

Government of the District of Columbia Department of Mental Health (DMH)



# **SAINT ELIZABETHS HOSPITAL**



# FY10 TREND ANALYSIS

Hospital Statistics

## December 23, 2010

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## **Data Disclaimer**

The primary source of data extracted and analyzed herein is Avatar unless otherwise indicated. Additional data sources include the Hospital's Unusual Incident database, Adverse Drug Reaction database and the Nursing office's Restraint/Seclusion Log. Data reflects information as entered in each system by users. The Office of Patient Statistics and Reporting (OPSR) does not guarantee the accuracy, timeliness, reliability, or completeness of data although the OPSR has made reasonable efforts to ensure that data and its accompanying information are as accurate and up-to-date as possible at the time of disclosure. The OPSR is not liable for any misinterpretation or misuse of the data. However, notification of any errors or questions on data presented can be directed to <u>Won-ok.Kim@dc.gov</u> or 202-299-5430.

## **EXECUTIVE SUMMARY**

The June 25, 2007 Settlement Agreement (Agreement) between the District of Columbia and the United States requires Saint Elizabeths Hospital (Hospital) to regularly track and analyze data for actionable indicators and targets. The leadership of the Hospital further recognized the urgency of performance monitoring using data and the importance of data collection. In response to the need for a regular data reporting mechanism, the Office of Patient Statistics and Reporting (OPSR)<sup>1</sup> analyzed the Hospital's key available data and published the first edition of the Trend Analysis Report on December 19, 2007 and every two months thereafter until April 2009 when PRISM (Performance Related Information for Staff and Managers) replaced the Trend Analysis Report as the Hospital's primary monthly statistical monitoring report.

PRISM provides the Hospital's key performance related indicators in a visual format on a monthly basis, including trends over a 12 month period. While we believe PRISM is a very effective monitoring tool to present key data that speaks to the quality and quantity of patient care services in a timely manner, there are some areas that are not included in or are limited in PRISM but that need in-depth analysis and attention. In November 2009, we published the FY09 Trend Analysis Report as an annual report to serve that need and we are now presenting our FY10 report.

Until the Hospital launched its client information management system AVATAR on July 22, 2008, identifying data availability and collecting data in a useful format was a significant challenge to publishing any data report. AVATAR has significantly expanded our data tracking capacity, enabling us to analyze real-time patient data in a variety of areas and it is now an indispensable source of all kinds of information. However, despite significant progress made over the past year , it is still too early for AVATAR to be fully functioning and capable of maintaining data efficiently, accurately, and consistently d. As a result, we encountered challenges with data accuracy and timeliness of data entry, occasionally discovering inconsistencies between our monthly data in PRISM and data re-extracted for the entire fiscal year due in part to delayed or incorrect data entry updated after our initial reporting. Despite such limitations, we believe the level of discrepancies is not significant and we have made our best efforts to reconcile them and provide the most accurate data available. In addition, we sometimes used different data sources if data was not available from AVATAR. Wherever data was extracted from sources other than AVATAR, the source is accordingly identified.

Areas covered in this report include the Hospital's census, admission, discharge and transfer information, demographic characteristics of the individuals in care, length of stay, readmissions, clinical profile captured in all five axes of DSM-IV-TR, medication related data, and unusual incidents. Analysis results are presented visually in charts or tables, along with bullet points describing key findings and interpretations in every section. Selected highlights of key findings follow.

<sup>&</sup>lt;sup>1</sup> OPSR was previously known as Office of Monitoring Systems (OMS) in the Performance Improvement Department (PID). The previous trend analysis reports were published under OMS.

#### Census, Admissions, Discharges and Transfers

- The Hospital saw a major decline in census between FY09 and FY10. As of September 2010, the number of individuals in care on a given day was 313, which is a 12% reduction from FY09.
- Both admissions and discharges continued to decrease in FY10, but discharges exceeded admissions, contributing to a reduction in the census: 485 discharges (40 per month) vs. 442 admissions (37 per month).
- During FY10, the Hospital served a total of 697 unique individuals for at least one day.
- A total of 139 individuals experienced at least one inter-unit transfer during FY10. Of those, 27 were transferred more than once over the 12 month period. However, those with repeated transfers declined considerably compared with FY09.
- The number of emergency medical leaves, which are likely to be medical transfers to external medical facilities for temporary treatment, increased considerably. In FY10, on average, 18 emergency medical leaves were reported per month compared to 12 per month in FY09.

#### **Demographic Characteristics of Individuals in Care**

- The patient population has been aging. As of September 2010, those 60 years or older comprised 29% of the total individuals in care whereas this age group made up 23% in November 2007. The median age also increased from 51 years in 2007 to 55 years in 2010.
- Forty-two percent (42%) of admissions were female but only 28% of those remaining in care were female, indicating females tend to be discharged more quickly.
- Eighty-six percent (86%) were Non-Hispanic Black or African-American and 11% were Non-Hispanic White or Caucasian.
- The overwhelming majority of individuals in care were single (80%) or divorced/separated (11%).
- As of September 30, 2010, a total of 102 or 33% of the total individuals in care were those adjudicated to be not guilty by reason of insanity (NGBRI) and 52 or 17% were those court-ordered for inpatient pre-trial examination.
- Of those whose religion was identified, 45% were Protestant, 24% were Catholic, and 14% indicated that they did not have any religion.
- Of those whose education information was available, 43% received 7 to 9 years of education, 37% received between 10 and 11 years of education, 5% graduated high schools, and 7% received some type of college level education or bachelor's degree.

#### Length of Stay

- Length of stay (LOS) significantly increased over the past three years: the median LOS for individuals in care on 9/30/10 is 811 days (27 months), which is 123 days longer than LOS measured on 9/30/09 and 324 days longer than that on 11/7/07.
- Almost two out of three individuals (64%) have been in care at SEH for at least one year including 28% (88 individuals) hospitalized for 10 years or longer.
- Individuals in forensic legal status remain hospitalized for a longer period than those in civil legal status.
- Individuals who have been recently admitted to SEH tend to be discharged more quickly than those who have hospitalized for a long period: 75% of the individuals admitted in FY10 were discharge by the end of FY10; the median LOS of the individuals discharged was 63 days while that of those remaining in care is 811 days.

#### **Readmissions**

- 30-day readmission rate decreased to 6.8% in FY10 from 9.3% in FY10.
- 180-day readmission rate also decreased to 23% (FY10 7 months) from 30% in FY09.
- The Hospital's 30-day readmission rate (6.8%) is lower than the national public rate (NPR)<sup>2</sup> (7.8%)
- Some individuals were repeatedly readmitted but the frequency of multiple re-admissions declined. In FY10, 13% were re-admitted more than once within 180-days from discharges compared to 28% in FY09.
- Individuals readmitted tended to have a shorter LOS in their hospitalization immediately prior to readmission than the general discharged population.

#### **Clinical Profile Identified in each Axis**

- Axis I: of the 311 individuals being served on 9/30/10, all but one had at least one clinical disorder (Axis I) identified. There were 277 (89%) with a psychotic disorder (d/o), 64 (21%) with a cognitive d/o, 26 (8%) with a mood d/o, and 154 (50%) with a substance related d/o.
- Axis II: 134 individuals (43%) had at least one diagnosis on Axis II. This number excludes 29 with diagnosis deferred (799.9). Eighty-four (84) individuals (27%) were diagnosed with a personality d/o, 32 with mental retardation and 30 with Borderline Intellectual Functioning. The remaining 148 were assessed to have no diagnosis on Axis II (V71.09).
- Axis III: 275 individuals (88%) had at least one medical condition identified. The most prevalent medical condition was Hypertension (142 or 46%) and 24% were diagnosed to have Type II Diabetes. Twenty-two (22) individuals had seizure d/o and 38 were diagnosed with Tardive Dyskinesia (TD). Axis III identified 50 individuals (16%) with Obesity, but Body Mass Index (BMI) measures revealed that 107 individuals (34%) were obese based upon a BMI of 30 or higher.
- Axis IV: problems with social environment (72%), housing (69%), and primary support group (68%) were identified as major contributing psychosocial and environmental factors.
- Axis V (GAF): the average GAF score of individuals in care on 9/30/10 (35.6) was slightly lower than that of individuals in care a year ago (36.2). Certain units serve more individuals with higher needs: those served in 1F (26.2) and 1E (27.8) had the lowest scores (least functioning) while those served in Annex B (47.5), 1C (40.7) and 2B (40.3) had the highest GAF scores.

#### **Medication and Pharmacy**

- During FY10, a total of 226 medication variance (MV) incidents were reported. This is 19 per month on average, or 1.95 per 1,000 patient days, and a reduction of 41% from 386 (32 per month) in FY09.
- Individuals served on certain units were more frequently involved in reported MV incidents than others: since May 2010, Annex A and 1A reported a total of 14 and 11 MVs, respectively, while many other units reported only one or two MVs during the same time period.
- Of the 226 reported MVs, 118 (52%) were potential MVs that had the capacity to cause error or that did not reach the patient. The other 108 MVs (48%) actually occurred.
- The major critical break points of MVs include prescribing (30%), administering (30%), and dispensing (14%)

<sup>&</sup>lt;sup>2</sup> National Association of State Mental Health Program Directors (NASMHPD) Research Institute, Inc. (NRI) makes aggregate reports based on measurement data collected from a number of state psychiatric hospitals nationwide, publishing 'National Public Rates (NPR)'. The most recent version available includes data measured for March 2009.

- A significant percentage of MVs were discovered by pharmacy personnel (36%). Those discovered and reported by nursing staff visibly increased to 36% in FY10 from 8% in FY09.
- During FY10, a total of 65 Adverse Drug Reactions (ADR), which translates into five (5) per month, were reported. The actual monthly number ranged from zero (0) to 15. In FY09, a total of 62 ADRs were reported.
- Some units reported ADRs more frequently than others.
- A majority of ADRs were mild or moderate in their severity level: 9% were level 0 (mild) and 89% were level 1 or level 2 (moderate). Throughout the year, there was only one case considered to be severe.

#### **Unusual Incidents**

- The number of reported unusual incidents (UI) during FY10 was 156 per month, an increase of 31% from FY09 (119 per month).
- The number of UI reports significantly increased beginning in May 2010, when all of the individuals in care moved to the new facility. Between May and September 2010, on average, 203 incidents were reported per month. Prior to May, between October 2009 and April 2010, 123 incidents were reported per month.
- Each month, about one third of individuals in care were involved in at least one UI. Of those, 16% were involved in three or more UIs within a month period. The number of individuals in care repeatedly involved in multiple incidents increased particularly since May 2010.
- Assault/altercation (32 per month) and physical injury (29 per month) were the most frequently reported incidents in FY10.
- Physical injuries were often the result of either physical assaults or falls. Of the total injury incidents, 46% and 20% were associated with physical assaults and falls, respectively.
- The Hospital's patient injury rate in FY10 (1.80 per 1000 patient days) considerably increased from FY09 (1.01) and was much higher than the NPR (0.39).
- An increase of medication refusal incident reporting is the key contributing factor to the increased total number of incident reports. Since May, on average, 33 medication refusal incidents were reported per month whereas only five incidents were reported per month prior to May.
- Since May 2010, 1F reported UIs most frequently (41 per month). However, many of those were non-major UIs (29 per month), primarily medication refusal. Major UIs were reported most frequently by 1D (18 per month) and 1E (14 per month).
- Timely reporting significantly improved in FY10: As of September 2010, 90% of UIs were reported within one day whereas below 60% were reported within one day prior to January 2010.
- The number of restraint episodes significantly declined in FY10 but the number of seclusion episodes doubled from FY09 due in part to an atypical spike of seclusion episodes reported in November 2009, when a number of individuals from a unit were simultaneously involved in a seclusion incident. Despite that, the average restraint and seclusion hour rates and the percent of patients restrained or secluded at SEH were much lower than the NPR.

The Trend Analysis Report, along with PRISM, is aimed at promoting a data-driven culture wherein hospital staff routinely and proactively use data at all levels to assess service delivery and to develop evidence based strategies to improve patient care and practice. Doing so will support best practices and ultimately improve the quality of services to individuals in our care.

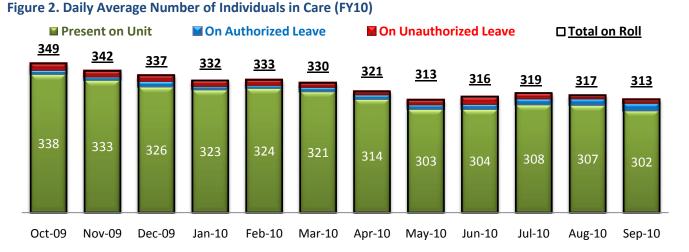
## I. Census, Admissions, Discharges, and Transfers

## 1. SEH Daily Census

- The number of individuals served by the Hospital declined over the past several years. In September 2006, the hospital was serving a total of 434 individuals on a given day. By September 2010, a total of 313 were being served per day.<sup>3</sup>
- The Hospital saw a major decline of census between
   FY09 and FY10. The number of individuals on the hospital roll dropped by 13% in FY09 and 12% in FY10.
- The Hospital's census declined throughout the year in FY10. In particular, there was a notable reduction between March and May, when the Hospital was moving to the new facility.



#### Figure 1. Trend of Year-End Census (FY06 ~ FY10)



 During FY10, the average number of individuals who were away from the facility – on authorized or unauthorized leave – on a given day was ten (10): five on authorized leave and five on unauthorized leave<sup>4</sup>.

#### Table 1. Individuals in Care on Leave on a Given Day (FY10)

	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Aor-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	FY10
Authorized	4	4	6	4	3	4	4	5	5	6	6	8	5
Unauthorized	6	6	6	5	5	4	3	4	7	5	3	3	5

■ The total number of patient days<sup>5</sup> for FY10 was 115,676, which translates into an average of 317 patients present on a given day. This is a reduction of 17% from FY09 (138,639 days in total or 380 per day).

During FY10, the Hospital served a total of 697 unique individuals for at least one day.

<sup>&</sup>lt;sup>3</sup> Data between FY07~FY09 is the number of patients on the last day of September whereas FY06 and FY10 data is the daily average for the entire month. Also, data between FY06 and FY07 is from the previous information management system STAR while data from FY08 through FY10 comes from the current information management system AVATAR.

<sup>&</sup>lt;sup>4</sup> This is not the total number of leaves that occurred on a given day but the number of patients on a leave status on a given day.

<sup>&</sup>lt;sup>5</sup> Patient days are the sum of patients who were present on the unit at 11:59pm of each day. They do not include those on authorized or unauthorized leave at that time.

#### Table 2. Total Patient Days and Unique Individuals Served (FY10)

	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Aor-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	FY10
Total Patient Days	10491	9975	10097	10007	9081	9958	9408	9406	9105	9553	9532	9063	115676
Total Unique* individuals Served	387	374	377	367	361	367	361	344	348	355	361	340	697**

\* Some individuals may have been admitted to SEH more than once during FY10 and data herein counts the number of 'unique' individuals served regardless of the number of times they were admitted.

\*\*This is not the sum of monthly numbers but the total number of unique individuals served at the hospital at least one day during FY10.

## 2. Individuals in Care by House

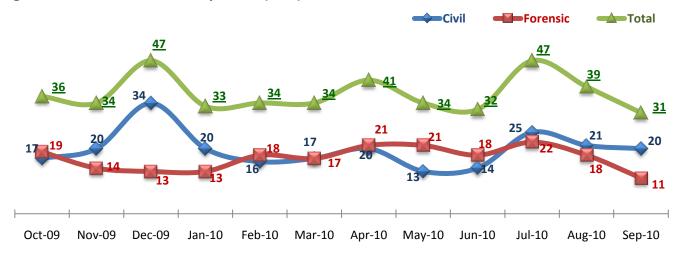
As of September 30, 2010, the Hospital was serving a total of 311 individuals residing in 13 houses. Each house was serving on average about 24 individuals, with a range between 17 and 27.



#### Figure 3. Number of Individuals Served by House (9/30/10)

## 3. Admissions

The total number of admissions during FY10 was 442: 237 in a civil legal status (Civil) and 205 in a forensic legal status (Forensic)<sup>6</sup>. The average number of monthly admissions was about 37 (20 in Civil and 17 in Forensic). This is a 21% reduction from FY09.



#### Figure 4. Number of Admissions by Month (FY10)

<sup>&</sup>lt;sup>6</sup> The number of admissions of individuals in a forensic legal status includes returns from convalescent leave of post-trial outpatients. However, the overwhelming majority of admissions in Forensic were in pre-trial status.

- A majority of admissions were either transfers from another psychiatric unit of a community hospital or pretrial defendants admitted by court order.
- The number of those who were directly sent from CPEP dropped to 67 in FY10 from 91 in FY09.
- A total of 10 individuals in a forensic post-trial legal status returned to the Hospital from the community.

#### Table 3. Admissions by Source (FY09 vs. FY10)

Admission Source	FY	09	FY	10
	Number	Percent	Number	Percent
СРЕР	91	16%	67	15%
Community Hospital - Medical Unit	31	6%	19	4%
Community Hospital - Psychiatric Unit	176	32%	151	34%
Court/Law Enforcement	210	38%	189	43%
Transfer from Forensic Outpatient (CL) to Inpatient	15	3%	10	2%
Other or Not Identified*	35	6%	6	1%
Total	558	100%	442	100%

## 4. Discharges

- The total number of discharges during FY10 was 485 (275 in Civil and 210 in Forensic), an average of 40 discharges per month (23 in Civil and 18 in Forensic). This number represents a 20% decrease from FY09, in which a total of 604 discharges or 50 discharges per month occurred.
- A significant number of discharges occurred between October and December 2009, and March and April 2010. Discharges slowed down in the month of May 2010, when the Hospital moved to the new facility. Since June, discharges gradually increased again, reaching at 49 in August 2010.

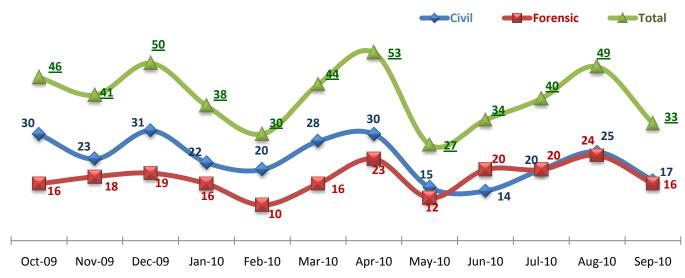


Figure 5. Number of Discharges by Month (FY10)

- The primary reason for discharges was because hospitalization was no longer clinically needed (37% of the total discharges) followed by court-ordered discharges of individuals in a pre-trial forensic legal status (35%).
- Sixteen (16) individuals were discharged against medical/agency advice.

 A total of 29 individuals in a forensic post-trial legal status were transferred to the community to be served as outpatients.

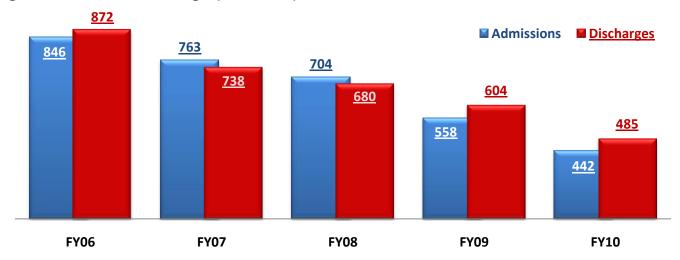
Discharge Dessen	FY	09	FY	10
Discharge Reason	Number	Percent	Number	Percent
Against Medical/Agency Advice	40	7%	16	3%
Court Ordered Discharge – Civil	43	7%	64	13%
Court Ordered Discharge – Forensic Pre-trial	171	28%	169	35%
Other Health Care Services Needed	26	4%	6	1%
Hospitalization No Longer Clinically Needed	213	35%	178	37%
Transfer from Forensic Inpatient to Outpatient	27	4%	29	6%
Discharge from Unauthorized Leave	6	1%	9	2%
Death	5	1%	7	1%
Other or Data Missing*	73	12%	7	1%
Total	604	100.0%	485	100%

#### Table 4. Discharges by Reason (FY09 vs. FY10)

\* This includes those whose discharge type information is missing, unverifiable or categorized in inactive values.

## 5. Admissions vs. Discharges

Both admissions and discharges continued to decrease in FY10. However, the number of discharges exceeded the number of admissions in both FY09 and FY10, contributing a significant reduction of census. In FY10, a total of 485 discharges (40 per month) occurred whereas there were 442 admissions (37 per month), resulting in a net reduction of 43 individuals in care.



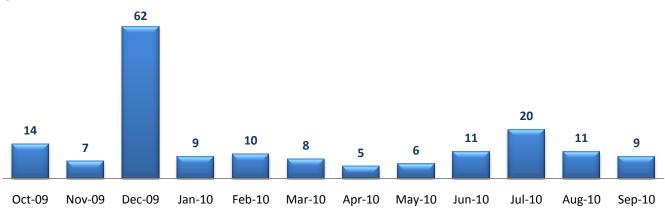
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Figure 6. Admissions vs. Discharges (FY06 ~ FY10)
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## 6. Inter-Unit Transfers

During FY10, a total of 172 transfers<sup>7</sup> were documented between units within the Hospital. More than one third of those inter-unit transfers occurred in December 2009, when there was a major restructuring of units that resulted in a total of 67 transfers during that month. Excluding this occasion, the frequency of inter-unit transfers ranged between 6 and 20 per month.

<sup>&</sup>lt;sup>7</sup> This does not count any unit changes that occurred on May 3, 2010, when all of the individuals in care moved to new units in the new facility and the RMB building.

#### Figure 7. Inter-Unit Transfers (FY10)



- During FY10, a total of 139 individuals in care experienced at least one inter-unit transfer. Of those, 27 were transferred more than once over the 12 month period.
- The number of individuals in care with repeated transfers considerably declined. There were a total of eight
   (8) individuals who were transferred more than three times in FY09 while there was only one individual who
   was transferred more than three times in FY10.

Total Jutan Unit Transfers during 12 Month Davied	FY09		FY10	
Total Inter-Unit Transfers during 12-Month Period	# of Individuals	Percent	# of Individuals	Percent
Once	104	65%	112	81%
Twice	33	20%	22	16%
Three (3) Times	16	10%	4	3%
Four (4) ~ Five (5) Times	4	2%	1	1%
Six (6) Times or More	4	2%	0	0%
Total individuals who experienced >=1 transfer in FY	161	100%	139	100%
Total number of inter-unit transfers (Average)	268 (22 per i	month)	172 (14 per i	month)

#### Table 5. Unique Individuals in Care Transferred between Units (FY09 vs. FY10)

#### 7. Leaves

- During FY10, a total of 1093 leave episodes, 91 per month, or 3 per day were recorded.
- A total of 345 medical leave episodes were reported: emergency (211) and non-emergency (134). Home visit was the major type of non-medical related authorized leave. Leaves related to a court order or for a judicial hearing notably increased since June 2010.
- There were a total of 55 unauthorized leaves (5 per month) documented in Avatar.

Leave Type & Reason	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Average
Medical/Emergency	13	12	13	18	14	29	19	21	16	15	20	21	211	18
Medical/Non-Emergency	3	14	5	9	11	12	13	18	17	10	13	9	134	11
Home Visit	43	45	39	28	16	21	23	24	24	17	24	15	319	27
Pre-discharge Activities	48	16	17	14	9	9	13	7	13	12	10	40	208	17
Court Order/ Hearing	0	3	1	6	2	5	2	13	41	41	25	27	166	14
Unauthorized Leave	12	3	7	3	3	4	3	8	7	2	2	1	55	5
Total	119	93	82	78	55	80	73	91	118	97	94	113	1093	91

#### Table 6. Leave Episodes by Type and Reason (FY09 vs. FY10)

The number of emergency medical leaves, which were likely medical transfers to external medical facilities for temporary treatment, considerably increased in FY10. In FY09, on average, about 12 emergency medical leaves were reported per month. In FY10, 18 emergency medical leaves were reported per month.

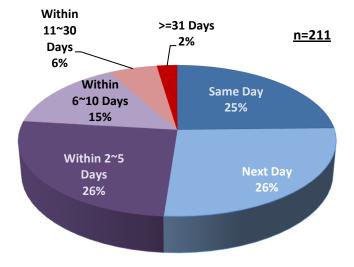
Category		FY09 (10 Months)*	FY10
Emergency Medical Leave (EML)	Total # of EMLs	121	211
Episodes during Fiscal Year	Monthly Average*	12	18
	One EML	43	62
# of Unique Individuals with	Two EMLs	17	32
>=1 Emergency Medical Leave(s)	Three EMLs	6	7
by Frequency of Leave Episodes	More than Three EMLs	5	12
	Total	71	113

#### Table 7. Emergency Medical Leaves: Likely Medical Transfers (FY09 vs. FY10)

\* Prior to December 2008, documentation of medical leaves in AVATAR was scarce and thus 10 month data was selected for the analysis of FY09 data whereas FY10 data is the sum of 12-month period data.

- One hundred thirteen (113) unique individuals in care experienced one or more emergency medical leaves during FY10. The total number of emergency medical leave episodes was 211, indicating that a number of individuals were repeatedly involved in emergency medical leaves. In fact, 19 individuals were involved in emergency medical leaves at least three (3) times during the 12-month period, including two (2) individuals who had eight (8) or more emergency medical leaves.
- Of the 211 emergency medical leaves, 51% ended on the same day or next day but 23% lasted longer than five (5) days, including five (5) instances that lasted longer than 31 days.

Figure 8. Return from Emergency Medical Leaves (FY10)



Emergency medical leaves occurred much more frequently in particular units: unit 1A and 1B, which serve mostly geriatric individuals in care, had a total of 20 and 15 emergency medical leaves, respectively, between May 2010 and September 2010.

#### Figure 9. Emergency Medical Leaves by Sending Unit (May-10 ~ Sep-10)



Figure 11. Change in Median Age (2007~2010)

## II. Demographic Characteristics of Individuals in Care

## 1. Age Distribution

- Two thirds (67%) of individuals in care on September 30, 2010, were 50 years or older.
- The Hospital's population has been aging over the past few years. The number of individuals aged 60 years or older has increased notably. This age group comprised 23% in November 2007 and made up 29% in September 2010. The median age also increased from 51 years to 55 years old.

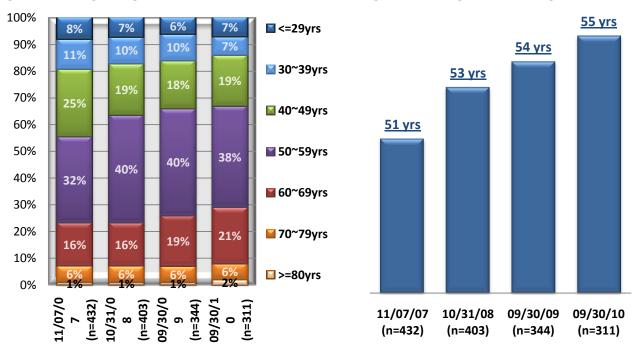


Figure 10. Change in Age Distribution (2007~2010)

In contrast, the age of the admission population is getting younger. In FY09, those under 40 years old comprised 33% of the total admissions. In FY10, the same group made up 40% of the total admissions. Admissions of individuals between 40 and 60 years old notably dropped and there was a minor increase of those aged 70 or above. Consequently, the median and the average age of individuals at the time of admission declined.

			•
vs. FY10)			
Age at Admission	FY09	FY10	Trend
>=29 years	18%	23%	1
30~39 years	15%	17%	+
40~49 years	7%	25%	+
50~59 years	28%	23%	
60~69 year	9%	9%	
70~79 years	1%	2%	+
>=80 years	1%	1%	
Median Age	47 years	44 years	₽
Average Age	45 years	43 years	+

## Table 8. Trend of Age Distribution in Admission (FY09

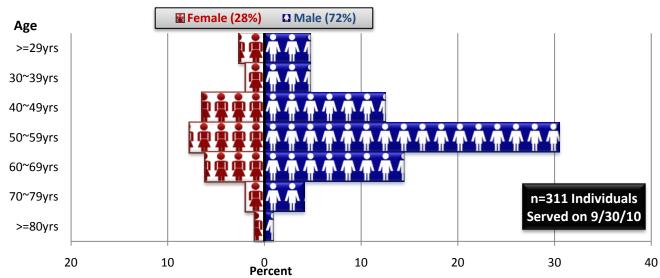
## Table 9. Trend of Age Distribution in Discharge (FY09 vs. FY10)

VS. FT10)			
Age at Discharge	FY09	FY10	Trend
>=29 years	18%	19%	+
30~39 years	13%	18%	+
40~49 y ars	26%	24%	+
50~59 years	29%	26	Ŧ
60~69 years	0%	10%	
70~79 years	3%	3%	
>=80 years	1%	1%	
Median Age	47 years	46 years	ŧ
Average Age	46 years	45 years	+

Also, those discharged in FY10 were slightly younger than those discharged in FY09. Thirty-eight percent (38%) of the individuals discharged in FY10 were below 40 in contrast to 31% in FY09. The median age also declined from 47 years old in FY09 to 46 years old in FY10.

## 2. Gender Distribution

- The gender ratio remained same as the previous year. Of the 311 individuals in care on September 30, 2010, 28% were female and 72% were male.
- The proportion of females was much higher among both admissions (42%) and discharges (41%) than among the individuals remaining in care, indicating male patients were more likely to stay longer at the Hospital.



## Figure 12. Age & Gender Distribution (9/30/10)

## 3. Race/Ethnicity and Primary Language

- Eighty-six percent (86%) of the individuals residing in the Hospital were identified as Non-Hispanic Black or African-American, 11% as Non-Hispanic White or Caucasian, 1% as Hispanic and 0.3% (one) as Asian or Pacific Islander.
- The overwhelming majority (95%) of the individuals in care speak English as their primary language.

#### Table 11. Race and Ethnicity (9/30/10)

Religion	Number	Percent
Asian/Pacific Islander	1	0.3%
Black/African-American	260	86%
White/Caucasian	34	11%
Hispanic	3	1%
Other	4	1%
Total Identified	302	100%
No Data Available	9	

• Five (5) individuals were identified as speaking a language other than English as their primary language.

Primary Language	9/30/09	9/30/10	
English	320 (93%)	295 (95%)	
Spanish	5 (1%)	4 (1%)	
Other	7 (2%)	1 (0.3%)	
Not Identified	12 (3%)	11 (4%)	
Total	344 (100%)	311 (100%)	

## Table 10. Gender Ratio by Group (FY10)

Group	Female	Male
Admissions (n=442)	42%	58%
Discharges (n=485)	41%	59%
Remaining (n=311)	28%	72%

## 4. Marital Status

 A total of 244 individuals in care had their marital status identified, and of those, 80% were single, 7% were married, and the other 13% divorced, separated or widowed.

## 5. Legal Status

- One hundred two (102) individuals, which is one third of all individuals in care as of 9/30/10, were those adjudicated not guilty by reason of insanity (NGBRI).
- Forty-three (43) individuals had a voluntary legal status, 35 were committed inpatients, 31 were committed outpatients<sup>8</sup>, and 52 were court-ordered for inpatient pre-trial examination.
- There were more individuals in DC examination legal status and fewer in committed outpatient legal status than a year ago.

## 6. Religion & Education

- Of the 191 individuals in care whose religion was identified, 45% were Protestant, 24% Catholic, 4% Baptists, and 13% indicated other types of religion. Fourteen percent (14%) indicated that they did not have any religion.
- Of the 172 individuals in care whose education

information was available, 43% received 7 to 9 years of education and 37% received between 10 and 11 years of education. Five percent (5%) graduated high school and about 7% received some type of college education or bachelor's degree.

Table 15. Religion (9/30/10)			
Religion	Number	Percent	
Baptist	8	4%	
Catholic	46	24%	
Christian	5	3%	
Islam/Muslim	3	2%	
Jewish	1	1%	
Protestant	86	45%	
Other	16	8%	
None	26	14%	
Total Identified	191	100%	
No Data Available	120		

## Table 16. Education (9/30/10)

Education Level	Number	Percent
None	1	1%
01-03 Years	2	1%
04-06 Years	11	6%
07-09 Years	74	43%
10-11 Years	64	37%
High School Graduate	8	5%
Some College/Technical Training	4	2%
Associate's Degree	2	1%
Bachelor's Degree	6	3%
Total Identified	172	100%
No Data Available	139	

<sup>&</sup>lt;sup>8</sup> The legal status of these patients is committed outpatient but they were being served as inpatients at the Hospital on 9/30/10.

## Table 13. Marital Status (9/30/10)

Marital Status	Number	Percent
Single	196	80%
Married	17	7%
Divorced	26	11%
Separated	1	0%
Widowed	4	2%
Total Identified	244	100%
No Data Available	70	

## Table 14. Legal Status (9/30/09 vs. 9/30/10)

Legal Status	9/30/09	9/30/10
Committed Inpatient	35	35
Committed Outpatient	41	31
DC Examination	44	52
DC Mentally Incompetent	8	5
Dual Commitment (NGBRI/Criminal Convct.)	1	1
Emergency	48	36
Non Protesting	0	1
NGBRI - DC	101	90
NGBRI - US	12	10
NGBRI - USVI	2	2
Sexual Psychopath (Miller Act)	4	4
Voluntary	44	43
No Legal Status Information Entered	4	1
Total	344	311

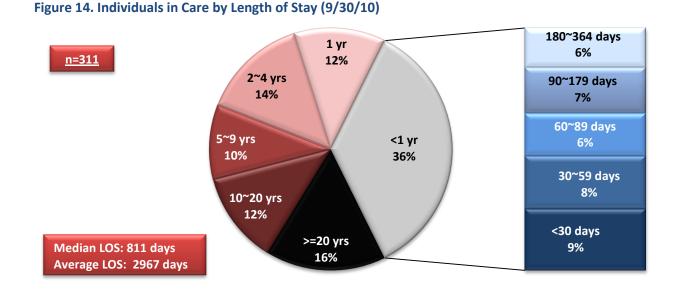
## III. Length of Stay

## 1. Length of Stay of Current Population

- The median length of stay (LOS) significantly increased over the past three years: the median LOS for those being served at the Hospital on 9/30/10 was 811 days (27 months), which is 123 days longer than the median LOS of individuals in care a year ago (9/30/09). Also, it is 324 days longer than the median LOS measured on 11/07/07.
- The average LOS was 2967 days, which is slightly over eight (8) years. The average LOS is much longer than the median LOS<sup>9</sup> because a few individuals who have been at the Hospital for an extended period of time disproportionately affect the average LOS.
- Of the 311 individuals in care on 9/30/10, 23% or 64 have been at the Hospital for less than 3 months. On the other hand, 64% had been in the Hospital for at least one year. This includes 88 individuals (28%) who have been hospitalized for 10 years or longer.



#### Figure 13. Trend in Median Length of Stay (2007~2010)



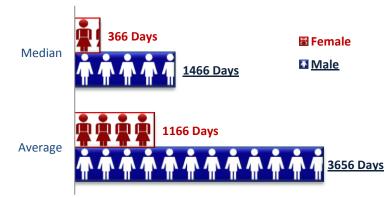
# <sup>9</sup> The median is the middle value of the set when they are ordered by rank, separating the higher half of a sample from the lower half, whereas the average is the arithmetic mean that is computed by dividing the sum of a set of terms by the number of terms. The average is not appropriate for describing skewed distributions as it is greatly influenced by outliers. For example, a few cases with extremely high LOS can skew the average LOS higher. The median is often used as a better measure of central tendency as it is influenced less than the average by outlier observations.

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## 2. Length of Stay by Gender

Male patients are likely to stay at the Hospital for a much longer period of time than female patients. The median LOS of male patients was 1466 days (4 years) whereas that of female patients was 366 days (1 year). The large gap between female and male is due in part to the fact that a majority of individuals in forensic legal status who tend to stay longer than those in a civil legal status are likely to be male. Even among those in civil legal status, however, males still stayed much longer than female patients.

#### Figure 15. Length of Stay by Gender(9/30/10)



#### Table 17. Median Length of Stay by Gender: Civil vs. Forensic (9/30/10)

Categ	ory	Female	Male
	Civil	472 Days	816 Days
Median LOS	Forensic	80 Days	2596 Days
	Combined	366 Days	1466 Days
	Civil	1239 Days	2705 Days
Average LOS	Forensic	942 Days	4141 Days
	Combined	1166 Days	3656 Days

## 3. Length of Stay by Legal Status

- Overall, individuals with a forensic legal status, except those in pre-trial examination status, tend to stay much longer than those with a civil legal status. The median LOS was 482 days (16 months) for individuals in a Civil status and 1985 days (65 months) for those in a Forensic status.
- There was one individual in 'Non Protesting' legal status, whose length of stay was 10655 days (29 years).
   Except this individual, those with a legal status of not guilty by reason of insanity (NGBRI) showed the longest length of stay. The median LOS of US NGBRI patients is 9999 days (27 years), that of US VI (Virgin Island) patients

## Table 18. Length of Stay by Legal Status (9/30/10)

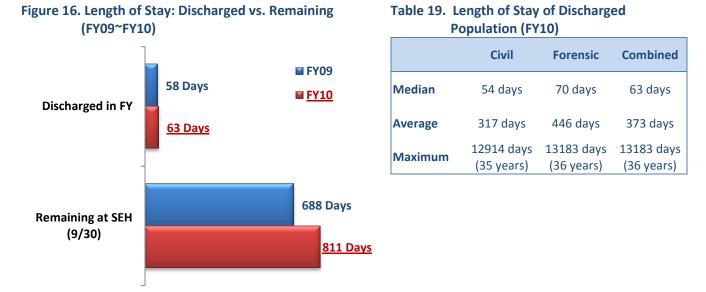
Legal Status	Number of	Median	Average
	Individuals	(Days)	(Days)
Committed Inpatient	35	495	1019
Committed Outpatient	31	659	1238
DC Examination	52	72	145
DC Mentally Incompetent	5	149	410
Dual Commitment (NGBRI/Criminal Convct.)	1	773	773
Emergency	36	42	239
Non Protesting	1	10655	10655
Not guilty by reason of insanity – DC	90	5201	5555
Not guilty by reason of insanity – US	10	9999	10868
Not guilty by reason of insanity – USVI	2	8722	8722
Sexual Psychopath (Miller Act)	4	6473	6873
Voluntary	43	1528	3851
No Legal Status Information Entered	1	43	43
Total	311	811	2967

was 8722 days (24 years), and LOS of DC NGBRI patients was 5201 days (14 years). Among those with civil legal status, those in voluntary legal status tend to stay longest. Their median LOS was 1528 days (4 years).

Those in emergency legal status showed the shortest length of stay: their median LOS was 42 days. Those who entered as pre-trial patients for DC examination also stayed for a relatively short period of time: their median LOS was 72 days.

## 4. Length of Stay of Discharged Population

- The length of stay of the discharged population was significantly shorter than the LOS of those remaining in the Hospital. The median LOS of the individuals remaining in care at the end of FY10 (9/30/10) was 811 but the median LOS of those who have been discharged during FY10 was 63 days.
- The length of stay of individuals served in FY10 was longer than those served in FY09. The median LOS of those who left the Hospital as well as the LOS of those remaining in care increased in FY10. The median LOS of those discharged in FY09 was 58 days and that of those in FY10 was 63 days.
- The median LOS of individuals discharged in FY10 from civil legal status was 54 days whereas the median LOS of those discharged from forensic legal status was 70 days.

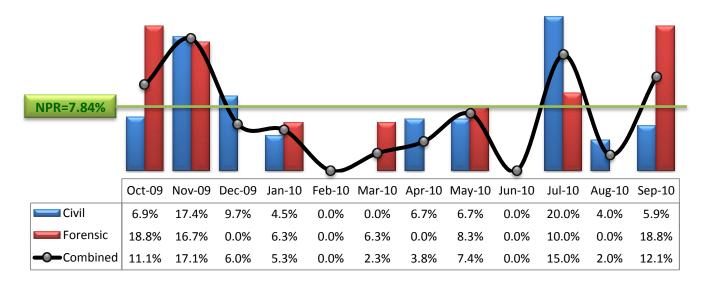


The length of stay data indicates that those who were newly admitted to the Hospital tended to be discharged quickly whereas those who had been remaining at the Hospital for a long period continued to stay longer. In fact, of the 442 admissions made during FY10, 332 or 75% were discharged by the end of the fiscal year. On the contrary, of the 311 remaining at the end of the fiscal year, 64% had been admitted more than a year ago.

## IV. Readmissions

## 1. Readmission Rate<sup>10</sup>

- Of the 485 individuals discharged in FY10, 6.8% or 33 were readmitted within 30 days. This is a 2.5% decrease from FY09, when the 30-day readmission rate was 9.3%.
- The 30-day re-admission rate of the Hospital is lower than the national trend: according to the most recent NPR, the average 30-day admission rate of state psychiatric hospitals is 7.8%



#### Figure 17. 30-Day Readmission Rate (FY10)

- Of the 33 30-day readmissions, 15 (45%) were readmitted within one week after their discharge, including seven (7) who were readmitted the next day following their discharges.
- In FY10, 23% of discharges (10 per month) returned to the Hospital within 180 days whereas 30% (15 per month) did so in FY09.
- Some individuals were repeatedly re-admitted but the frequency of multiple re-admissions declined. In FY10, only one (1) individual was readmitted twice within 30-days while there were eight (8) individuals who were readmitted within 30-days in FY09. During the first 7 months of FY10, there were a total of 62 unique individuals who returned within 180-days and of those, 13% had more than one re-admission within 180 days. In FY10, of the 109 unique individuals readmitted within 180-days, 28% were readmitted repeatedly.

<sup>&</sup>lt;sup>10</sup> 30-day readmission rate is calculated by dividing the total number of patients readmitted within 30 days of discharge by the total number of hospital discharges. It is more commonly used as a quality indicator that measures the pattern of returns of discharged patients

#### Table 20. Readmissions (FY09 vs. FY10)

	Category	FY09	FY10
Tatal Discharges		604	485
Total Discharges		(50 per month)	(40 per month)
Number of modulations		56	33
20 Day	Number of readmissions		(3 per month)
30-Day Readmissions	Readmission rate	9.3%	6.8%
Unique individuals Individuals of >=2 readmissions within 30-day		47	32
		8	1
	Number readeriations		70 for 7 months*
Number readmissions		(15 per month)	(10 per month)
180-Day Readmission rate		30.1%	23.3% (out of 301)*
Reduinissions	Unique Individuals	109	62
	Individuals of >=2 readmissions within 180-day	31 (28%)	8 (13%)

\* It is the result of observing discharges that occurred during the first seven months of FY10 (Oct-2009 ~Apr-2010)<sup>11</sup>.

## 2. Characteristics of Individuals Readmitted to Care

- There is no significant difference in age and gender between readmitted population and all discharged population. The median age of both readmissions and the discharged population at 48. The gender ratio of female and male for readmissions is 42% vs. 58% while that for all discharges is 41% vs. 59%.
- Individuals who are readmitted tend to have had a shorter length of stay in their previous episode than who
  do not return to the Hospital. Almost half of those readmitted within 30 days (45%) stayed 30 days or less in

their previous hospitalization whereas only 24% of all discharges had a LOS of 30 days or less. The median LOS also speaks to the same trend: the median LOS of individuals readmitted was 36 days in their previous episode while that of all individuals discharged was 63 days. This indicates that an individual with a short length of stay at discharge is more likely to return to the Hospital.

## Table 21. Length of Stay in Previous Episodes of Those Readmitted within 30 Days (FY10)

Length of Stay	All Discharged in FY10	Readmitted within 30-days
# of Individuals	485	33
Los <=30 Days	24% (115)	45% (15)
Median LOS	63 days	36 days
Average LOS	374 days	267 days

<sup>&</sup>lt;sup>11</sup> Analyzing the readmission rate requires us to observe discharge cohort data retrospectively. For example, for the 180-day readmission rate, we have to observe those who have been discharged for 180 days from the discharge date. For this report, we observed and analyzed only those who were discharged for the first six months of FY09.

## V. Clinical Profile of Individuals in Care

## **1.** Principal Diagnosis

- Three out of four individuals (74%) admitted during FY10 had a psychotic disorder indicated as their principal admission diagnosis. Comparatively, 84% of the individuals remaining in care on 9/30/10 had this diagnosis.
- Those who entered with mood disorder were more likely to be discharged than those with other types of disorders. A total of 84 individuals or 19% of those admitted in FY10 were diagnosed with a mood disorder as the principal diagnosis while only 6% of the individuals remaining in care had a mood disorder. Of those 84 individuals admitted with a mood disorder, 72 or 86% were discharged on or before 9/30/10 whereas 75% of all admissions in FY10 were discharged during the same time period.

Diagnosis	Admissio	ns in FY10	Remaining o	on 9/30/10
Diagnosis	Number	Percent	Number	Percent
Cognitive Disorder	4	1%	10	3%
Psychotic Disorder	327	74%	258	83%
Mood Disorder	84	19%	18	6%
Substance Related Disorder	15	3%	10	3%
Developmental Disorder	2	0%	3	1%
Personality Disorder	1	0%	3	1%
Sexual Disorder	0	0%	6	2%
Other (None of Above)	9	2%	3	1%
Total	442	100%	311	100%

#### Table 22. Principal Diagnosis: Admissions (FY10) vs. Remaining (9/30/10)

Data presented hereinafter is based on diagnosis information from AVATAR for the 311 Individuals remaining in care as of 9/30/10.

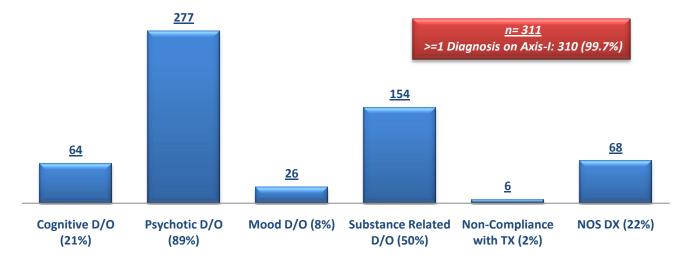
## 2. Clinical Disorders (Axis I)

- Of the 311 individuals served on 9/30/10, all but one had at least one clinical disorder on Axis I identified.
   One individual was indicated to have 'No Diagnosis or Condition on Axis I (DSM-VI Code V71.09)'.
- A total of 277 individuals (89%) were diagnosed with a psychotic disorder schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder and all other psychotic disorders<sup>12</sup>.
- The number of individuals who had a cognitive disorder, which includes delirium, dementia, and amnestic and other cognitive disorders, increased to 64 (21%) in September 2010 from 51 (15%) in September 2009.
- Twenty-six (26) individuals (8%) had a mood disorder, which includes depressive disorders and bipolar disorders.
- A total of 154 individuals (50%) were diagnosed as having a substance use disorder. It is an increase from 46% in the previous year.
- A total of 68 individuals (22%) were diagnosed with a "not otherwise specified (NOS)" diagnosis<sup>13</sup> on at least one of their Axis I diagnoses. In September 2009, 67 or 19% of the then population had a NOS diagnosis.

<sup>&</sup>lt;sup>12</sup> Axis I diagnoses were grouped as guided by the DSM-IV-TR Classification of the American Psychiatric Association.

<sup>&</sup>lt;sup>13</sup> Enough information available to indicate the class of disorder that is present, but further specification is not possible, either because there is no sufficient information to make a more specific diagnosis or because the clinical feature of the disorder does not meet the criteria for any of the specific categories in that class. (*DSM-IV-TR, American Psychiatric Association.*) The most frequent NOS diagnoses among SEH patients include '298.9 Psychotic Disorder NOS', '294.8 Dementia NOS' and '294.9 Cognitive Disorder NOS.

There were six (6) individuals who were identified as 'Noncompliance with Treatment (DSM-IV code V15.81)'<sup>14</sup>

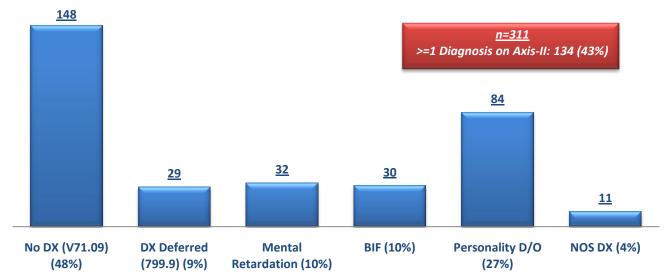


#### Figure 18. Individuals in Care with Diagnosis in Axis I (9/30/10)

## 3. Personality Disorders and/or Mental Retardation (Axis II)

- Forty-three percent (43%) or 134 individuals in care on 9/30/10 had one or more diagnoses identified on Axis II, 148 (48%) had 'No Diagnosis or Condition on Axis II (DSM-VI Code V71.09)', and the remaining 29 (9%) had 'Diagnosis Deferred on Axis II (DSM-VI Code 799.9)'.
- A total of 84 individuals (27%) had a personality disorder diagnosed. It is a decrease from 111 (32%) in the previous year.

Figure 19. Individuals in Care with Diagnosis in Axis II (9/30/10)



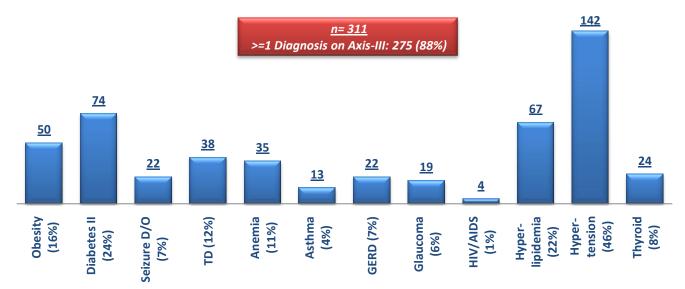
<sup>&</sup>lt;sup>14</sup> "This category can be used when the focus of clinical attention is noncompliance with an important aspect of the treatment for a mental disorder or a general medical condition. The reasons for noncompliance may include discomfort resulting from treatment, expense of treatment, decisions based on personal value judgments or religious or cultural beliefs about the advantages and disadvantages of the proposed treatment, maladaptive personality traits or coping styles, or the presence of a mental disorder. This category should be used only when the problem is sufficiently severe to warrant independent clinical attention." DSM-IV-TR, American Psychiatric Association.

- Thirty-two (32) individuals or 10% were diagnosed with Mental Retardation (DSM-VI Code 317~319) and 30 individuals (10%) were diagnosed with 'V62.89 Borderline Intellectual Functioning'<sup>15</sup>.
- A total of 11 individuals (4%) had a NOS diagnosis on 9/30/10 compared to 23 (7%) on 9/30/09.

## 4. General Medical Conditions (Axis III)

- Almost nine out of ten individuals in care (88%) had at least one identified medical condition or physical disorder. In September 2009, 83% had at least one medical condition identified.
- The most prevalent medical condition was 'Hypertension': 142 individuals or 46%, which is an increase from 2009 (133 individuals or 39%).
- One out of four individuals (24%) was diagnosed as having 'Type II Diabetes'.
- Fifty (50) individuals (16%) were diagnosed with 'Obesity' through Axis-III. This is much smaller than the number of obesity diagnoses projected from the Body Mass Index (BMI) calculation, which revealed that 107 Individuals (34%) were obese as their BMI was 30 or above (See page 27).
- Twenty-two (22) individuals were diagnosed as having a 'Seizure Disorder'.
- Thirty-eight (38) individuals or 12% were identified with Tardive Dyskinesia (TD)<sup>16</sup>.

Figure 20. Individuals in Care with Major Medical Conditions (9/30/10)

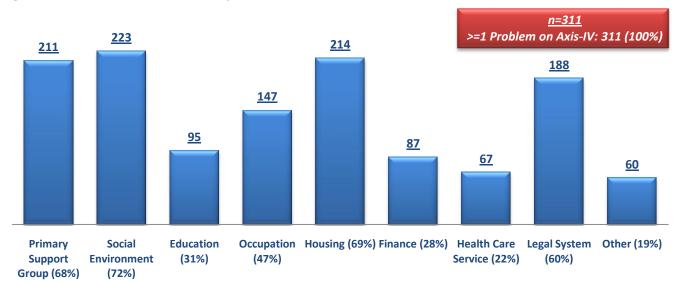


## 5. Psychosocial and Environmental Factors Contributing to the Disorder (Axis IV)

- All of the 311 individuals had at least one identified psychosocial and environmental problem.
- Problems with 'social environment' (72%), 'housing '(69%), and 'primary support group' (68%) were identified as major contributing psychosocial and environmental factors. Also, 60% were identified as having problems related to 'interaction with the legal system or crime'.

<sup>&</sup>lt;sup>15</sup> "This category can be used when the focus of clinical attention is associated with borderline intellectual functioning, that is, an IQ in the 71–84 range." *DSM-IV-TR, American Psychiatric Association.* 

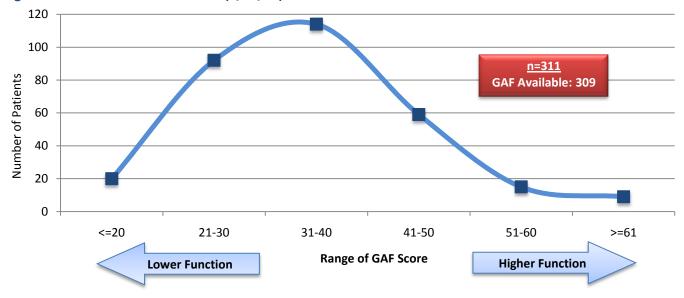
<sup>&</sup>lt;sup>16</sup> "Tardive dyskinesia is a neurological disorder caused by the long-term use of neuroleptic drugs, or anti-psychotic medications. Neuroleptic drugs are generally prescribed for psychiatric disorders, as well as for some gastrointestinal and neurological disorders. The prevalence of tardive dyskinesia is estimated to be 10 to 20 percent of individuals treated with anti-psychotic medications. The elderly are more susceptible to persistent and irreversible TD than younger people." National Mental Health Association.



#### Figure 21. Individuals in Care with Psychosocial/Environmental Problems (Axis IV) Identified (9/30/10)

## 6. Global Assessment of Functioning [GAF] (Axis V)<sup>17</sup>

- All but two individuals had Global Assessment of Functioning (GAF) score available. In September 2009, only 87% of individuals had GAF score available in AVATAR.
- Those who were identified as being 'unable to function in almost all areas (21~30)' increased to 30% from 24% in the previous year. Consequently, the FY10 average GAF score (35.6) is slightly lower than FY09's (36.2).
- Individuals served in Annex B had the highest GAF score (47.5 on average) followed by those served in units 1C (40.7) and 2B (40.3) while those in units 1F (26.2) and 1E (27.8) had the lowest scores.



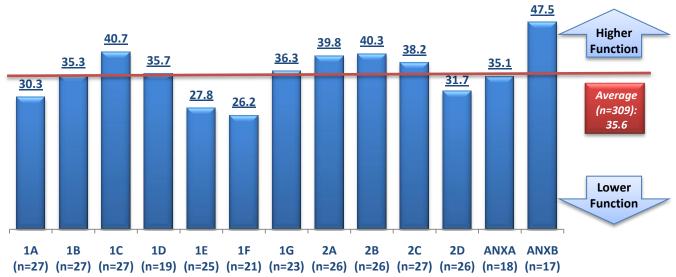
#### Figure 22. Distribution of GAF Score (9/30/10)

<sup>&</sup>lt;sup>17</sup> GAF is a numeric scale (0 through 100) used by mental health clinicians and doctors to rate the social, occupational and psychological functioning of adults. Higher scores indicate better functioning.

Domain	Symptom Severity	Level of Functioning
1~10	Persistent danger of severely hurting self or others or serious suicidal act with clear expectation of death.	Persistent inability to maintain minimal personal hygiene
11 ~ 20	Some danger of hurting self or others or Gross impairment in communication	Occasionally fails to maintain minimal personal hygiene
21 - 30	Behavior is considerably influenced by delusions or serious impairment in communication or judgment	Inability to function in almost all areas
31 - 40	Some impairment in reality testing or communication	Major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood
41 - 50	Serious symptoms	Any serious impairment in social, occupational, or school functioning
51 - 60	Moderate symptoms	Moderate difficulty in social, occupational, or school functioning
61 - 70	Some mild symptoms	Some difficulty in social or occupational functioning, but generally functioning pretty well, has some meaningful interpersonal relationships.
71 - 80	If symptoms are present, they are transient and expectable reactions to psychosocial stressors	No more than slight impairment in social, occupational, or school functioning
81 - 90	Absent or minimal symptoms, Generally satisfied with life. No more than everyday problems or concerns.	Good functioning in all areas, interested and involved in a wide range of activities, socially effective,
91 - 100	No symptoms	Superior functioning

#### Reference: GAF scale chart, Dr. Ray Wintker of the Murfreesboro VAMC

#### Figure 23. Average GAF Score by Unit (9/30/10)



## 7. Body Mass Index (BMI) and Obesity

- Weight and height information necessary to calculate BMI was obtained from the most recent 'History and Physical Assessment' or weight and height information screen maintained by nurses in AVATAR for 98% or 304 individuals.
- According to BMI measure findings, as of 9/30/10, a total of 107 individuals (34%) were obese as their BMI was 30 or above. However, the number of individuals who were formally diagnosed with obesity on Axis-III was only 50 (16%).

## VI. Medication and Pharmacy

Data Source: MEDMARX<sup>18</sup> for data prior to December 2009 and internal databases (UI DB and ADR DB) for data since December 2009.

## **1.** Medication Variances (MV)<sup>19</sup>

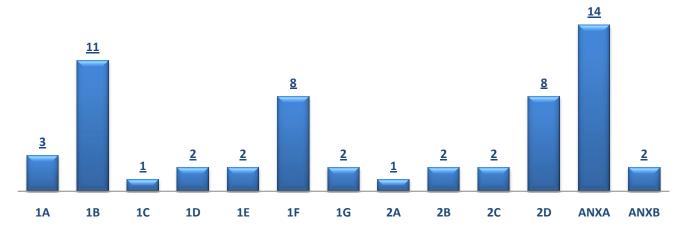
- During FY10, a total of 226 medication variances (19 per month on average) were reported.
- The number of reported MV incidents varied month by month, ranging from seven(7) to 40.

#### Figure 24. Volume of Reported Medication Variances (FY10)



- Medication Variances are shown for each unit after the move in May into the new building.
- Annex A reported the most MV incidents (14) followed by 1B (11) while many other units reported fewer than three since May 2010.



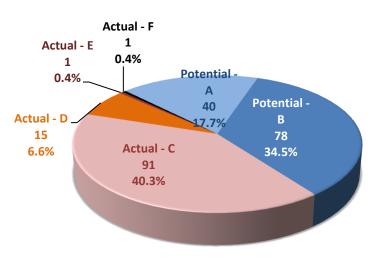


Of the 226 reports, 40 (18%) were those where no actual variances occurred but it had the capacity to cause a variance (Category A), 78 (35%) cases did not reach patients (Category B), and the remaining 108 were MVS that actually occurred.

<sup>&</sup>lt;sup>18</sup> An internet-based medication variance and drug reaction reporting database many hospitals and health care systems use to document and track medication variances and ADRs and the Hospital participated between April 2007 and November 2009.

<sup>&</sup>lt;sup>19</sup> It is an equivalent term of 'medication error', which is defined as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer." –*National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP)*.

Of the 108 actual MVs, 91 (40%) cases reached the patient but did not cause the patient harm (Category C), 15 (7%) required monitoring and intervention to preclude harm (Category D), one resulted in temporary harm to the patient (Category E), and one contributed to temporary harm to the patient and required hospitalization (Category F).



## Figure 26. Outcomes (Category) of Medication Variances (FY10)

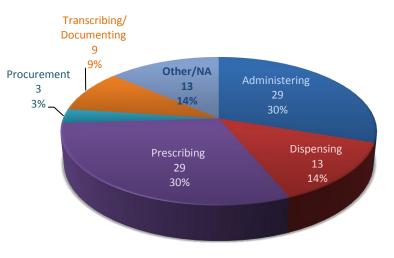
#### Category Descriptions

- A Circumstances or events that have the capacity to cause error.
- **B** An error occurred, but the error did not reach the patient.
- **C** An error occurred that reached the patient, but did not cause patient harm.
- **D** An error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to the patient, and/or required intervention to preclude harm.
- **E** An error occurred that may have contributed to or resulted in temporary harm to the patient and required intervention.

**F** An error occurred that may have contributed to or resulted in temporary harm to the patient and required initial or prolonged hospitalization.

- Of the MVs that had a Critical Break Point, 29 (30%) variances developed during medication prescribing process, 29 (30%) in administering process, 13 (14%) in dispensing process, 9 (9%) in the transcribing and documenting process, and three (3) in the procurement process.
- A majority of MVs were discovered/reported by Pharmacy Personnel (82 or 36% of the total 226 MVs reported) and reports made by nursing staff and physicians composed 72 or 32% and 33 or 15%, respectively.

#### Figure 27. MV by Critical Break Point (Mar 2010 ~ Sep 2010)



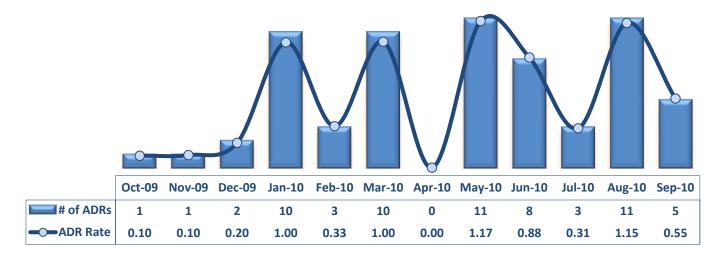
#### Table 23. MV by Reporter's Discipline (FY10)

Discipline	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Average
Physician	0	0	3	1	4	1	2	4	5	6	4	3	33	2.8
Nursing Staff	2	4	4	9	8	7	8	1	4	5	6	14	72	6.0
Pharmacy Personnel	16	13	4	16	16	6	2	2	5	1	0	1	82	6.8
Not Identified	0	2	18	14	4	0	0	0	0	0	1	0	39	3.3
Grand Total	18	19	29	40	32	14	12	7	14	12	11	18	226	18.8

## 2. Adverse Drug Reaction (ADR)<sup>20</sup>

- During FY10, a total of 65 ADRs or five (5) per month on average were reported. In FY09, a total of 62 ADRs were reported.
- The monthly number of reported ADRs ranged from zero (0) to 11.

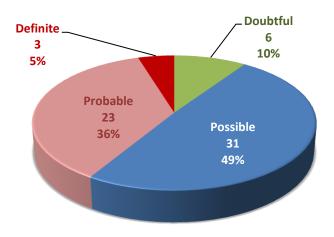
## Figure 28. Number of Reported ADRs (FY10)



Data Source: MEDMARX for data prior to December 2009 and UI DB for data since December 2009

- Data on the number of ADRs by unit suggests that ADRs may not be consistently reported throughout the hospital.
- The ADRs had a 'possible' probability of occurring at 31 (49%), 'probable' at 23 (36%), 'doubtful' at 6 (10%), and 'definite' at 3 (5%)
- Annex A had the most ADRs reported (a total of 15) while several units did not have any ADRs reported for the entire fiscal year.

#### Figure 29. Probability of ADR (Dec 2009 ~ Sep 2010)



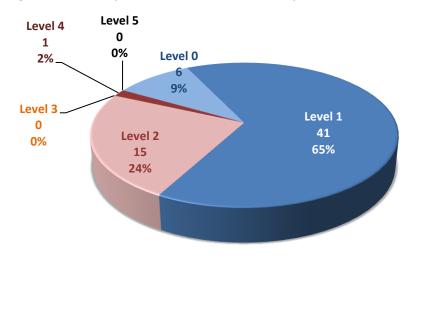
Office of Patient Statistics and Reporting

<sup>&</sup>lt;sup>20</sup> A Suspected Adverse Drug Reaction is a "noxious and unintended response to any dose of a drug (or biologic) product for which there is a reasonable possibility that the product caused the response. In this definition, the phrase 'a reasonable possibility' means that the relationship cannot be ruled out. – Food and Drug Administration proposed definition, Federal Register, 3/14/2003 (Volume 68, Number 50)

## Figure 30. ADR Reports by Unit (May 2010 ~ Sep 2010)



Figure 31. Severity Level of ADR (Dec 2009 ~ Sep 2010)



#### Severity Level

**0** (Mild) Required little or no treatment, no change in therapy, and did not cause harm or extend the stay in the facility

FY10 Trend Analysis (12/23/10)

- 1 (Moderate) Caused no harm to the patient but required a significant reduction in dosage or discontinuation of the drug, and required treatment or caused an extension of stay in the facility
- 2 (Moderate) Resulted in temporary harm to the patient and required initial or prolonged hospitalization
- **3 (Severe)** Resulted in permanent patient harm or disability
- 4 (Severe) Required intervention necessary to sustain life
- 5 (Severe) Resulted in the patient's death
- Of the 63 ADRs reported since December 2009<sup>21</sup>, 41 or 65% required dosage change and required treatment or caused an extension of stay in the facility while 15 required initial or prolonged hospitalization (24%), six (6) cases (or 10%) required little or no treatment, and one (1) cases required intervention necessary to sustain life.

<sup>21</sup> The severity level of a medication variance incident was tracked in a different methodology prior to December 2009.

## VII. Unusual Incidents

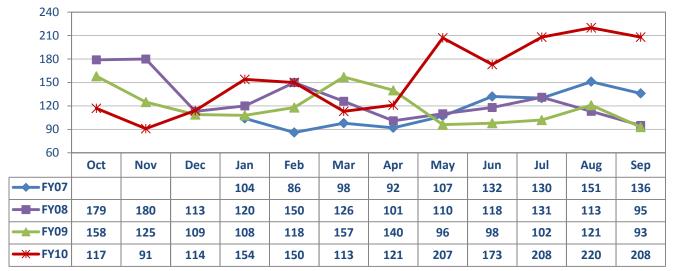
Data Source: Unusual Incidents Database

## 1. Volume of Unusual Incident Reports (UI)

- A total of 1876 unusual incidents (156 per month on average) were reported during FY10. This represents an increase of 31% from FY09, when there were 119 UIs reported per month.
- The number of incidents significantly increased beginning in May 2010. Between May and September, on average, 203 incidents were reported per month.

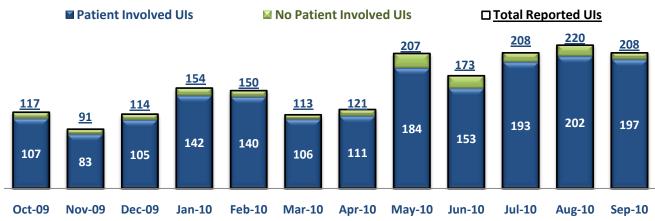
	fonthly Average of s (FY07~FY10)
Year	Monthly Average
FY07	115
FY08	128
FY09	119
FY10	156

#### Figure 32. Reported Unusual Incidents by Month (FY08 ~ FY10)



## 2. Individuals Involved in UI

 Of the 1876 incidents reported in FY10, 92% or 1723 (144 per month on average) were those where at least one individual in care was involved. The other 8% were classified as non-patient related incidents.



#### Figure 33. Number of f Incidents by Patient Involvement (FY10)

On average, about 101 unique individuals in care were involved in at least one incident every month. They comprise about 28% of the total individuals served at least one day during month (362 per month in FY10).

- One third of those 101 individuals were repeatedly involved in more than one incident within a month period. About 16 were involved in three (3) or more UIs per month. Those who were repeatedly involved in incidents visibly increased particularly since May.
- Some individuals in care were also frequently alleged as aggressors. Of the average of 101 unique patients involved in at least one incident, 30 (29%) were alleged as aggressors in at least one incident and about nine (9) were alleged as aggressors in more than one instance within a month period.

# of Incidents Involved	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Mean	Percent
1 Incident	69	55	67	79	68	68	74	68	60	63	65	58	66	65%
2 Incidents	20	11	14	17	19	22	18	29	13	25	23	23	20	19%
3 Incidents	5	6	5	13	11	3	6	8	12	6	10	8	8	8%
4~5 Incidents	0	2	3	2	7	4	3	9	3	10	10	6	5	5%
6~10 Incidents	2	0	1	4	0	1	1	2	5	4	5	2	2	2%
>=11 Incidents	0	0	0	0	0	0	0	1	1	2	2	4	1	1%
Pts involved >=3UIs (#)	7	8	9	<b>19</b>	<b>18</b>	8	10	20	21	22	27	20	16	16%
(%)	7%	11%	<b>10%</b>	17%	17%	8%	<b>10%</b>	17%	22%	20%	23%	20%	16%	
Total (Unique Patients)	96	74	90	115	105	98	102	117	94	110	115	101	101	100%

#### Table 25. Unique Patients Involved in UIs (FY10)

#### Table 26. Unique Patients Alleged as Aggressors in UIs (FY10)

# of Allegations	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Mean	Percent
1 Incident	32	19	19	18	18	14	21	21	24	16	25	20	21	20%
2 Incidents	5	3	4	5	6	5	7	7	3	6	5	8	5	5%
3 Incidents	0	3	1	4	2	2	1	2	2	4	2	2	2	2%
4~5 Incidents	1	2	1	0	0	1	2	3	2	2	1	1	1	1%
6~10 Incidents	0	0	0	1	0	0	0	0	1	2	0	0	0	0.3%
>=11 Incidents	0	0	0	0	0	0	0	0	0	0	0	1	0	0.1%
Pts alleged in >=2UIs (#)	6	8	6	10	8	8	10	12	8	14	8	12	9	9%
(%)	6%	11%	7%	9%	8%	8%	10%	10%	9%	13%	7%	12%	9%	
Total Alleged Aggressors	38	27	25	28	26	22	31	33	32	30	33	32	30	29%
Total Involved in >=1 UI	96	74	90	115	105	98	102	117	94	110	115	101	101	100%

## 3. UI by Type and Severity

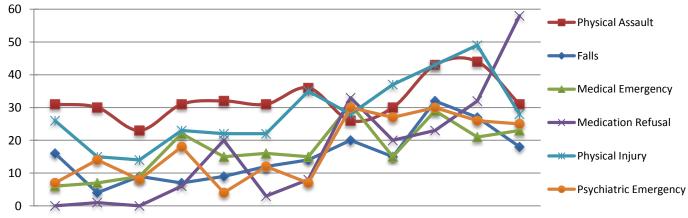
- Assault/altercation (21%), physical injury (18%), medical emergency (11%), psychiatric emergency (11%), and Medication Refusal (11%) were the most frequently reported incidents in FY10.
- The frequency of assault/altercation, falls, and physical injury incidents soared in July and August 2010 but declined somewhat in September.
- An increase of medication refusal incident reporting was the key contributing factor to the increased volume of incident reports since May 2010. Prior to May, on average, only five medical refusal incidents were reported per month. Since May, the average number of medication refusal incident reports increased to 33 per month. This considerable increase may be due in part to the increased awareness on the importance of medication refusal reporting among nursing staff, along with medication refusal related policy reinforcement.

#### Table 27. Incidents by Type (FY10)

UI Туре	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	Percent
Abuse/Neglect/Exploitation	7	4	8	6	4	3	3	5	3	5	6	9	63	5	3%
Physical Assault	31	30	23	31	32	31	36	26	30	43	44	31	388	32	21%
Sexual Assault	3	0	0	1	0	1	0	2	1	0	1	1	10	1	0.5%
Contraband	5	7	4	8	8	8	6	12	13	6	11	11	99	8	5%
Crime	2	2	0	0	0	0	0	4	1	0	0	0	9	1	0.5%
Death	1	0	1	5	1	0	0	0	0	1	1	2	12	1	1%
Emergency Invol. Medication	0	0	0	0	0	0	0	4	9	6	3	5	27	2	1%
Environment	3	0	1	3	1	1	0	6	3	0	5	2	25	2	1%
Falls	16	4	9	7	9	12	14	20	15	32	27	18	183	15	10%
Fire	1	0	1	0	1	2	1	0	2	1	0	0	9	1	0.5%
Medical Emergency	6	7	9	22	15	16	15	31	15	29	21	23	209	17	11%
Medication Refusal	0	1	0	6	20	3	8	33	20	23	32	58	204	17	11%
Medication Variance	3	7	29	39	30	14	12	7	14	12	11	18	196	16	10%
Physical Injury	26	15	14	23	22	22	35	28	37	43	49	28	342	29	18%
Psychiatric Emergency	7	14	8	18	4	12	7	30	27	30	26	25	208	17	11%
Reportable Disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Restraint	1	1	2	0	0	4	0	1	1	2	3	0	15	1	1%
Seclusion	2	2	4	5	1	2	0	4	5	3	4	3	35	3	2%
Security Breach	3	3	1	0	1	2	1	2	4	4	6	4	31	3	2%
Suicide Attempt/Behavior	0	0	0	1	1	1	0	1	2	1	0	0	7	1	0.4%
Unauthorized Leave	13	4	5	4	1	3	3	7	5	2	3	1	51	4	3%
Vehicle Accident	1	1	1	0	3	1	2	0	0	0	2	0	11	1	1%
Vital Sign/Finger Stick Refusal	0	0	0	1	17	0	3	1	4	1	6	1	34	3	2%
Other Attempted UL*	1	0	1	3	0	1	5	4	5	7	7	2	36	3	2%
Self Injurious Behavior*						0	2	1	2	3	3	1	12	2	1%
Other (None of above)	11	11	9	18	13	9	9	22	26	33	27	34	222	19	12%
Total**	117	91	114	154	150	113	121	207	173	208	220	208	1876	156	100.0%

\* Attempted UL and self injurious behavior were not separate categories in the official UI form. Instead, they were captured under 'other' category and each case in the 'other' category was manually reviewed and re-categorized.

\*\* Total number of patient involvement records. One patient may be involved in multiple incidents, playing different roles.



## Figure 34. Trend of Key Types of UI (FY10)

Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Aug-10 Sep-10

- Two out of three incidents (67%) reported in FY10 were considered to be major incidents.
- A majority of incidents had their severity level identified by the Risk Manager to be low (41%) or medium (41%) and those considered to be critically severe (high or catastrophic) constituted about 18%.

UI Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	Percent
Major Incidents (#)	115	84	86	89	70	81	79	138	114	139	143	120	1258	105	67%
(%)	98%	92%	75%	58%	47%	72%	65%	67%	66%	67%	65%	58%	67%		
Non-Major Incidents (#)	2	7	28	65	80	32	42	69	59	69	77	88	618	52	33%

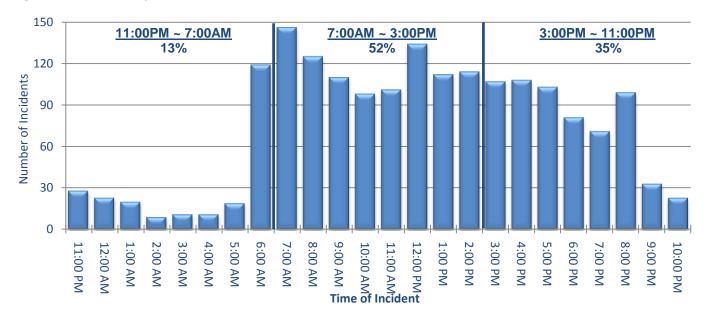
#### Table 28. Major UIs vs. Non-Major UIs (FY10)

#### Table 29. UIs by Severity (FY10)

Severity	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	Percent
Catastrophic	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0.1%
High	6	4	6	16	13	21	19	61	43	62	38	45	334	28	18%
Medium	33	21	47	51	75	43	43	82	77	78	114	111	775	65	41%
Low	78	66	61	86	62	49	59	64	53	68	68	52	766	64	41%

## 4. UI by Time and Location

- Most of UIs took place during the day shift (52%) and the evening shift (35%).
- Incidents climbed at 6:00am, reaching its peak between 7:00am and 8:00am. They slowed down in the late morning but rose again at noon. They declined notably after 6:00pm but climbed again at 8:00pm. The number of incidents decreased after 9:00pm and stayed low until 6:00am in the morning.



#### Figure 35. Incidents by Time and Shift (FY10)

A significant number of UIs reported between 6:00am and 9:00am and between 8:00pm and 9:00pm involved medication refusal: of the total of 146 incidents that occurred between 7:00am and 8:00am, 40% were medication refusal incidents. Medication variances were reported most frequently in the morning. Unlike medication refusal, however, there were not many medication variance incidents reported in the evening but the trend showed a noticeable increase at noon.

The frequency of psychiatric emergency incidents increased between 9:00am and 10:00am and medical emergency incidents rose between 11:00am and 1:00pm.

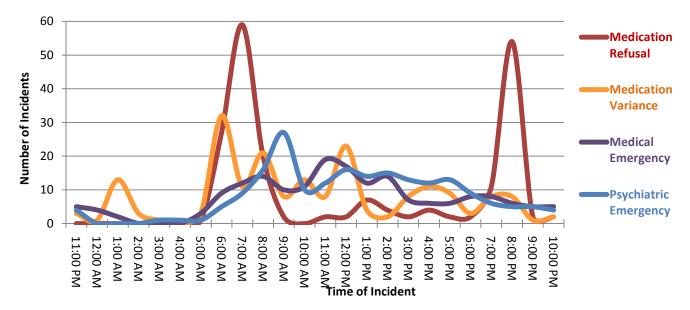
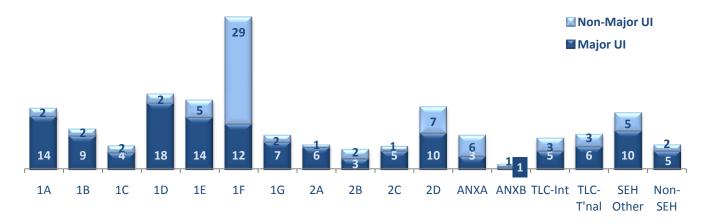


Figure 36. Time Trend of Key Incidents (FY10)

Certain units reported incidents more frequently than other units. Over the last five months of FY10, unit 1F reported a total of 41 incidents per month whereas Annex B (2) and 2B (5) reported five or fewer incidents per month. A majority of incidents (29) reported from 1F, however, were non-major UIs including medication refusal. Unit 1D reported major incidents most frequently: 18 per month.

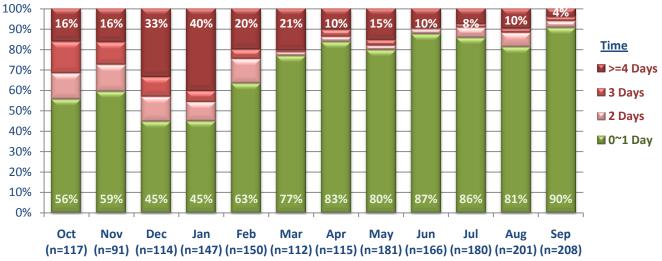
Figure 37. Monthly Average Number of UIs by Incident Location (May 2010~Sep 2010)



## 5. Time Lag between Incident and Reporting

Timely reporting of incidents significantly improved throughout the year. Ninety percent (90%) of UIs that occurred in September 2010 were reported within one day<sup>22</sup> whereas until January 2010 less than 60% of UIs were reported within one day.

<sup>&</sup>lt;sup>22</sup> The time lag has been calculated by subtracting the time an incident actually occurred from the time the incident report was received by the Risk Manager.



#### Figure 38. Time Lag between Incident and Reporting (FY10)

## 6. Physical Injury

- Physical injuries are often associated with either physical assaults or falls. In FY10, a total of 342 injury incidents (29 per month) were reported<sup>23</sup> and of those, 46% (158) were followed by physical assaults and 20% (69) were caused by falls.
- Of the 388 physical assault incidents reported in FY10, 41% resulted in injuries to individuals in care or staff.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	%
Total Physical Injury UIs	26	15	14	23	22	22	35	28	37	43	49	28	342	29	100%
Physical Assault	8	5	2	11	13	12	22	7	19	21	23	15	158	13	<b>46%</b>
Fall	4	2	2	3	3	4	7	9	8	8	9	10	69	6	<b>20%</b>
Neither Assault nor Fall	14	8	10	9	6	6	6	12	10	14	17	3	115	10	<b>34%</b>
<b>Total Physical Assault UIs</b>	31	30	23	31	32	31	36	26	30	43	44	31	388	32	100%
Resulted in Physical Injury	8	5	2	11	13	12	22	7	19	21	23	15	158	13	41%
No Physical Injury	23	25	21	20	19	19	14	19	11	22	21	16	230	19	<b>59%</b>

#### Table 30. Association between Physical Injuries and Physical Assaults/Falls (FY10)

#### Figure 39. Patient Injury Rate (FY10)



<sup>&</sup>lt;sup>23</sup> A physical injury incident may involve one or more individual(s) in care and/or staff. Occasionally, some of the alleged physical incident reports may not have any individuals identified to have been injured.

- In FY10, a total 208 individuals in care (17 per month) and 123 employees (10 per month) became s physical injuries.
- The patient injury rate of the Hospital in FY10 (1.80 per 1000 patient days) is not only significantly higher than the national public rate (0.39) but a critical increase from its FY09 patient injury rate (1.01).
- Patient injuries significantly increased since April 2010 and staff injuries also increased since May 2010.
- Half of the staff injuries are associated with physical assaults.

Table 51. Stall lijuly (FT10	וי														
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	%
Staff Injured	7	3	1	8	6	9	8	12	18	21	18	12	123	10	100%
Associated with Assault	4	2	0	2	2	4	3	3	9	15	12	6	62	5	50%
Not Associated with Assault	3	1	1	6	4	5	5	9	9	6	6	6	61	5	50%

#### Table 31. Staff Injury (FY10)

## 7. Restraint and Seclusion<sup>24</sup>

- The total number of restraint and seclusion episodes for FY10 is respectively 21 and 77. The number of restraint episodes significantly declined in FY10 but the number of seclusion episodes doubled from FY09. It is due in part to an atypical spike of seclusion episodes reported in November 2009.
- In FY10, on average, two (2) restraint episodes were reported per month, ranging between zero (0) and six (6). Also, six (6) seclusion episodes were reported per month, ranging between zero (0) and 50.

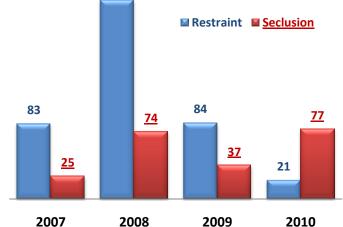


Figure 40. Total Number of Restraint & Seclusion

Episodes (FY07~FY10)

219

## The total duration of the restraint episodes in FY10 was 22 hours 10 minutes for 21 episodes,

which averages about 63 minutes per restraint episode. The total duration of seclusion episodes was 66 hours 47 minutes for 7 episodes, which is about 52 minutes per seclusion episode.

able 52. Restraint and Sec	Jusio	L PISC		110)										
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Monthly Average
Total Restraint Episodes	1	1	3	4	0	6	0	1	0	2	3	0	21	2
Unique Patients Restrained	1	1	3	4	0	5	0	1	0	2	2	0		2
Total Duration (hh:mm)	1:00	1:00	2:15	4:05	0:00	6:45	0:00	0:45	0:00	2:05	4:15	0:00	22:10	1:50
Total Seclusion Episodes	2	50	3	3	1	0	0	4	4	3	4	3	77	6
Unique Patients Secluded	2	26	2	4	1	0	0	3	3	3	4	3		4
Total Duration (hh:mm)	1:05	50:00	2:05	2:30	0:20	0:00	0:00	2:55	1:22	3:05	2:10	1:15	66:47	5:33

## Table 32. Restraint and Seclusion Episodes (FY10)

 In FY10, the restraint hours rate<sup>25</sup> stayed 0.03 or below and the seclusion rate<sup>26</sup> was 0.01 or below throughout the year except for the month of November 2010, when a number of individuals from a unit were

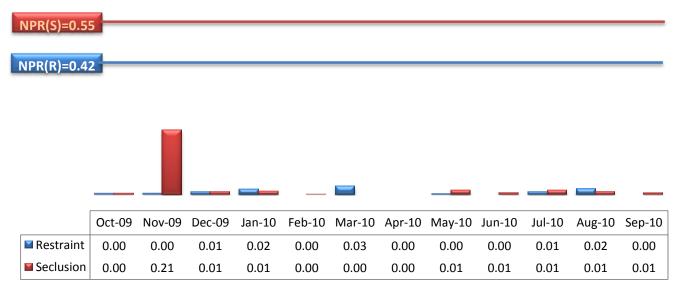
<sup>&</sup>lt;sup>24</sup> Data source for this section is the seclusion/restraint log, which may or may not include those episodes reported as UI. While PID reconciles the log and UI data at the end of every month, numbers may not be the same between two data sources for some months if any episodes are not reported in one of them.

<sup>&</sup>lt;sup>25</sup> Number of restraint hours per 1000 patient hours

simultaneously involved in a seclusion incident. Despite that, the average restraint and seclusion hour rates of the Hospital are much lower than the NPR: 0.42 for restraint and 0.55 for seclusion.

The percent of individuals in care restrained or secluded was also much lower than the NPR throughout the year except for the month of November 2010. On average, 0.4% and 1.2% of the individuals served at the Hospital were restrained or secluded in a given month while NPR is 3.6% and 2.6%, respectively.

#### Figure 41. Restraint Hours Rate & Seclusion Hour Rate (FY10)



#### Figure 42. Percent of Individuals in Care Restrained or Secluded (FY10)

