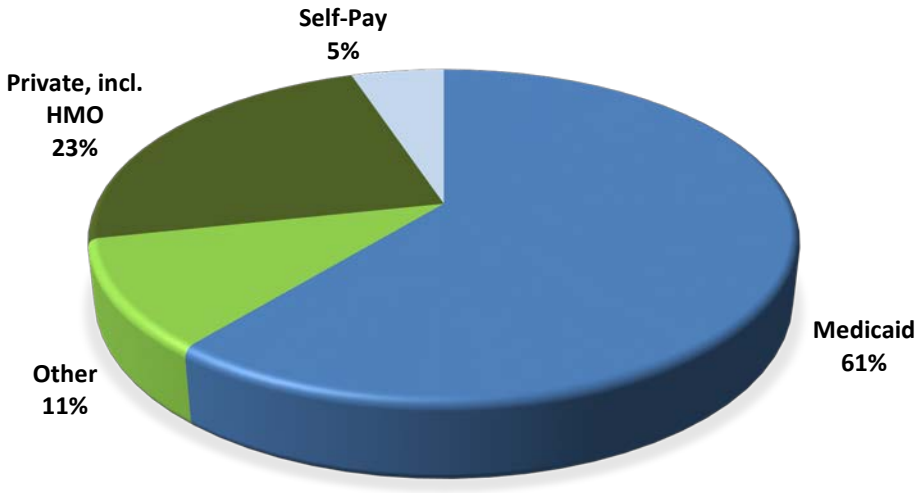


Figure 5. PDI Charges by Payer Source



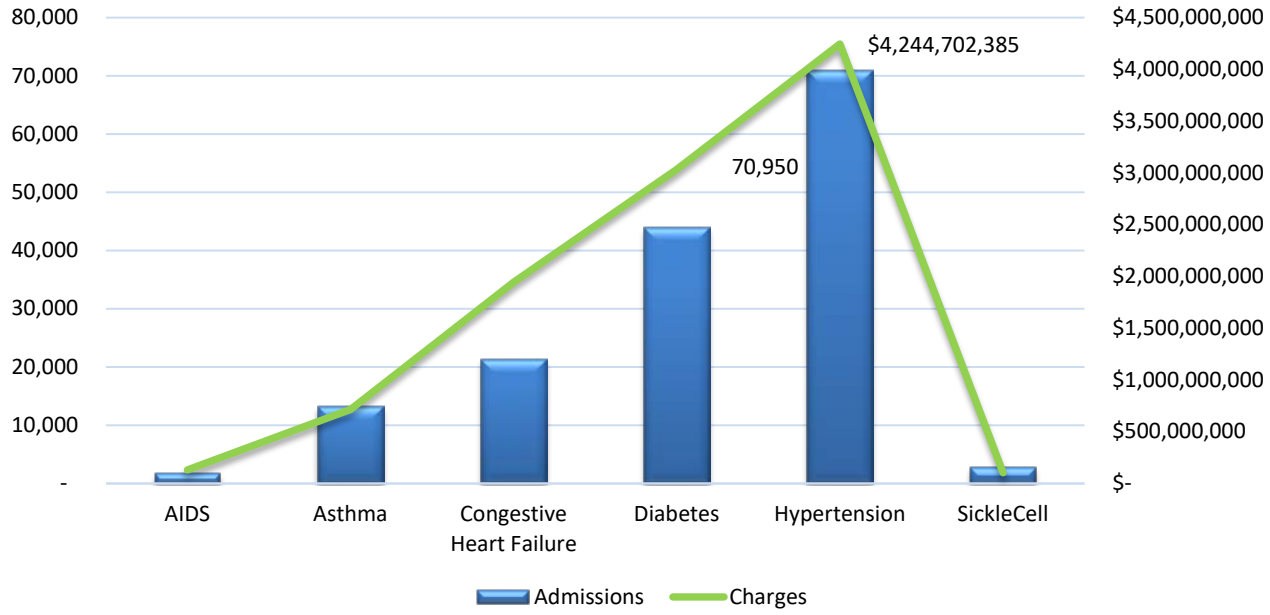
CHRONIC DISEASE (ICD-10-CM) HOSPITALIZATIONS

BRHPC's web-based analytical engine allows public access to utilization by using the 10th revision of the International Classification of Diseases (ICD-10-CM) chronic disease codes for AIDS, Asthma, Congestive Heart Failure (CHF), Hypertension and Sickle Cell.

The Chronic Condition Indicator tool, developed as part of the Healthcare Cost and Utilization Project (HCUP), stratifies chronic diseases based on ICD-10-CM diagnosis codes. A chronic condition is a condition lasting 12 months or longer and meeting one or both of the following tests: (a) the condition places limitations on self-care, independent living and social interactions; (b) the condition results in the need for ongoing intervention with medical products, services and special equipment. The identification of chronic conditions is based on all five-digit ICD-10-CM diagnosis codes, excluding external cause of injury codes (E codes). More information regarding the HCUP tools used in this report may be obtained at http://www.hcup-us.ahrq.gov/tools_software.jsp.

Figure 6 displays that hypertension accounts for both the highest number of admissions (70,950) and charges ($4,244,702,385) out of the six observed chronic conditions.

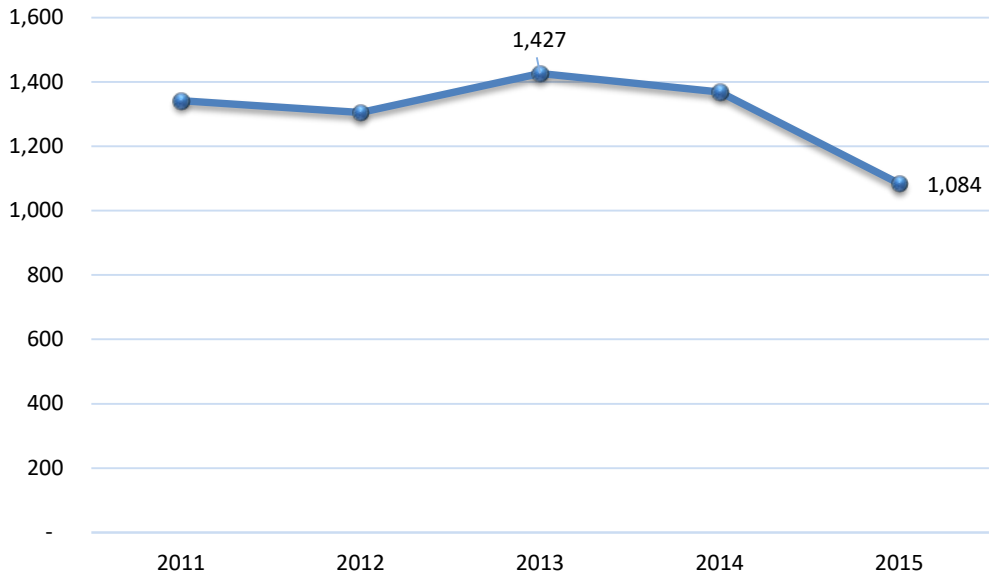
Figure 6. Chronic Conditions Admissions vs. Charges, 2015



SELF-INFLICTED INJURY INCIDENCE

The Health Data Warehouse includes suicide and self-inflicted injury incidence data by E-code. The cases have been pulled from the AHCA Inpatient database and are pulled when they contain any of the E-codes related to suicide or self-inflicted injury for any of the E-code fields. E-codes or "external cause of injury" codes are diagnostic categories which differ from nature of injury codes (N-codes) in providing data on the cause, rather than type, of injury. For example, a traumatic head injury, coded with an N-code, could result from a car accident or gunshot wound, both coded with E-codes. Additionally, E-codes distinguish self-inflicted injuries, essential information for suicide surveillance.

Figure 7. Self-Inflicted Injuries, 2015



AMBULATORY ED VISIT STRATIFICATIONS

Hospital Emergency Departments (ED) are intended to provide urgent and lifesaving care; however, EDs have increasingly been utilized as a safety net provider by the uninsured, underinsured and persons with limited or no primary care services. This is likely due to federal law requiring hospital EDs to accept, evaluate and stabilize all those who present for care, regardless of their ability to pay. Consequently, hospital EDs are providing increasing levels of primary care services to millions of Americans. BRHPC's database provides two methods for analyzing ambulatory emergency department visits (visits resulting in inpatient admissions): 1)Acuity/Severity and 2) New York University (NYU) Algorithm.

AMBULATORY ED ACUITY/ SEVERITY LEVEL

Ambulatory ED visits were aggregated by Current Procedural Terminology (CPT) Evaluation and Management codes delineating the relative severity of the condition upon arrival at the ED.

Table 3. Evaluation and Management Acuity Classification	
Low Acuity ED Visit (99281 – 99282)	**HIGH ACUITY (99283 – 99285)**
99281 - Requires a problem focused history; a problem focused examination; a straightforward medical decision making. Presenting problems that are **self-limited or minor.**	**99283** – Requires expanded problem focused history; expanded problem focused examination; medical decision making of moderate complexity. Presenting problems that are **moderate severity**.
99282 - Requires expanded problem focused history; expanded problem focused examination; medical decision making of low complexity. Presenting problems that are **low to moderate severity**.	**99284** - Requires a detailed history; a detailed examination; medical decision making of moderate complexity. Presenting problems of **high severity, and require urgent evaluation** but no immediate significant threat to life or physiologic function.
	99285 – Requires a comprehensive history; comprehensive examination; medical decision-making of high complexity. Counseling/coordination of care with other providers or agencies provided consistent with nature of problem(s) and patient's/family's needs. Usually, presenting problems that are of **high severity and pose an immediate threat to life or physiologic function.**

From 2014 to 2015, low acuity ED visits decreased by over 9,000 while high acuity visits increased by over 32,000. This data suggests that fewer individuals visited the hospital for non-life-threatening conditions, however there has been a major increase in high severity visits (Table 4).

Table 4. Broward ED CPT Acuity Stratification, 2014 and 2015				
CPT	**Visits**		**Charges**	
	2014	2015	2014	2015
99281	45,865	43,241	$21,866,831	$29,188,119
99282	82,209	75,358	$70,964,757	$70,935,161
99283	249,884	255,781	$528,083,211	$576,370,358
99284	218,502	235,476	$1,444,241,368	$1,679,674,531
99285	68,824	78,260	$869,519,333	$1,034,262,704
Total	665,284	688,116	$2,934,675,500	$3,390,430,873
Source: Broward Regional Health Planning Council				

ED AMBULATORY: EMERGENCY VS. AVOIDABLE

New York University (NYU) ED Algorithm classifies visits based on patient principal diagnosis (ICD-10-CM), from the perspective of primary care and preventive care for emergent and non-emergent cases. The algorithm was developed with the advice of a panel of ED and primary care physicians, and based on an examination of a sample of almost 6,000 full ED records. Data abstracted from these records included the initial complaint, presenting symptoms, vital signs, medical history, age, gender, diagnoses, procedures performed and resources used in the ED. Based on this information, each case was classified into one or more of the following categories:

1. Non-Emergent
2. Emergent But Primary Care Treatable
3. Emergent, Ed Needed, But Preventable/Avoidable
4. Emergent, Ed Needed, Not Preventable/ Avoidable
5. All Other Conditions (conditions related to injury, mental health, alcohol and substance abuse, and all other unclassified conditions)

Because few diagnostic categories are clear-cut in all cases, the algorithm assigns cases probabilistically on a percentage basis, reflecting this potential uncertainty and variation. The methodology used in this analysis is as follows:

The unit of analysis is the county resident ED visit not resulting in a hospital inpatient admission. ED visits for an individual whose place of residence was not identical to the county hospital or was unknown were excluded.

The term "**ED Avoidable,**" is defined by NYU algorithm classifications 1-3 above, represents ED visits that were potentially avoidable or treatable in a primary care setting. The term "**Emergency Status**," is defined by NYU algorithm classifications 1-4 above, is used to represent the cases identified as non-emergent or emergent.

Table 5. Emergency Department (ED) NYU Algorithm Data, 2014 & 2015

	2014	2015
Numerator: All NON-Drug/ Alcohol, Psychiatric, Injury & Unclassified		
Total	429,562	436,828
Charges	$2,029,299,912	$2,296,233,271
Non-Emergent	45.3	45.6
Emergent Primary Care Treatable	40.8	40.6
Emergent Preventable	6.9	6.6
Emergent Non-Preventable	7.1	7.0
Numerator: ONLY Drug/Alcohol, Psychiatric, Injury & Unclassified		
Total	235,722	251,269
Charges	$905,375,588	$1,094,072,166
Drug/Alcohol	7,605	8,506
Psychiatric	13,436	15,542
Injury	128,536	130,206
Unclassified	86,145	97,015

Source: Broward Regional Health Planning Council

HEALTH INTERVENTION TARGETED SERVICES

In FY 2010, the uninsured generated more than $36.9 million in charges billed to taxpayer-funded programs for avoidable hospital inpatient admissions and $9.5 million in emergency department visits. These costs may have been avoided if the uninsured had been linked to government-sponsored programs such as Medicaid and Medicare or the Memorial Primary Care Center Program. This connection to a "medical home" would have provided quality preventive care in an outpatient primary care venue, rather than in a costly emergency department or inpatient hospital setting. MHS's Health Intervention with Targeted Services (HITS) Expansion Program builds on the success of a 6-month HITS Pilot Program in one underserved neighborhood in Hollywood, Florida.

The HITS Expansion Program strategically links the uninsured accessing MHS facilities for avoidable inpatient admissions and emergency department visits to either a government-sponsored program or Memorial's Primary Care Center Program. Through in-home visits from two dedicated outreach teams, the uninsured are connected to health insurance, a medical home and if needed, Disease Management services. The following provides an update on the HITS program for 2015:

- Met with 2,103 residents on the Memorial Mobile Health Units, in the HITS offices or in the resident's homes

- Provided information and referral for case management services (that address social determinates of health), Medicare and ACA Navigator linkage
- Completed 141 One-E-Applications
- 197 were successfully enrolled into Medicaid
- 246 were successfully linked to Memorial Primary Care services
- Communities touched include East Davie, Dania Beach, Hollywood, Hallandale Beach, and West Park (East) as well as Pembroke Pines and Miramar as the uninsured continue to reside further west than in 2010.

AHCA ED RECOMMENDATIONS

The Florida Agency for Health Care Administration (AHCA) developed the following recommendations to address and inappropriate emergency department utilization:
Healthcare access initiatives emphasizing early intervention and early access to appropriate care on behalf of uninsured persons can significantly improve the health status of Floridians and greatly reduce the financial burden on the healthcare system. This concept is embodied in the Department of Health Low Income Pool (LIP) Primary Care/Emergency Room Diversion projects. These projects emphasize aggressive outreach to identify high risk uninsured residents, linking these persons to primary care medical homes and disease management services, assisting in obtaining third party coverage and working to provide people with the medications they need to avoid hospitalization. A portion of the Low Income Pool should be devoted to community based primary care outpatient clinics and facilitating functions such as hospital based navigators who assist patients in accessing needed acute, chronic and preventive healthcare.

The expansion of health information technology will allow providers to access a continuity of care record for their patient providing health information on pharmacy use, hospitalizations, diagnoses, procedures and lab tests ordered across the full range of healthcare providers. This information will be especially valuable for patients accessing primary care services in clinic settings where they may not see the same provider for each service rendered.
Urgent care centers provide an alternative to the emergency department for urgent but non- life threatening emergencies such as lacerations, fractures, sore throats, ear aches, sciatic pain and sports injuries. Urgent care centers are not currently reimbursed under the Florida Medicaid program. The Agency may want to consider conducting a pilot program adding urgent care centers as a reimbursable facility type to see if this results in cost savings and appropriate utilization.