

CHAPTER VII: THE HEALTH DATA WAREHOUSE

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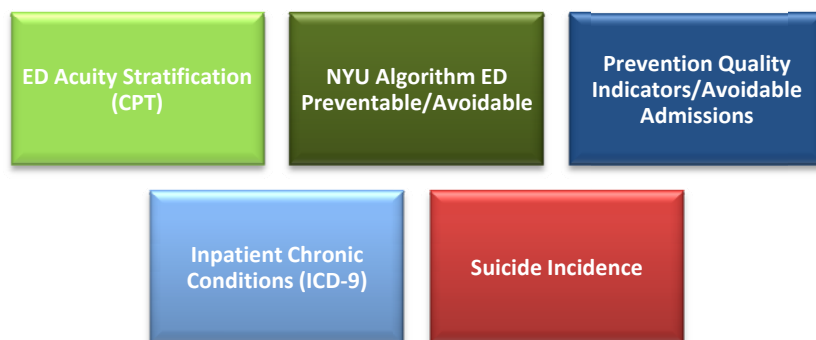
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INTRODUCTION

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

- Prevention Quality Indicators/Avoidable Admission
- Inpatient Chronic Conditions (ICD-9)
- Suicide Incidence
- ED Acuity Stratification (CPT)
- NYU Algorithm ED Preventable/ Avoidable

Figure 1. Inpatient Versus Emergency Department Data Queries



Information derived from these queries is utilized to identify, prioritize and address community health issues through initiatives such as the MHS Health Intervention Targeted Services (HITS) program.

PREVENTION QUALITY INDICATOR INITIATIVE

Prevention Quality Indicators (PQIs) are a set of measures used with hospital inpatient 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, for which early intervention can prevent complications and disease severity. PQIs consist of the 14 ACSCs, measured as hospital admission rates. Broward Regional Health Planning Council developed a web-based data warehouse and analytic engine to target Broward County avoidable hospital inpatient admissions. The two tax-assisted hospital systems, MHS and Broward Health utilize PQI data to identify geographic high incidence areas and develop targeted community-based interventions to reduce these unnecessary hospitalizations, discussed later in this Chapter.

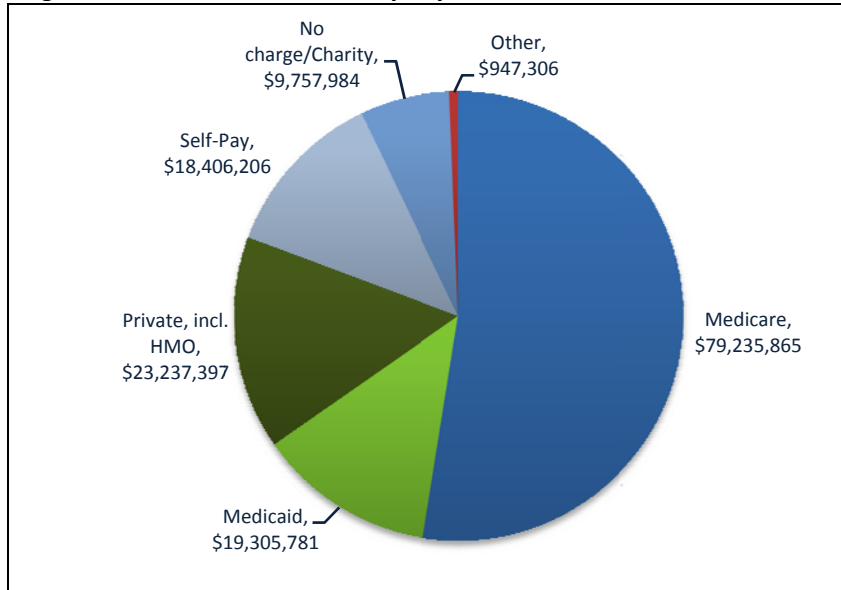
Table 1. Broward PQI Admissions per 100,000

INDICATOR	2006	2007	2008
Perforated Appendix (PQI 2)	21,188	23,793	20,881
Diabetes Long-term Complication (PQI 3)	123	117	112
Congestive Heart Failure (PQI 8)	391	357	345
Dehydration (PQI 10)	74	76	66
Bacterial Pneumonia (PQI 11)	235	209	201
Angina Admission -No Procedure (PQI 13)	19	17	14
Diabetes Short-term Complication (PQI 1)	42	45	45
Chronic Obstructive Pulmonary Disease (PQI 5)	173	170	187
Hypertension (PQI 7)	62	69	71
Low Birth Weight (PQI 9)	5,554	5,647	6,094
Urinary Tract Infection (PQI 12)	141	145	164
Uncontrolled Diabetes (PQI 14)	27	29	30
Adult Asthma (PQI 15)	135	130	131
Diabetes Lower Extremity Amputation (PQI 16)	28	25	27

Red = 2008 Increase* Green = 2008 Decrease/No Change*

* When compared with 2007

Figure 2. Diabetes Related PQIs by Payer, 2008



CHRONIC DISEASE (ICD-9) HOSPITALIZATIONS

BRHPC’s web-based analytical engine allows public access to utilization by chronic disease ICD-9 for AIDS, Asthma, Congestive Heart Failure (CHF) and Hypertension.

The Chronic Condition Indicator tool, developed as part of the Healthcare Cost and Utilization Project (HCUP), stratifies chronic diseases based on ICD-9-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-9-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.

Table 2. ICD -9 Chronic Diseases By Hospital, 2008

Hospital	Diabetes	Asthma	CHF	Hypertension	AIDS
Atlantic Shores Hospital	90	115	4	371	50
Broward General	4,577	1,730	1,926	7,240	969
Cleveland Clinic Hospital	1,659	363	755	3,041	49
Coral Springs	1,848	929	645	3,048	46
Florida Medical Center	3,073	580	1,833	5,013	98
Fort Lauderdale Hospital	149	257	9	641	125
Hollywood Pavilion	24	37	2,080	83	6
Holy Cross Hospital, Inc.	2,963	739	484	5,538	219
Imperial Point	1,578	514	122	2,832	398
Kindred Hospital Ft. Laud.	148	9	111	142	4
Kindred Hosp Hollywood	167	4	284	173	8
MHS Miramar	867	414	804	1,544	15
MHS Pembroke	1,752	444	1,631	2,639	77
MHS West	3,093	840	2,693	5,267	52
MHS Regional	5,425	1,625	323	9,095	279
MHS Regional South	624	177	1,276	1,164	20
North Broward	2,928	712	144	4,997	378
North Ridge	219	34	1,445	359	6
Northwest Medical Center	2,438	555	425	4,064	45
Plantation General	1,226	876	958	1,855	117
University Hospital	2,268	623	1,302	3,637	52
Westside Regional	3,512	476	90	5,823	75
Total	40,628	12,053	19,344	68,566	3,088

Source: <http://www.brhpc.org/brhpc/PQI/pqipress.aspx>

SUICIDE 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, using the 9th revision of the International Classification of Diseases (ICD-9). E-codes 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.

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. These two type of analyses allow for a better understanding of healthcare utilization.

AMBULATORY ED ACUITY/ SEVERITY LEVEL

Ambulatory ED visits were aggregated by 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 (9981 – 9982)	
99281	- Requires three key components: a problem focused history; a problem focused examination; a straightforward medical decision making. Presenting problem(s) self-limited or minor .
99282	- Requires three components: expanded problem focused history; expanded problem focused examination; medical decision making of low complexity. Presenting problem(s) low to moderate severity .
HIGH ACUITY (9983 – 9985)	
99283	- Requires three components: expanded problem focused history; expanded problem focused examination; medical decision making of moderate complexity. Presenting problem(s) moderate severity .
99284	- Requires three components: a detailed history; a detailed examination; medical decision making of moderate complexity. Presenting problems high severity, and require urgent evaluation but no immediate significant threat to life or physiologic function.
99285	- Requires three key components: 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(s) are of high severity and pose an immediate threat to life or physiologic function .

Table 4. Broward ED CPT Acuity Stratification , 2007 and 2008				
CPT	Visits		Charges	
	2007	2008	2007	2008
99281	76,065	71,089	\$75,255,018	\$64,921,650
99282	137,488	118,547	\$168,756,638	\$149,302,668
99283	169,901	183,992	\$383,254,093	\$424,495,484
99284	70,294	85,474	\$302,038,667	\$408,205,474
99285	41,114	47,545	\$242,868,286	\$323,426,768
Total	494,862	506,647	\$1,172,172,702	\$1,370,352,044

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-9), 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, 2007 & 2008

	2007	2008
Numerator: All NON-Drug/ Alcohol, Psychiatric, Injury & Unclassified		
Subtotal	306,639	316,146
Charges	\$794,933,621	\$934,107,825
Non-Emergent	36.2%	36.1%
Emergent Primary Care Treatable	36.9%	36.7%
Emergent Preventable	9.5%	9.6%
Emergent Non-Preventable	17.4%	17.6%
Numerator: ONLY Drug/Alcohol, Psychiatric, Injury & Unclassified		
Subtotal	188,223	190,501
Charges	\$377,239,081	\$436,244,219
Drug/Alcohol	5,820	5,924
Psychiatric	9,931	9,864
Injury	122,929	120,366
Unclassified	49,543	54,377

Source: Broward Regional Health Planning Council

HEALTH INTERVENTION TARGETED SERVICES

In FY 2007, the uninsured generated more than \$22.9 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. In addition, the HITS Expansion Program utilizes additional Prevention Quality Indicators data gathered from BRHPC's web portal.

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.

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.

THE HEALTH DATA WAREHOUSE

The Health Data Warehouse can be accessed via BRHPC's website. Register to have access to the above mentioned queries and be able to customize reports.