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

April & May 2008

Trend Analysis

- Hospital Statistics -

July 24, 2008

Office of Monitoring Systems (OMS)

Performance Improvement Department (PID)

Saint Elizabeths Hospital (SEH)

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I. Introduction

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 Office of Monitoring Systems (OMS) in the Performance Improvement Department (PID) published the first edition of the Monthly Trend Analysis Report on December 19, 2007, incorporating the Hospital's key data available for year 2007. The core purpose of the Trend Analysis report is to assist the Hospital in improving the quality of patient care by providing the Hospital's key actors with critical information regarding patients and its performance in delivering timely and effective services.

Many of the Hospital's managers recognize the urgency of performance monitoring using data and the importance of data collection. However, the Hospital currently lacks a functioning information system[1], from which reliable administrative and performance data could be efficiently obtained. In addition, methods of data collection are often manual; aggregate numbers are hand counted and the accuracy of those numbers is not easily verified. Offices that maintain a database often do not utilize their database in the most efficient way and it often lacks critical data elements. OMS is providing them with technical assistance to improve their data tracking capacity, reconstructing the data collection system or creating databases as needed, and analyzing compiled data. The Trend Analysis report is a final product of these processes. OMS will publish this report every two months until more efficient data compilation through the AVATAR system is available.

Areas covered in the monthly report include the Hospital's census, characteristics of patient population, the Interdisciplinary Recovery Planning (IRP) process, Treatment Mall group activities, Pharmacy data, Restraint/Seclusion, and Unusual Incidents. This edition additionally includes data regarding Infection Control (Chapter V) and Clinical Profile of Patient Population (Chapter VI).

As the current data collection mechanism is often manual and fragmented, the validity of the data presented in the report may not be verifiable for some areas. Despite these limitations, all available data is presented in this report. This is aimed at promoting efforts to enhance the reliability and validity of data as well as contribute toward building 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 which support best practice and ultimately improve the quality of patient care.

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[1] We expect that the Hospital's upcoming information management system AVATAR, Phase I of which is scheduled to launch in July 2008, will tremendously expand our data tracking and reporting capacity. The initial phase of Avatar will cover admissions, billing, laboratory and pharmacy. The next phase, which will include all other aspects of the clinical record, is scheduled for roll out in Winter 2008-2009.

II. Census

1. SEH Inpatient Population

Currently, the Hospital is operating 20 inpatient units, 10 in Civil Services and 10 in Forensic Services. (See **Table 1**.) Patients in the civil program are housed in RMB and CT2 buildings; patients in the forensic program are in the John Howard Pavilion (JHP). The forensic program additionally serves approximately 100 outpatients who have been adjudicated "not guilty by reason of insanity" and currently are on court ordered conditional release. This report focuses on the inpatient population.

As of May 31, 2008, the Hospital was serving a total of 411 inpatients: 212 inpatients in the civil program and 199 inpatients in the forensic program[2]. As **Figure 1** below illustrates, the Hospital's overall census gradually increased beginning in the summer 2007, through the end of the year. The census began to decrease in February, falling to under 400 in March and April. The May census is higher than the number in April but lower than May 2007, when the Hospital was serving a total of 443 inpatients.

Figure 1. Number of Patients Served by SEH on a Given Day (Apr 2007 ~ May 2008)

	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
Forensic	217	219	213	209	202	193	201	205	206	195	185	185	185	199
Civil	213	224	234	213	202	213	212	215	216	224	216	211	211	212
Total	430	443	447	422	404	406	413	420	422	419	401	396	396	411
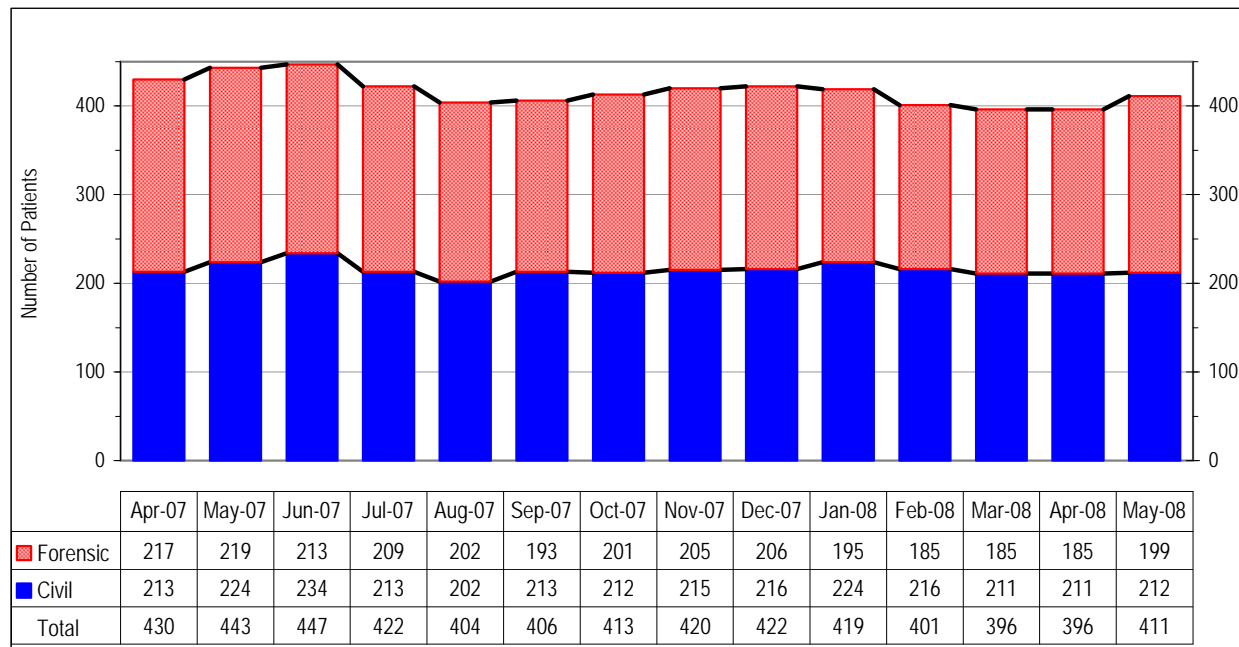
Note:The nursing offices maintain the Hospital's daily census reports, and for the months April 2007 to September 2007 the number reported is the average number of inpatients served on a given day has been generated to represent each month. However, forensic data for the months of October 2007 through May 2008 and civil data for December 2007 and May 2008 above reflects a point-in-time number reported on the last day of each month.

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[2] The forensic census does not include patients on court ordered conditional release or insanity acquittees on Unauthorized Leave.

2. Admissions & Transfers

As seen in **Figure 2**, the number of admissions to the Hospital, particularly to the civil program, shows fluctuations from month to month. A spike in civil admissions occurred in May and June 2007 when the number of admissions during each respective month was 50 and 48, respectively. In July 2007, the number of admissions in the civil program dropped to a low of 17[3] but rose again to 40 in October. Since then, it has been stable at around 40 per month. During the month of April and May 2008, there were respectively 45 and 35 new admissions to the civil program. Admissions to the forensic program range from 10 to 30 per month. From December 2007 through March 2008, forensic admissions remained under 20, reaching the lowest at 10 in February 2008; it increased to 25 in April and 21 in May 2008.   The number of total Hospital admissions for April 2008 reached 70, at the higher range but dropped to 56 in May 2008.

Figure 2. Admissions (Apr 2007 ~ May 2008)

	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
Forensic	24	30	23	22	20	23	22	22	17	18	10	15	25	21
Civil	33	50	48	17	38	26	40	36	36	44	40	42	45	35
Total	57	80	71	39	58	49	62	58	53	62	50	57	70	56
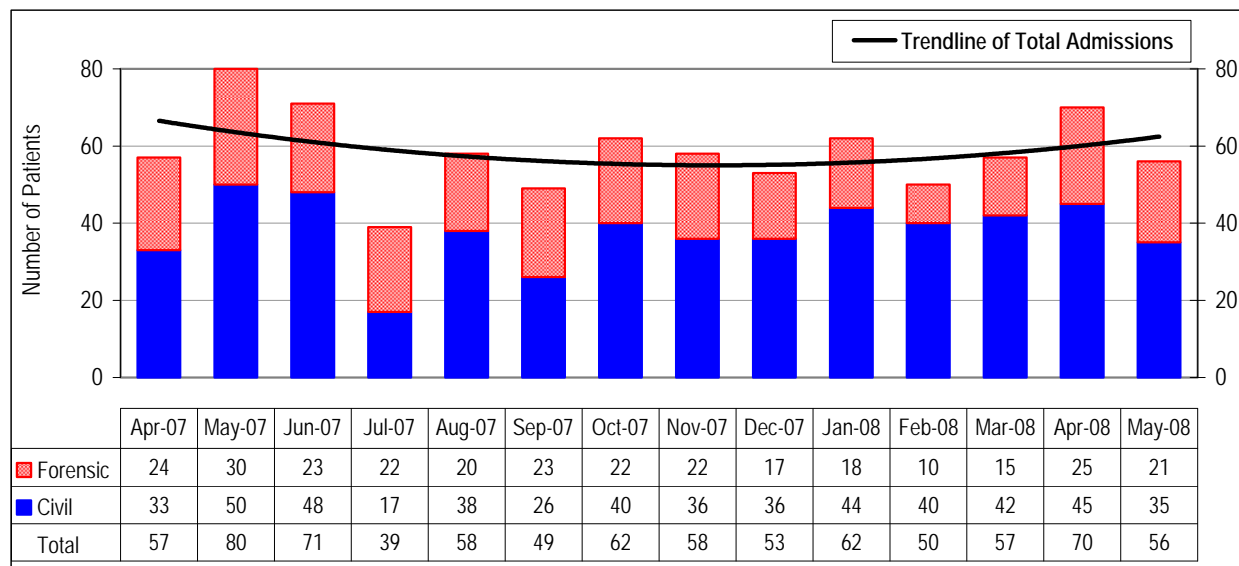
Source: Daily Census Report, Nursing Office

Some patients who initially enter the forensic program may be subsequently transferred to the civil program. This occurs when inpatients are civilly committed following a determination by the court that they cannot be restored to competency in the foreseeable future. During FY 2007, a total of 20 patients were transferred from the forensic program to the civil program. During the first six months of FY 2008, twelve forensic patients were transferred to the civil program. Those patients are reflected as civil patients beginning the month following the transfer; they are not included in the new admission data. Additionally, in January 2008 there were two civil patients who were transferred to JHP as their behaviors significantly jeopardized the safety of patients and staff in the civil program, requiring the structure of a maximum security setting. No civil patients have been transferred to the forensic program for behavioral reasons since that time.

3. Discharges

The total discharges in April and May were 67 and 54, respectively.   **Figure 3** demonstrates that overall total discharges, particularly in the civil program, significantly increased since February 2008. In the past four months, a total of 181 patients, 45 per month on average, were discharged from the civil program. These numbers exceed admissions for the same time period (162), 41 per month, even though the admissions during that period were relatively high.

Figure 3. Discharges (Apr 2007 ~ May 2008)

	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
Forensic	18	36	19	24	16	22	14	17	16	20	19	18	19	15
Civil	31	37	41	27	23	24	41	31	30	27	45	49	48	39
Total	49	73	60	51	39	46	55	48	46	47	64	67	67	54
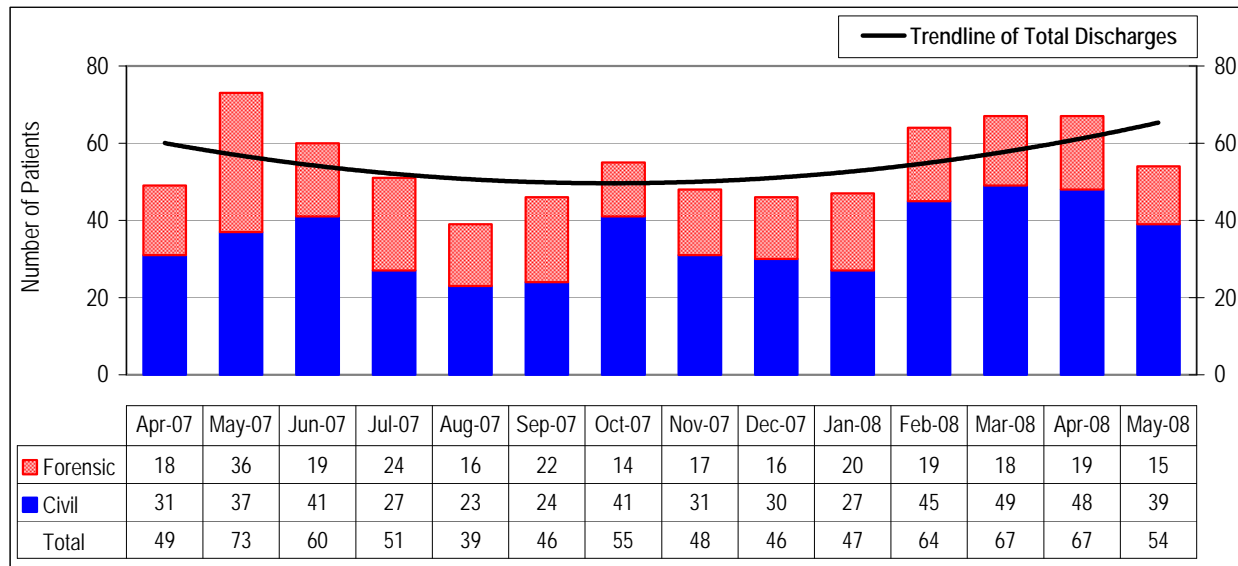
Source: Daily Census Report, Nursing Office

Figure 4. Total Admissions vs. Discharges (FY07: 10/1/06~9/30/07)
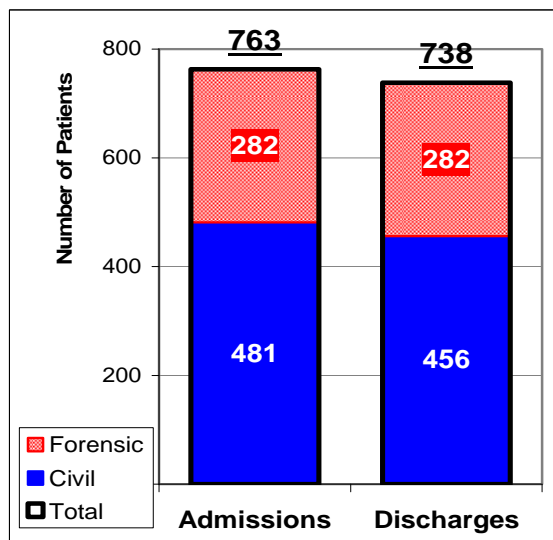
Data Source: Daily Census Report, Nursing Office

Figure 5. Total Admissions vs. Discharges (FY08 To Date: 10/1/07~5/31/08)

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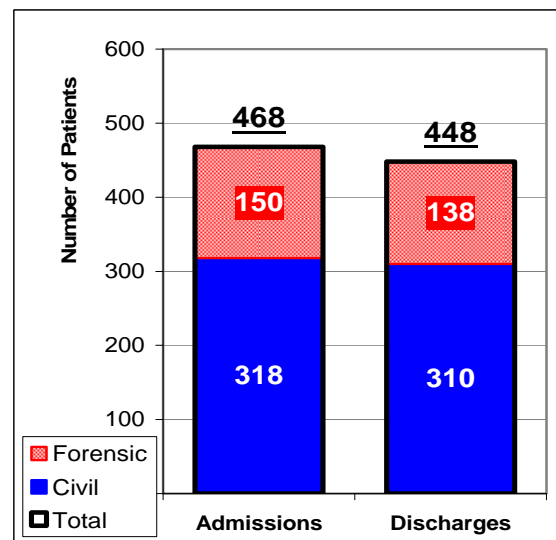
[3] This decline is partly a result of the DMH Authority diverting some acute admissions to the Psychiatric Institute of Washington (PIW) and the Greater Southeast Community Hospital starting in June 2007.

Despite the increase in discharges, to date total admissions during FY 2008 still exceed the total discharges during the same time period, although the gap is closing. As reflected in Figure 5 above, through the first 8 months of FY2008, the Hospital discharged 448 patients while receiving 468 admissions. In evaluating census information, it is important to note that admissions and discharges are not sole factors that affect the Hospital's overall trend of census – the number of total inpatients being served on ward on any given day. Some inpatients are temporarily transferred to a medical facility, placed on authorized/unauthorized leave, or released to a Convalescent Leave (CL) status – physically discharged from ward to a court ordered conditional release. These movements as well as admissions and discharges change the census. However, the Hospital does not yet have a systemic mechanism to track the number and length of time patients may be in these off ward categories. Monitoring the number of patients in these categories is important in order to accurately assess the trends in the actual number of patients that the Hospital is serving. This information is expected to be available in the fall through Avatar.

III. Demographic Characteristics of Patient Population

The Office of Monitoring Systems generates on a monthly basis the list of patients from STAR, the Hospital's current information management system. Although STAR is often not up-to-date, currently it is the only automated database that can electronically produce the entire list of patients with their unit and demographic information. The OMS analyzes the STAR data and reports its findings in this chapter.

1. Patients by Program and Unit

In March 2008, both civil and forensic programs began to restructure their units, which created notable discrepancies between the ward census reported in STAR and the census data provided by the nursing office as of May 31, 2008. According to the STAR data, as of May 31, 2008, the Hospital was serving 421 inpatients: 212 on the civil side; 209 on the forensic side[4] (see **Table 1**). On average, each unit serves about 21 patients and the unit populations range from 17 to 27. Of the 212 patients in the civil program, 42 or 20% were being served in behavior management units (RMB 3 and 4), 63 or 30% in geriatric care units (RMB 1 and 2, and CT 2B), 49 or 23% in transitional units (RMB 7 and 8), 18 or 8% on a cognitively impaired unit (CT 2A), and the remaining 40 or 22% in admission units (RMB 5 and 6). Of the 209 inpatients in the forensic program, at least 70 or 33% were in pre-trial status. Please note that it would not be appropriate to compare the unit census to the same time last year due to the recent restructuring.

Table 1. Number of Patients Served by Program Area and Unit (as of 5/31/08)

Civil Program				Forensic Program				
Unit		Female	Male	Total	Unit		Female	Male	Total
CT-2A	Cog. Impaired	10	8	18	JHP-1	Post-trial		18	18
CT-2B	Geriatric	11	7	18	JHP-2	Post-trial		18	18
RMB-1	Geriatric	11	11	22	JHP-3	Post-trial		23	23
RMB-2	Geriatric	11	12	23	JHP-4	Post-trial		17	17
RMB-3	Beh. Mgmt.	8	10	18	JHP-6	Pre & post trial	19		19
RMB-4	Beh. Mgmt.	7	17	24	JHP-7	Pre-Trial		**27**	**27**
RMB-5	Admission	10	10	20	JHP-8	Pre & post trial		22	22
RMB-6	Admission	9	11	20	JHP-9	Pre-Trial		**26**	**26**
RMB-7	Transitional	10	16	26	JHP-10	Post-trial		20	20
RMB-8	Transitional	9	14	23	JHP-12	Post-trial		19	19
Civil Total – Number		96	116	212	Forensic Total – Number		19	190	209
Percent		45%	55%	100%	Percent		9%	91%	100%
					Grand Total – Number		115	306	421
					Percent		27%	73%	100%

Source: Analysis of 5/31/08 Star Census

Note: Data above includes patients who may be in authorized leave but excludes those who are in unauthorized leave at the time of data collection.

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[4] According to the manual census data, the Hospital was serving 411 patients, including 212 civil patients and 199 forensic patients, on the same day.

2. Demographic Characteristics

The age distribution of the Hospital's patients reflects a bell curve and the majority of patients are within the 50-59 year range. A significant proportion of patients are 60 years of age or older; about one out of four patients in the civil program (23%) and almost one out of five patients in the forensic program (19%). The median age is 51 years for the civil patients and 52 years for the forensic patients.

Figure 6. Age Distribution (as of 5/31/08)

	<=29yrs	30~39yrs	40~49yrs	50~59yrs	60~69yrs	70~79yrs	>=80yrs
Civil	22	24	51	66	28	17	4
Forensic	23	17	42	87	33	6	1
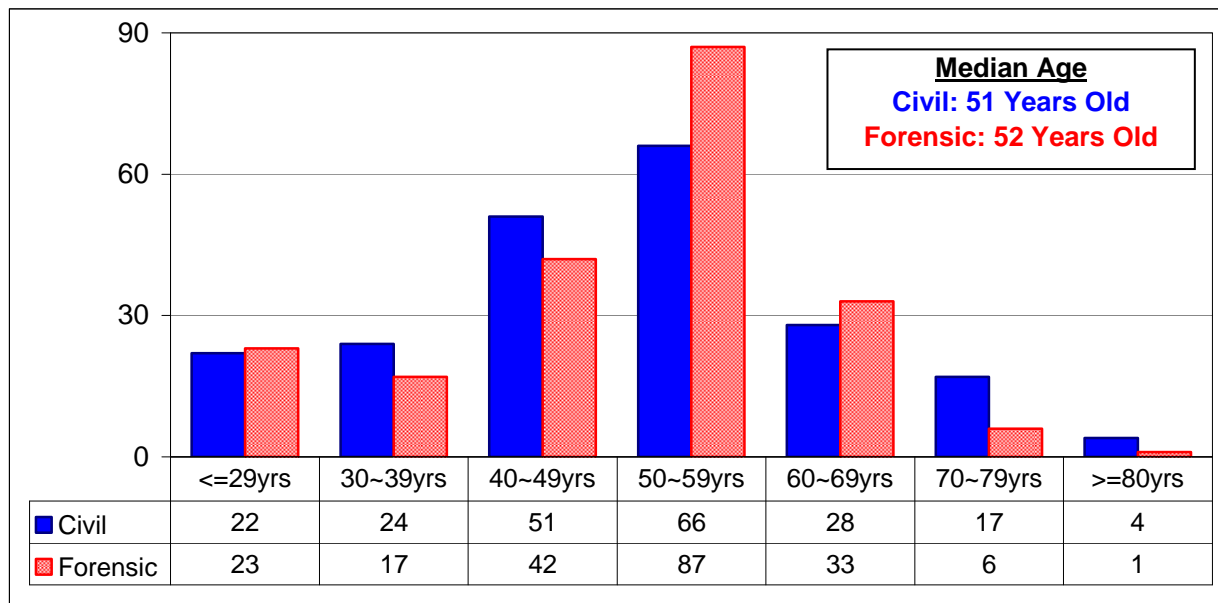
Source: Analysis of 5/31/08 STAR Census

The majority of the Hospital's patients are male: 73% of the patients served by the Hospital are male and 27% are female. However, as illustrated in **Figure 7** below, there is a significant difference in gender distribution between the civil program and the forensic program: only 9% of the forensic patients are female whereas 45% of the civil patients are female. In the forensic program, both pre-trial and post-trial female patients, all are housed together on one ward.

Figure 7. Gender Distribution (as of 5/31/08)
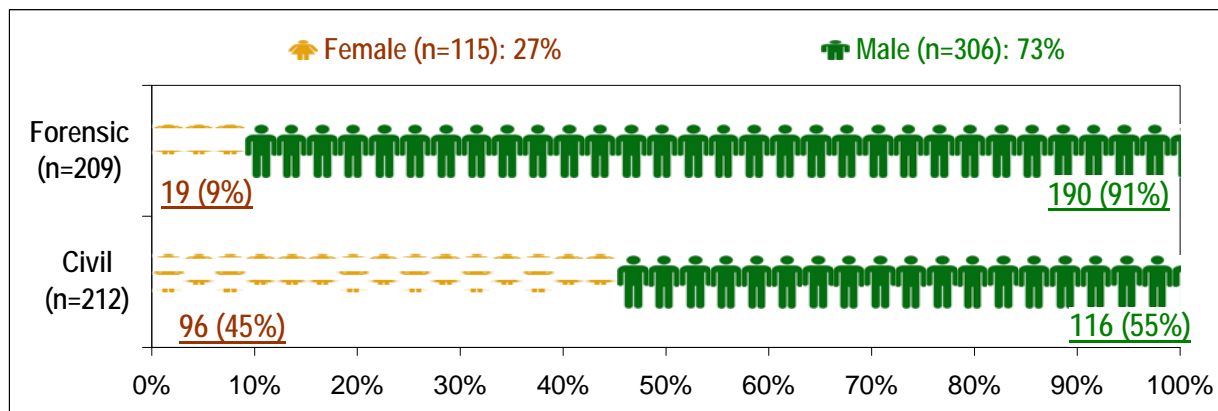
Source: Analysis of 5/31/08 STAR Census

3. Length of Stay

Not surprisingly, the length of stay (LOS) for forensic patients is much longer than that of civil patients. The median[5] length of stay is 354 days (12 months) for civil patients and 1475 days (49 months) for forensic patients (**Figure 8**). Also, male patients are more likely to stay in the Hospital for a longer period than female patients. The median LOS for female patients is 266 days (9 months) whereas that for male patients is 787 days (26 months). It should be noted that the median LOS for civil patients decreased over the past several months. According to the LOS data presented in the November 2007 Trend Analysis Report, as of November 7, 2007, the median LOS of the civil patients was 392 days (13 months), which is 38 days longer than the current median LOS (354 days). It appears that the Hospital's concerted efforts to discharge patients when community resources are available may have contributed to this decrease of the LOS of civil patients.

Figure 8. Median Length of Stay by Program and Gender (as of 5/31/08)

	Female	**Male**	**Total**
■ **Civil (n=212)**	**288 Days**	**490 Days**	**354 Days**
▨ **Forensic (n=209)**	**62 Days**	**2368 Days**	**1475 Days**
□ **Total (n=421)**	**266 Days**	**787 Days**	**489 Days**
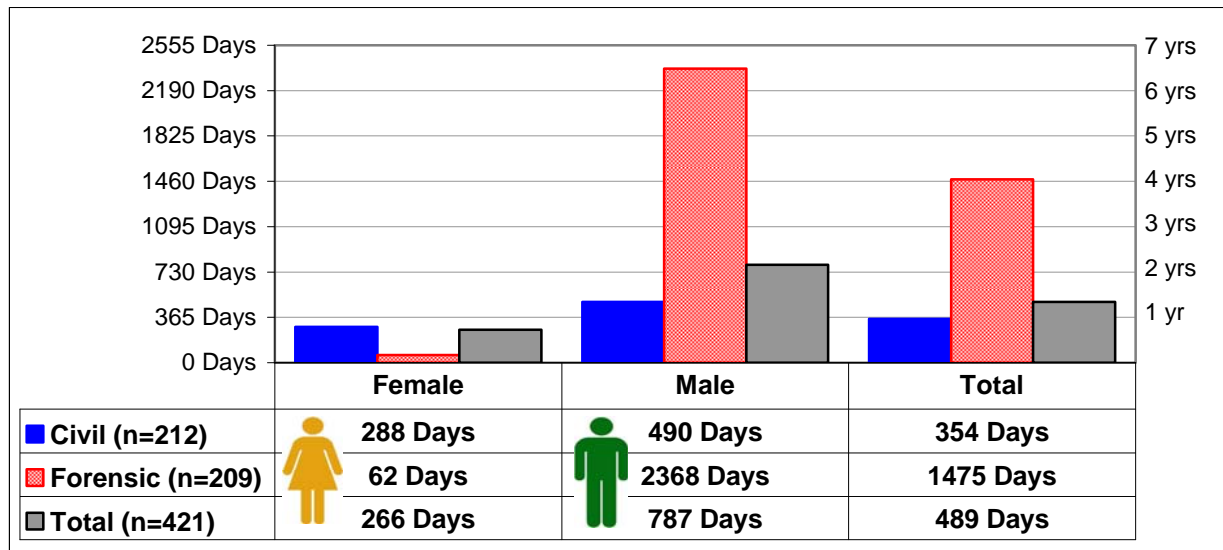
Source: Analysis of 5/31/08 STAR Census

Table 2 below further provides median, average (mean), and maximum length of stay breakdown by unit. Patients served in RMB-5, one of the admission units, have the shortest median length of stay in the civil program, at about 18 days. Almost half the patients served in RMB-2, one of the geriatric units, have been in the Hospital for longer than 1468 days (48 months or four years). The length of stay for the patients in JHP-6, JHP-7 & JHP-9, which serve primarily as pre-trial units, is much shorter than the rest of units that serve as post-trial unit. The median LOS for the 56 pre-trial patients on those wards is 49 days, whereas the median LOS

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[5] 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.

for the post-trail patients is 3386 days (112 months or 9 years). The average LOS for pre-trial patients is 192 days (6 months) and that for post-trial patients is 3651 days (121 months or 10 years). It is expected that the recent restructuring of the Hospital is affecting the LOS pattern of each unit over the past few months and may continue to do so in the next few months.

Table 2. Length of Stay (Months) by Program and Unit (as of 5/31/08)

Unit: Months

Civil Program				Forensic Program				
Unit		Median	Average	Maximum	Unit		Median	Average	Maximum
CT-2A	Cog. Impaired	16	25	86	JHP-1	Post-trial	115	115	258
CT-2B	Geriatric	33	54	173	JHP-2	Post-trial	103	116	292
RMB-1	Geriatric	23	48	183	JHP-3	Post-trial	153	146	238
RMB-2	Geriatric	35	86	342	JHP-4	Post-trial	189	176	314
RMB-3	Beh. Mgmt.	13	26	106	JHP-6	Pre & post trial	2	13	106
RMB-4	Beh. Mgmt.	22	43	173	JHP-7	Pre-Trial	2	3	12
RMB-5	Admission	1	2	9	JHP-8	Pre & post trial	29	71	264
RMB-6	Admission	1	3	31	JHP-9	Pre-Trial	1	3	17
RMB-7	Transitional	11	25	115	JHP-10	Post-trial	111	114	260
RMB-8	Transitional	8	41	233	JHP-12	Post-trial	103	102	267
Civil (n=212)		12	36	342	Forensic (n=209)		48	80	314
					Grand Total (n=421)		16	58	342

Source: Analysis of 5/31/08 STAR Census

IV. Clinical Profile of Patient Population

In January 2008, the Hospital conducted clinical data collection, constructing a Patient Diagnosis Database in preparation for the DOJ site visit that was scheduled for February 2008. In collaboration with the DOJ Compliance Officer, the OMS coordinated data collection and created a database that includes diagnoses and medication information of the inpatient population who were being served by the Hospital as of January 25, 2008. Using the compiled data, we conducted further analysis on the diagnoses by each unit as well as by program (civil vs. forensic) and introduced findings in the January 2008 Trend Analysis Report published on March 26, 2008.

The Hospital further developed a new Access database to continue to collect clinical data until the AVATAR system becomes available. Information collected in January 2008 was transferred to the Access database, through which additional data is being collected. Key staff members were trained on this database and have been updating clinical data including diagnosis in Axis 1 through Axis 5, Body Mass Index (BMI), Risk Assessment, and medication information. As of July 2008, the OMS is analyzing data collected in this database to prepare the DOJ's next site visit scheduled in September 2008. Findings will be presented in the next Trend Analysis Report. For the findings from the January 2008 data collection, please refer the January 2008 Trend Analysis Report.

V. Infection Control

Infection data critically reflects both the risk and quality factors of the patient care setting in a public health care facility. The OMS compiled and analyzed available infection data, with support from the Infection Control Coordinator of the Office of the Medical Affairs. However, the scope of the available data is limited to laboratory test results for the following types of infection: MRSA (Methicillin-Resistant Staphylococcus aureus), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV), and HIV (Human Immunodeficiency Virus). In addition to screening for the preceding four microorganisms, the Director of Medical Affairs has approved PPD testing and screening for head lice infestation for every new admission contigent upong the patient's signed consent. Patients who are non-reactive for hepatitis B and HIV on the initial screening will be re-screened within three months. We expect that this information will be available through AVATAR, the Hospital's upcoming automated information management system scheduled to launch in July 2008. Until data from AVATAR becomes available for analysis, we will continue to present available data in the above areas, hoping it still provides meaningful information and insights about the current practice of infection management.

During the current data review period, we have analyzed the infection control data maintained manually from the hard copy documents. We expect that once the infection control data collected and managed electronically, it will drastically improve the overall integrity of all data collected. In order to ensure the quality of the infection control data, the PID Staff and the Infection Control Coordinator have jointly cross checked all the data presented in this chapter.

1. MRSA

Methicillin-resistant Staphylococcus aureus (MRSA) is a "*staph*" bacterium causing infections that are resistant to usual antibiotics treatment. It was known that MRSA occurs most frequently among patients who have recent hospitalization and undergo invasive medical procedures or who have weakened immune systems and are being treated in hospitals and healthcare facilities. Community-associated MRSA spreads through skin-to-skin contact or objects in public spaces, such as locker rooms of gymnasiums, day cares and hot spas, and healthy people can carry MRSA on their fold skin areas or in anterior part of nose with no symptom of infection.

During the last 12 months beginning June 2007 through May 2008, a total of 44 patients who were identified to be at risk of being a MRSA carrier were tested for MRSA infections (see **Table 3**). Of those, 16 patients (36%) had a MRSA skin infection detected and their infection was confirmed through antibiotic susceptibility testing. As seen in **Figure 9**, the number of patients who are referred and tested for MRSA infection ranges between 0 and 9 each month. For the months of February and March 2008, no patients were tested. In the months of April and May, four patients were tested during each month.

Figure 9. Patients with MRSA Skin Infection Detected (June 07 ~ May 08)

	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
Unknwon					3			1				
Forensic		4	5	7	1	2	2	3			4	2
Civil	1	1	3	2			1					2
Total	1	5	8	9	4	2	3	4	0	0	4	4
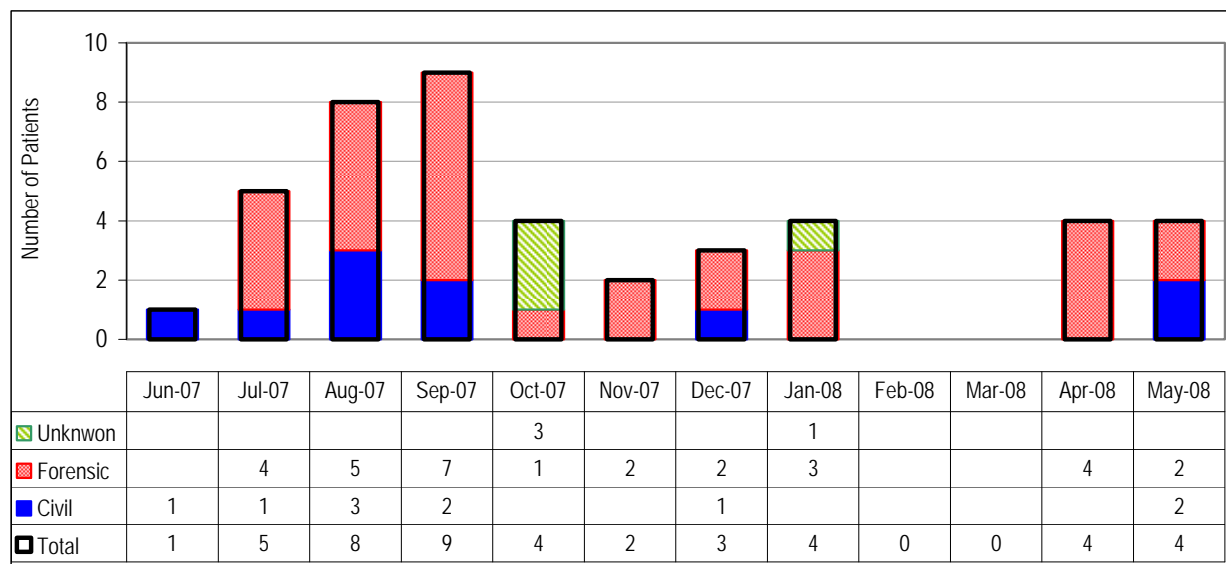
Table 3. MRSA Skin Infection Test Results (June 2007 ~ May 2008)

Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Total Tested	1	5	8	9	4	2	3	4	0	0	4	4	44
Total Skin Infections Detected	0	3	4	2	1	0	1	1	0	0	0	4	16

2. Hepatitis B Virus (HBV)[6]

Identifying Hepatitis B Virus (HBV) carriers in a hospital setting is crucial for patient care. The Hospital conducts three types of HBV tests and **Table 4** presents the result of tests with the reactive statuses by civil and forensic services. During the past 12 months, a total of 168 tests for HBV were conducted: 51 (30%) for civil patients and 117 (70%) for forensic patients. This total includes 3 repeated tests. The data indicates the Hospital's practice is to conduct the HBV test much more frequently for forensic patients than for civil patients.

Of the three categories of HBV test, *Hepatitis B surface antigen (HBsAg)* is the most critical indicator to identify HBV infection as individuals who remain *HBsAg* positive for at least six months are considered to be HBV carriers. Of the total 168 HBV tests conducted for the past 12 months, five (3%), three for civil patients and two for forensic patients, were found to be positive for *HBsAg.* A total of 134 patients were positive for *hepatitis B surface antibody (anti-HBs)*, which indicates previous exposure to HBV, but the virus is no longer present and the person cannot pass on the virus to others. A total of 118 patients were positive for *Anti-hepatitis B core antigen (anti-HBc)* but they are considered at low risk to develop the adverse sequel of chronic hepatitis B. For more explanation regarding each test result, refer to the note section of **Table 4**.

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[6] Hepatitis B is a serious disease caused by a virus that attacks the liver. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. *Centers for Disease Control and Prevention (CDC).*

Table 4. HBV Test Results (June 2007 ~ May 2008)

Test Type	Program	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
					Number of Reactive/Positive Results in Each Test									
Total Patients Tested*	Civil	4	8	1	5	3	4	4	2	6	4	9	1	51
	Forensic	7	12	11	18	9	13	1	7	7	8	14	10	117
	Total	*11*	*20*	*12*	*23*	*12*	*17*	*5*	*9*	*13*	*12*	*23*	*11*	*168 (100%)*
Surface Antigen 1)	Civil				1	1		1						3
	Forensic										1		1	2
	Total	*0*	*0*	*0*	*1*	*1*	*0*	*1*	*0*	*0*	*1*	*0*	*1*	*5 (3%)*
Surface Antibody 2)	Civil	4	7	1	4	2	4	3	2	5	2	6	1	41
	Forensic	6	10	8	17	9	9	1	7	6	8	6	6	93
	Total	*10*	*17*	*9*	*21*	*11*	*13*	*4*	*9*	*11*	*10*	*12*	*7*	*134 (80%)*
Core Antibody 3)	Civil	3	6	1	3	2	4		1	2	4	8	1	35
	Forensic	4	5	8	15	9	7		4	5	7	11	8	83
	Total	*7*	*11*	*9*	*18*	*11*	*11*	*0*	*5*	*7*	*11*	*19*	*9*	*118 (70%)*
Repeat Incidents**					1			1				1		3

Notes: What does the test result mean? (American Association for Clinical Chemistry)

1) *Hepatitis B surface antigen (HBsAg): A negative result indicates that a person has never been exposed to the virus or has recovered from acute hepatitis and has rid themselves of the virus (or has, at most, an occult infection). A positive (or reactive) result indicates an active infection but does not indicate whether the virus can be passed to others.*

2) *Hepatitis B surface antibody (anti-HBs): a positive result indicates <u>immunity</u> to hepatitis B from the <u>vaccination</u> or recovery from an infection.*

3) *Anti-hepatitis B core antigen (anti-HBc): If it is present with a positive anti-HBs, it usually indicates recovery from an infection and the person is not a carrier or chronically infected. In acute infection, the first type of antibody to HBc to appear is an IgM antibody. Testing for this type of antibody can prove whether a person has recently been infected by HBV (where anti-HBc, IgM would be positive) or for some time (where anti-HBc, IgM would be negative).*

*   *Total Patients tested include reactive and non-reactive results*

**   *Repeat incidents are included in the total.*

3. Hepatitis C Virus (HCV)[7]

There are several blood tests that can be used to detect Hepatitis C Virus (HCV) infection. The Hospital Laboratory conducts EIA (Enzyme immunoassay) antibody test[8]. According to the test results, in the first 8 months of FY 2008, there are a total of 27 patients (12 civil patients and 15 forensic patients) who tested positive for Hepatitis C compared to 28 patients during the FY 2007 (16 civil patients and 12 forensic patients).

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[7] Hepatitis C is a blood-borne infectious disease that is caused by Hepatitis C virus (HCV) infecting the liver. The infection causes liver inflammation (hepatitis) that may turn to chronic hepatitis can result later in cirrhosis (fibrotic scarring of the liver) and liver cancer. The hepatitis C virus (HCV) spreads by blood-to-blood contact with an infected person's blood. As no vaccine against hepatitis C is available, the symptoms of infection can be medically managed, and a proportion of patients can be cleared of the virus by a long course of anti-viral medicines.

[8] Enzyme immunoassays (EIAs) detect the presence of antibodies in serum directed against HCV. These tests are commonly used for initial detection of hepatitis C. However, EIAs do not differentiate between acute, chronic or resolved infection. – *United States Department of Veterans Affairs.*

Figure 10. Patients with HCV Infection (June 2007 ~ May 2008)

	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
Forensic	1	2	0	1		3	3	1	0	2	2	0
Civil	4		0		4			0	2	1	0	1
Total	5	2	0	1	4	3	3	1	2	3	2	1
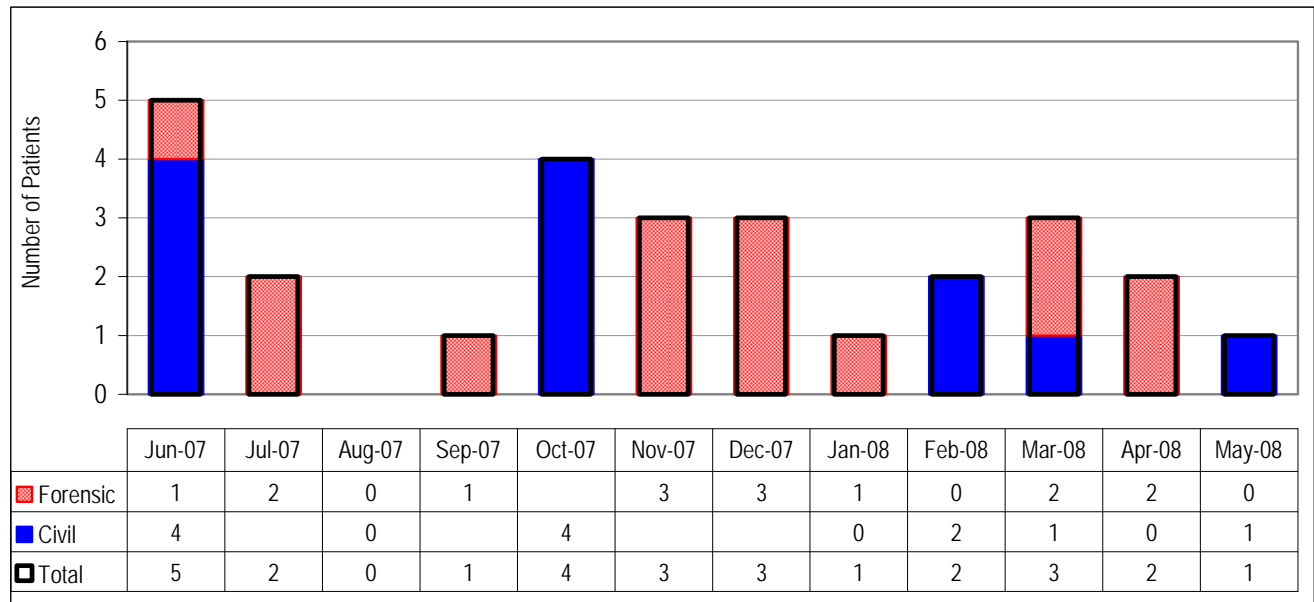
4. HIV/AIDS

Human immunodeficiency virus (HIV) is a retrovirus that can lead to acquired immunodeficiency syndrome (AIDS), a condition in humans in which the immune system begins to fail, leading to life-threatening opportunistic infections. The Infection Control Coordinator reported during the first eight months of FY 2008, a total of 30 patients, about four patients per month, were newly identified to be positive for HIV. During the FY 2007, a total of 39 patients, about three patients per month, were identified to be positive with HIV.[9] In the month of May, there were 7 patients identified with HIV, which is the highest number for FY 2008. Out of these seven patients, five of them were admitted in the last three months. During the first five months of 2008, 128 patients were tested for HIV, of which 31 cases (24%) were reported to be positive for HIV infection. The Director of Medical Affairs recently reinforced the policy to have GMO order annual Tuberculosis (TB) screening for patients who have tested positive for HIV.

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[9] The total number of patients who were tested for HIV positive is not available.

VI. Treatment Planning

1. Timelines of Interdisciplinary Recovery Planning (IRP)

There is no automated mechanism in place to monitor and accurately measure the timeliness and currency of Interdisciplinary Recovery Planning (IRP) as the Hospital documents IRP forms only manually and in a hard copy format. The FY 2008 1st quarter self-assessment conducted in November 2007, however, provided us with an approximate estimate about the currency of IRPs. According to the November 2007 findings, IRPs for at least one of five patients (22%) were behind schedule. (See **Figure 11**.)

The Hospital is currently transitioning to a new process to evaluate key indicators about treatment plan process. Beginning in May, 2008, the Hospital initiated direct observations of a sample of 20% of scheduled treatment plans. Prior to that time, however, the Hospital relied on clinical administrators to report information on when treatment plans were held and PID audited the self report by reviewing one record per ward per month, to test the accuracy of the self report. This method was not wholly reliable, as data is skewed by the fact some wards had no clinical administrator, so while treatment plans may have been completed, they were not reported. It is expected that by August, 2008, the Hospital will no longer require clinical administrators to report data concerning treatment plans, but will rely on the observation process (and later, clinical chart audits as well) and by next winter 2008-2009, data in Avatar, to evaluate treatment plans. In the meantime, this chapter will present findings from self-reported data on patient and staff participation in IRP conferences that were manually collected by clinical administrators.

Figure 11. IRP Currency by Program (11/14/07)

	Civil	Forensic	Total
☐ IRP Current %	76%	79%	78%
IRP Current #	55	46	101
Total Cases Reviewed	72	58	130

Source: Nov-2007 Self-Assessment Preliminary Findings

2. Volume of IRPs Held by Unit

Both the civil program and forensic program clinical administrators began monitoring IRP

Table 4. IRP Conferences Held (May 2008)			
Civil		**Forensic**	
Unit	**Number**	**Unit**	**Number**
CT-2A	N/A	JHP-1	12
CT-2B	N/A	JHP-2	2
RMB-1	13	JHP-3	9
RMB-2	11	JHP-4	6
RMB-3	N/A	JHP-6	6
RMB-4	5	JHP-7	14
RMB-5	34	JHP-8	N/A
RMB-6	38	JHP-9	15
RMB-7	4	JHP-10	5
RMB-8	1	JHP-12	6
Subtotal	**106**	**Subtotal**	**75**
Source: IRP Participation Tracking DB, May-2008			

conference participation in December 2007 using a unified tracking form, reporting the results to the Performance Improvement Department (PID) on a monthly basis. PID compiles them for analysis as well as audits the self-reported data by review one case per ward per month. According to this analysis, during the month of May 2008, a total of 181 IRP conferences, including 106 from the civil side and 75 from the forensic side, reportedly were held (see **Table 4**). RMB-3, CT-2A, CT-2B, and JHP-8 could not report the results for the month of May 2008 due to absence of clinical administrators and no data from these units were available for analysis. Of those reported 181 IRP conferences held, 72 or 40% were Comprehensive conferences and 109 or 60% were Review conferences. The volume of IRPs is significantly higher in civil admission units, RMB-5 and RMB-6, and forensic pre-trial units, JHP-7 and JHP-9, than other units.

3. Patient Participation in IRP

The self-reported data for the months of December 2007 and May 2008 shows a moderate level of patient participation in IRPs. According to **Figure 13**, patients participated in 147 or 81% of the total 181 IRPs held in May 2008: 72% for civil and 95% forensic. This is a visible decrease from the participation rate (95%) reported in the self report in December 2007 (see **Figure 12**). The decrease is the result of a significantly lower rate of participation on RMB-6 which did not document patient participation on 27 IRPs.

Figure 12. Patients' Participations in IRP Conferences (Dec 2007)

	Civil	Forensic	Total
☐ Percent	93%	97%	95%
Attended	100	57	157
Total Held	107	59	166
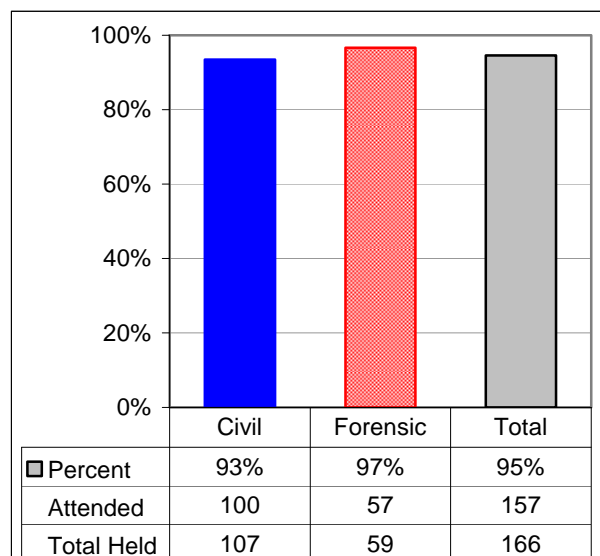
Source: IRP Participation Tracking DB, Dec-2007

Figure 13. Patients' Participations in IRP Conferences (May 2008)

	Civil	Forensic	Total
☐ Percent	72%	95%	81%
Attended	76	71	147
Total Held	106	75	181
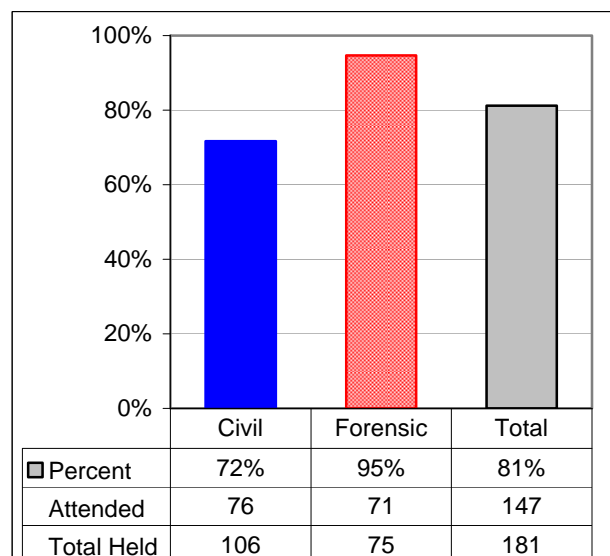
Source: IRP Participation Tracking DB, May-2008

The self-reported data regarding patient participation shows a sharp contrast to the findings of the clinical records review conducted in the November 2007 self-assessment (refer to the December 2007 Trend Analysis Report). The self-assessment findings revealed that only 39% of the total IRP forms reviewed (18% for civil and 63% for forensic) included a patient's signature, which is an indicator of patient participation. The discrepancies are particularly

marked for civil. The Office of Quality Improvement (OQI) conducts a monthly audit by comparing the self-reported data with signatures on the IRP and these findings also show a discrepancy between reported attendance and documentation of signatures. According to the QI audit results, of the 91 IRPs selected and available for complete review[10], almost one out of five, a total of 17 records (19%), showed discrepancy in regard to patient participation. Of those 17 records, 11 are those where the self-reported data indicates the patient participated in the IRP conference but the patient had not signed the treatment plan. In the other six cases, the self-reported data indicates that the patient was not present at the IRP conference but the IRP documents the patient's signature. This finding illustrates that many patients who attend IRP conferences may not sign the final IRP forms while some patients who do not attend actual conferences may sign the final IRP forms. With the new method of evaluating the IRP process that includes direct observation, more reliable data will be available by the next report.

4. Staff & Family Participation in IRP by Discipline

Figure 14 below compares staff participation in IRP conferences between civil services and forensic services by each core discipline, based on the self-reported data in the month of May 2008.

Figure 14. Staff & Family Participations in IRP by Discipline (May 2008, Self-Reported)

	Psychiatrist	Nurse	GMO	Social Worker	PNA/FPT	Clinical Amin.	Case Mgr	Family
■ Civil	100%	100%	57%	88%	21%	99%	37%	15%
▨ Forensic	97%	96%	0%	92%	80%	89%	11%	1%
▨ Total	99%	98%	33%	90%	45%	95%	26%	9%
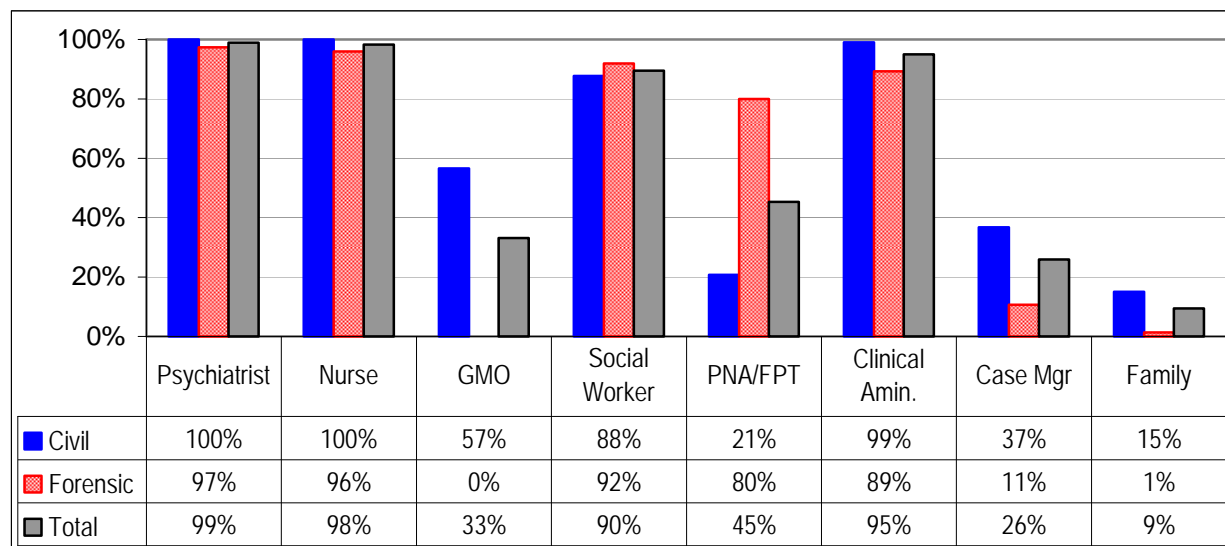
Source: IRP Partcipation Tracking DB, May-2008

According to the findings, psychiatrists, nurses, social workers, and clinical administrators attended almost all IRP conferences in both civil and forensic services held during the month of May 2008. There were notable differences, however. Forensic Psychiatric Technicians (FPTs) attended a majority (80%) of the forensic conferences whereas PNAs attended only 21% of the civil IRPs. GMOs (General Medical Officer) attended 33% of the IRP conferences. GMOs on

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[10] For the months of November 2007 through April 2008, a total of 104 IRPs were selected for QI audit. Of those, 13 cases couldn't have their review completed due to the absence of respective IRP documents in the medical chart.

the civil side attended over half of the IRPs (57%) where none of forensic IRPs showed GMOs' participation. Case managers attended over one third (37%) of civil IRPs at 37% and family members participated in 15% of IRPs on the civil side. The forensic cases had a lower rate with case managers at 11% and family members attending 1% of the IRPs. There were only a few cases where participation of therapists (7%) or treatment mall team members (2%) was documented.

Like patient participation, staff participation rate in the self-reported data is overall much higher than indicated in the November Self-Assessment review findings. **Figure 15** below presents the percentage of IRP forms that included staff signatures by discipline. For instance, 78% of the cases reviewed had signatures from psychiatrists, 82% from nurses, 83% from social workers, and 56% from clinical administrators. While the largest discrepancy involved clinical administrators, the QI's monthly audit found discrepancies in rates of participation for other treatment team members as well.

Figure 15. Staff Signatures in IRP Forms by Discipline (Nov-2007 Self-Assessment)

	Psychiatrist	Nurse	GMO	Social Worker	Psychologist	Clinical Administrator
Civil	75%	89%	64%	82%	4%	29%
Forensic	83%	74%	13%	85%	24%	89%
Total	78%	82%	41%	83%	13%	56%
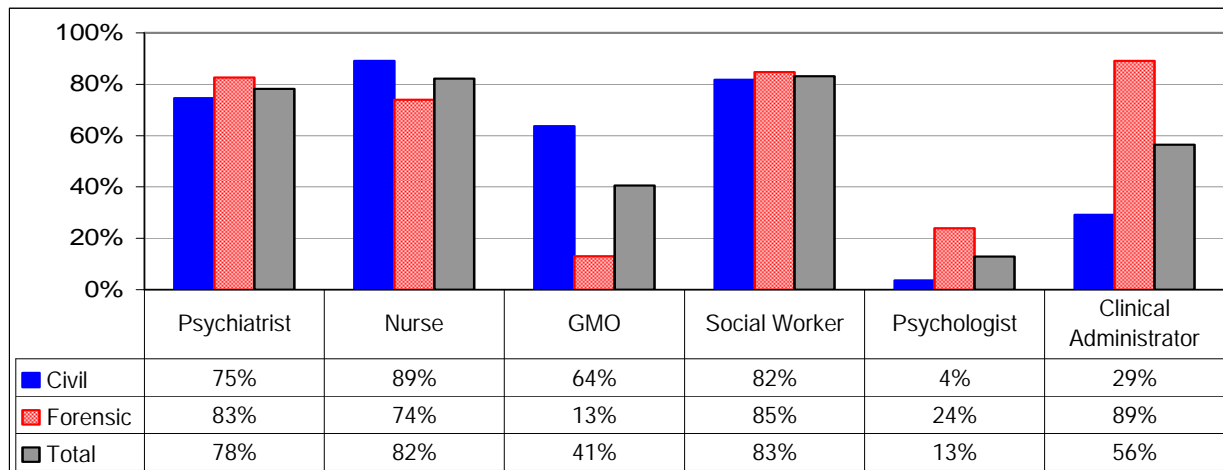
Source: Nov-2007 Self-Assessment Preliminary Findings

VII. Treatment Mall

1. Summary of Treatment Mall Programs

The Hospital provides various treatment programs to patients through on ward activities, a work adjustment training program (WATP) and a multi-disciplinary treatment mall program from 9:45 a.m. to 2:45 p.m. Monday through Friday, embracing an Enhanced Recovery Model. The treatment mall offers diverse group sessions during weekdays through eight programs, which include Psychosocial Rehabilitation; Dual Diagnosis; Cognitive Development; Behavior Management; the Geriatric Center; Skill Development; the Geri mall and; Restorative Care. Each program runs a variety of groups, including but not limited to mental health training, physical health training, medication skills, social skills, community living skills, dance, music, art and physical activities. Groups are led by nursing staff, rehabilitation services staff, psychiatry, psychology, social work and other disciplines such as dietary or dental staff. The breakdown of scheduled groups by discipline can be found in **Table 6**.

2. Monthly Trend of Group Cancellation

The treatment mall monitors group activity status of about 45~50 sessions each day in the following five program areas: Psychosocial Rehabilitation, Dual Diagnosis program, Cognitive Development program, Behavior Management program, and the Geriatric Center. In the months of April and May 2008, a total of 1257 and 1230 sessions were scheduled respectively for non-holiday weekdays. Of those, 121 sessions (10%) in April and 114 sessions (9%) in May were cancelled as the treatment mall was closed due to patient field trip, staff training or shortage of staff according to the Treatment Mall staff   Therefore, the treatment mall had a total of 1154 and 1116 group sessions expected to be held in April and May, respectively.

Of the 1154 sessions that were expected to be held in April, 39 sessions (3%) were reported[11] to have been cancelled or affected by leaders' absence: group leaders called to cancel or did not show at the scheduled time, and as a result theses sessions were negatively affected[12]. In May, 44 sessions (4%) of the 1116 expected sessions were either cancelled or had no group leader as planned. The number and the rate of such cancellation in April and May are lower than those reported in March 2008. The number of cancelled group sessions in the past 12 months is on average about 52 in a given month, ranging from 22 to 74 (see **Figure 16**). The average cancellation rate for the months of March through May 2008 was 5% of the scheduled sessions (see **Table 6**). Cancellation of scheduled group activities adversely affects the compliance with the DOJ requirement that patients have at least 20 hours of active treatment activities each week.

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[11] The current monitoring system lacks a structured process to ensure that the result of all scheduled sessions are reported and documented.
[12] These sessions were not held at all, covered by staff, or combined with other sessions.

Figure 16. Group Activities Cancelled by Group Leaders (Apr 2007 ~ May 2008)
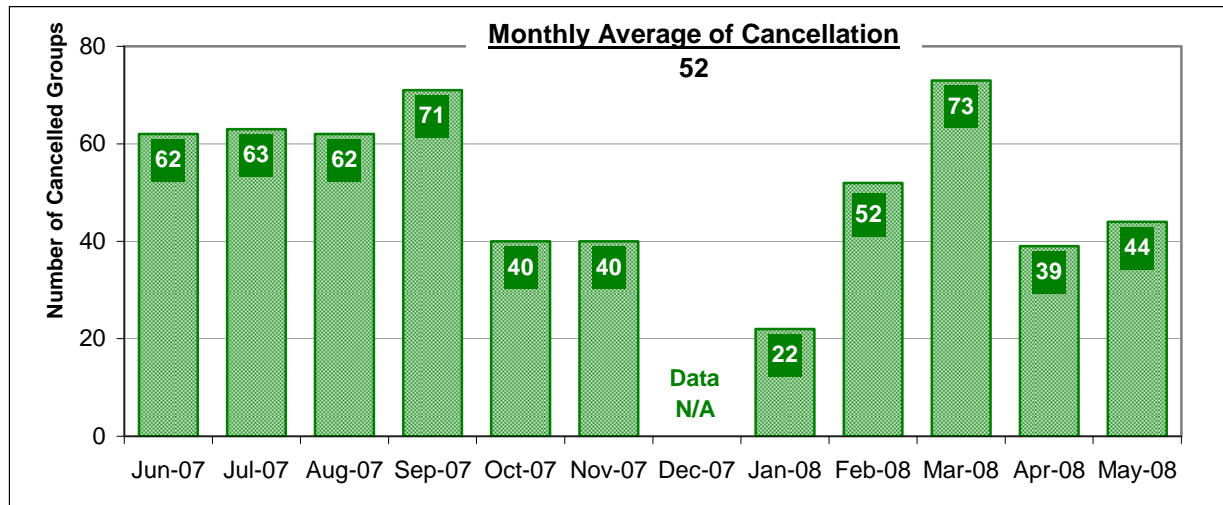
Data Source: Analysis of Treatment Mall Group Cancellation Data, Office of Monitoring Systems
Note: Cancellation data for the month of December 2007 is not available as the treatment mall was in the process of modifying the tracking system to make it more efficient.

3. Group Cancellation by Discipline of Group Leader

In order to catch more meaningful pattern of cancellation data, we combined data over the past three months, March through May 2008, and compared it with data collected for the months of September 2007 through November 2007 as seen above. Data illustrates that the volume of cancelled group sessions run by leaders in the Psychiatry and Rehabilitation Services Disciplines have been consistently high. During March through May 2008, of the total cancelled sessions 156,

Table 5. Group Cancellation by Discipline of Group Leader (Sep 2007 ~ May 2008)				
Discipline	Sep ~ Nov 2007		Mar ~ May 2008	
	Number*	Percent	Number	Percent
Chaplain Services	15	10%	6	4%
Dental	0	0%	1	1%
Dietary/ Nutrition	1	1%	1	1%
Medical/ GMO	9	6%	9	6%
Nursing	14	9%	19	12%
Psychiatry	51	34%	43	28%
Psychology	18	12%	12	8%
Rehab Services	29	19%	38	24%
Social Work	6	4%	10	6%
Other	7	5%	17	11%
Total	151	100%	156	100%
*Source: OMS Analysis of Treatment Mall Group Cancellation Data				

81 sessions (52%) were those scheduled with either psychiatrists or rehabilitation therapists.

While **Table 5** displays the volume of cancellation by each discipline and the proportion of the cancellations of each discipline out of the total cancellations, **Table 6** analyzes cancellation rate, the percentage of cancelled sessions out of the total scheduled sessions, which reflects consideration of the total volume of scheduled sessions in each discipline. According to this, sessions scheduled with psychiatrists and medical staff (GMO) consistently shows the highest cancellation rate. The number of group sessions scheduled with medical staff is relatively low compared with those run by other disciplines and a small number of cancellations can result in a

high cancellation rate: in March through May 2008, medical staff were expected to lead 43 sessions, of which 9 sessions (21%) were cancelled. The cancellation rate of medical staff was 14% between September 2007 and November 2007. Of the 355 sessions scheduled with psychiatrists for the same time period, 43 sessions (12%) were cancelled. The cancellation rate of psychiatrists was 11% from September through November 2007. Nursing and rehabilitation services lead the highest number of group sessions: 1112 and 1043, respectively. Of those, 19 sessions (2%) by nursing staff and 38 sessions (4%) by rehabilitation service staff were cancelled. Group sessions led by Dietary, Chaplain, and Nursing staff consistently show a low cancellation rate. The overall cancellation rate slightly increased while the total number of scheduled sessions went down visibly during the March 2008 quarter from the previous September 2007 quarter.

Table 6. Scheduled vs. Cancelled Sessions by Discipline (Sep 2007 ~ May 2008)

Discipline of Group Leader	September 2007 ~ November 2007			March 2008 ~ May 2008		
	# Scheduled	# Cancelled	Cancellation Rate[1]	# Scheduled (Expected) [2]	# Cancelled	Cancellation Rate[1]
Chaplain Svcs	233	15	6%	225	6	3%
Dental	25	0	0%	24	1	4%
Dietary/Nutrition	75	2	3%	63	1	2%
Medical/GMO	65	9	14%	43	9	21%
Nursing[3]	1211	14	1%	1105	19	2%
Psychiatry	466	51	11%	350	43	12%
Psychology	146	18	12%	130	12	9%
Rehab Svcs	1048	29	3%	1033	38	4%
Social Work	311	6	2%	190	10	5%
Other[4]	160	7	4%	166	17	10%
Total	3740	151	4%	3329	156	5%

Notes 1) The number of cancelled sessions was divided by the number of scheduled sessions in each discipline
2) The number of sessions that were expected to be held; it excludes those cancelled due to the treatment mall closure for a reason other than holiday. Data for the months of September through November 2007 doesn't consider such closures while excluding sessions cancelled from holiday closures.
3) The following group activities are excluded: 'Community Meeting', 'Week in Review' and 'WRAP Ground'
4) Other includes those who don't belong to any of above disciplines: i.e. administrator, volunteer, etc.

4. Group Cancellation by Discipline of Program Area

Table 7 displays the group cancellation pattern by program area. Over half of the total scheduled group sessions belong to the Psychosocial Rehabilitation program in which both the number of cancelled

Table 7. Group Cancellation by Program (Mar 2008 ~ May 2008)

Program	Cancelled		Total Scheduled	Cancellation Rate
	Number	Percent		
Behavior Management	12	8%	374	3%
Cognitive Development	5	3%	596	1%
Dual Diagnosis	23	15%	437	5%
Geriatric Center	29	19%	920	3%
Psychosocial Rehabilitation	87	56%	1002	9%
Total	156	100%	3329	5%

sessions and the cancellation rate are the highest.   Over a half of the cancelled sessions belong to the Psychosocial Rehabilitation program and almost one out of ten Psychosocial Rehabilitation groups was cancelled during the presented months.

5. Reason of Cancellation and Coverage of Cancelled Groups

Of the 156 cancellations made between March and May 2008, 38 group sessions (30%) were canceled simply because responsible group leaders did not show up at the scheduled time without any advance notice. Forty-five (45) group sessions (36%) were called to cancel because the scheduled leaders were on either sick leave or annual leave. A total of 22 leaders couldn't lead the group because they were attending training or meetings. Additionally, there were 19 occasions where it was claimed there was no specific provider available for the scheduled sessions due to staff shortage.

Figure 17. Reason of Group Cancellation (Mar ~ May 2008)

156 Group Sessions Cancelled During Mar-May 2008

The majority of cancelled group sessions appear to be covered by other staff, however. Of the 156 cancelled group sessions, 75 sessions (48%) were combined with other group activities, 59 sessions (38%) were covered by other staff and the remaining 22 groups (14%) were not covered at all.
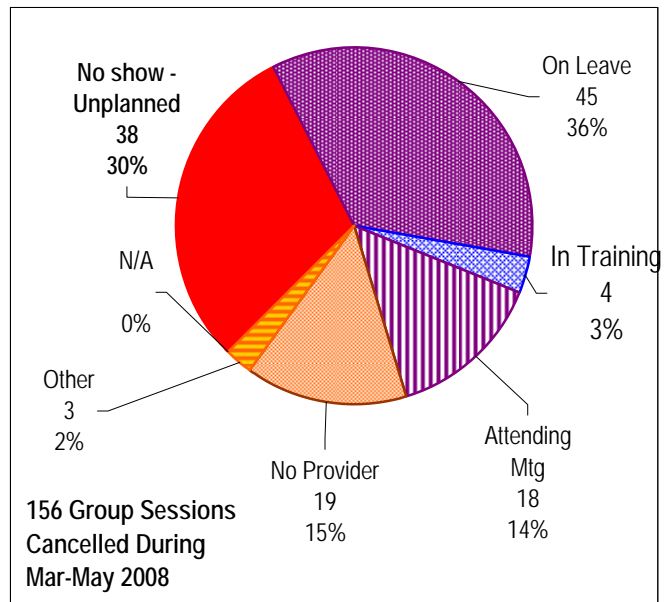
VIII. Medication

This Chapter presents data regarding medication errors[13] and adverse drug reactions (ADRs)[14] documented in MEDMARX. MEDMARX is an internet-based error and drug reaction reporting database many hospitals and health care systems use to document and track medication errors and ADRs and the Hospital has been participating since April 2007. The following analysis is bassed on the data OMS extracted from MEDMARX.

1. Medication Errors

From May 2007 through May 2008, a total of 137 medication errors, approximately 11 errors per month on average, were reported and documented in the MEDMARX database 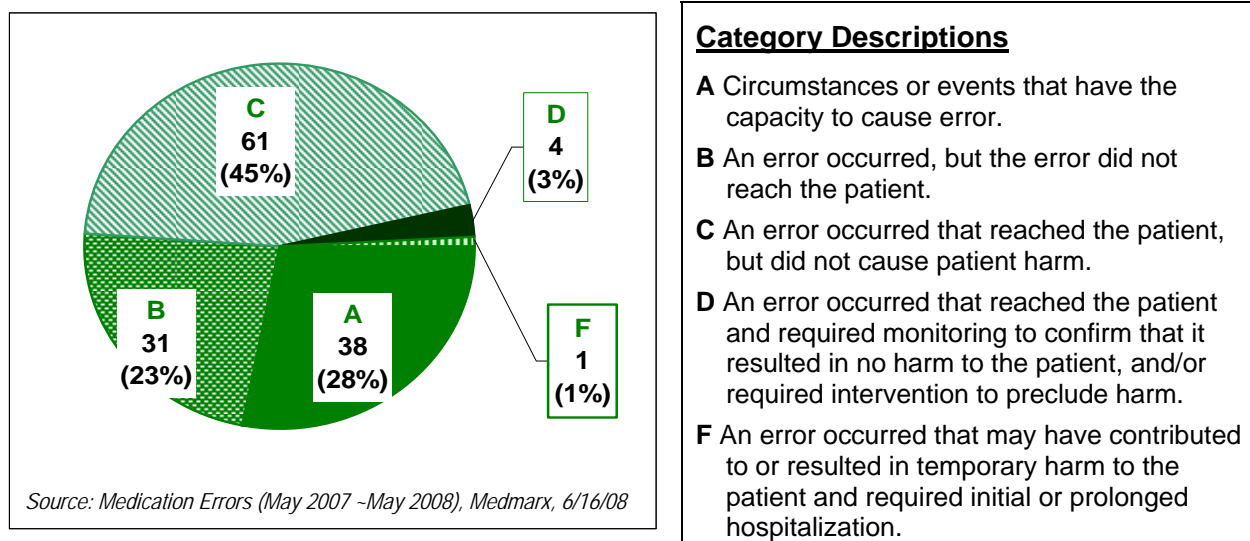(see **Table 8** below). There were two incidents where each report presented two errors that occurred simultaneously for the same patient. Of the total of 135 reported incidents, one occurrence caused patient harm resulting in hospitalization (see the Outcome Category F in **Figure 18**). Four cases required intervention to preclude harm (Outcome Category D). Almost half (45% or 61) of the reported errors reached the patient but did not cause patient harm and one third (31 or 23%) did not reach the patient. The remaining 38 cases are considered to have the capacity to cause errors but actual errors did not occur.

Figure 18. Outcomes (Category) of Medication Errors (May 2007 ~ May 2008)

Source: Medication Errors (May 2007 ~May 2008), Medmarx, 6/16/08

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.

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

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[13] A medication error is 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. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use. – *National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP).*

[14] 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)*

Table 8. Volume & Type of Reported Medication Errors (May 2007 ~ May 2008)

Type of Error	May-07~ Sep-07	Oct -07	Nov -07	Dec -07	Jan -08	Feb -08	Mar -08	Apr -08	May -08	Total	Percent
Prescribing error	22	5	3	11	3	1	1	2	3	**51**	**37%**
Omission error	17	7	1		6	9	1	3	6	**50**	**36%**
Improper dose/quantity	6	6				3	1	1	3	**14**	**10%**
Unauthorized/wrong drug	4	4	0		2	1				**7**	**5%**
Wrong administration technique	3	3	0	1	0	1	1			**6**	**4%**
Wrong patient	3				0		0	1		**4**	**3%**
Wrong time									2	**2**	**1%**
Extra Dose									2	**2**	**1%**
Wrong drug form									1	**1**	**1%**
Total*	**55**	**12**	**4**	**12**	**11**	**15**	**4**	**7**	**17**	**137**	**100%**

Source: Medication Errors, Medmarx, 6/16/08

Note: *The months of May thru Aug 2007 were not shown in the table but were included in totals. Two patients experienced 3 errors and eight patients each experienced 2 errors during the reported time period (12 months). In total, 122 patients are involved in a total of 137 medication errors*

The aggregate data suggests that the most commonly reported types of errors were prescription writing errors (51 or 37%) and omissions errors[15] (50 or 36%). (See **Table 8**.) There were 14 cases of improper dose/quantity, 7 cases of wrong drug, 6 cases of wrong administration technique, 4 cases of wrong patient, 2 cases of wrong time, 2 cases of extra dose, and 1 case of wrong drug form. The reported occurrences of omission errors, improper dose/quantity, and unauthorized/ wrong drug errors declined near end of CY 2007. In fact, as of December, 11 out of 12 reported errors were prescription writing errors. January did see a return of two cases of unauthorized/ wrong drug errors. February and March showed an increase across the entire range except cases of wrong patient. The most significant was 9 omission errors in February. April and May also showed a wide range of errors. In May 2008, three additional type of errors that were never reported before were reported and documented.

Of the 137 errors, 135 cases were a single type of error and two cases were two types of errors. The most common contributing factors are workflow disruption (37%), performance deficits (25%), and knowledge deficits (19%) (see **Table 9**).

Table 9. Frequently Reported Causes of Errors (May 2007 ~ May 2008)

Cause of Error	Number	Percent
Workflow disruption	37	26%
Performance (human) deficit	25	18%
Knowledge deficit	19	14%
Communication	10	7%
Documentation	9	6%
Transcription inaccurate/omitted	8	6%

Source: Medication Errors, Medmarx, 6/16/08

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[15] Failure to give an ordered dose.

2. Adverse Drug Reaction (ADR)

MEDMARX database documents a total of 71 Adverse Drug Reactions (ADRs) reported by the Hospital during the past twelve months, between June 2007 and May 2008. This is equivalent to an average of six (6) reports per month. The 60 reported ADRs include three life-threatening cases and six events that required hospitalization (see **Table 10**). Twenty-three (23) cases (32%) brought about other medically significant conditions and 17 cases (24%) required interventions to prevent incapacity.

Table 10. Volume of Reported ADRs by Severity & by Month (Oct 2007 ~ May 2008)

Severity	Jun ~ Sep-07	Oct -07	Nov -07	Dec -07	Jan -08	Feb -08	Mar -08	Apr -08	May -08	Total	Percent
Results in death										**0**	**0%**
Is life-threatening				1			1	1		**3**	**4%**
Requires initial/prolonged hospitalization	2					1	2	1		**6**	**8%**
Is a congenital anomaly or birth defect										**0**	**0%**
Other medically important condition	12	2	3	1	2	1			2	**23**	**32%**
Intervention to prevent incapacity	8	4		1	1		1	1	1	**17**	**24%**
Results in persistent/significant incapacity										**0**	**0%**
Not serious (none of the above apply)	*13*	*1*		*2*			*1*	*3*	*2*	**22**	**31%**
Total*	**35**	**7**	**3**	**5**	**3**	**2**	**5**	**6**	**5**	**71**	**100%**

Source: ADRs (Jun 2007~May 2008), Medmarx, 6/16/08

Note: The months of June thru Sept 2007 were not shown in the table but were included in totals. One patient experienced 5 ADRs, two patients experienced 3 ADRs and 8 patients each experienced 2 ADRs during the reported time period (12 months). In total, 61 patients are involved in a total of 71 medication errors.

Table 11 presents reported ADRs by location of patients involved in those events and suggests that some units, particularly in the civil program, may not be appropriately reporting the ADR events to the Hospital's Pharmacy. There were only four units (RMB-2, RMB-4, RMB-6 and RMB-7) from the civil program that reported at least one ADR over the past 12 months. In total, the civil program units reported 24 ADRs in one year. The forensic units reported a total of 39 ADRs for the same time period. Among the forensic units, JHP-7 and JHP-9, the pre-trial units where the total number of patients served throughout the year is much larger than post-trial units, reported greater number of ADRs.

Table 11. Location of Patients Involved in ADR (Jun 2007 ~ May 2008)

Civil Program		Number	Forensic Unit		Number
CT2-A	Cog. Impaired		JHP-2	Post-trial	2
CT2-B	Geriatric		JHP-3	Post-trial	
RMB-1	Geriatric		JHP-4	Post-trial	2
RMB-2	Geriatric	16	JHP-6	Pre / post	5
RMB-3	Beh. Mgmt.		JHP-7	Pre-Trial	12
RMB-4	Beh. Mgmt.	1	JHP-8	Pre / post	4
RMB-5	Admission		JHP-9	Pre-Trial	7
RMB-6	Admission	1	JHP-10	Post-trial	3
RMB-7	Transitional	6	JHP-11	Post-trial	2
RMB-8	Transitional		JHP-12	Post-trial	2
Civil Total		24	Forensic Total		39
Not Identified		6	Grand Total		69

The most common reaction of those reported ADRs was extra pyramidal/movement disorder: 21 or 30% (see **Figure 19**). Tremor has been reported in 12 cases (17%) and abnormal laboratory values incurred in 10 cases (14%).

The pharmaceuticals most commonly reported to cause ADRs included Olanzapine (20%), Risperidone (13%), Divalproex (12%), Quetiapine (12%) and Ziprasidone (9%) as seen in **Table 12**.

Figure 19. Most Common Reactions of ADRs (Jun 2007 ~ May 2008)

Total (n) = 69

Source: ADRs (Jun 2007 ~May 2008), Medmarx, 6/16/08
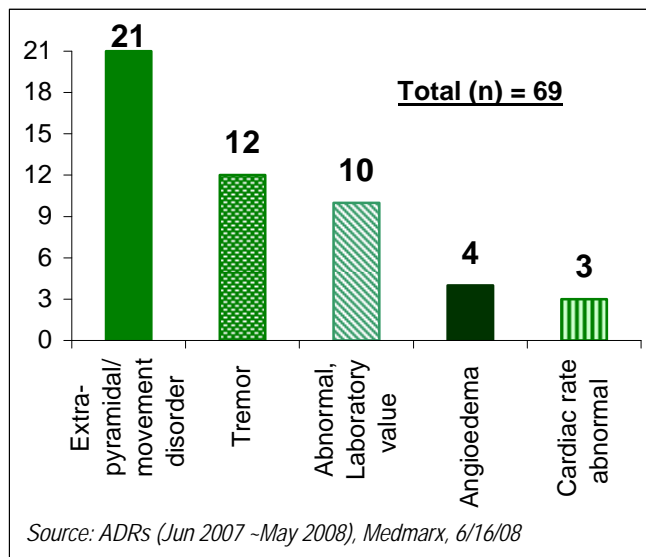
Table 12. Drugs that Caused >=5 ADRs (Jun 2007 ~ May 2008)

Generic Name	Number	Percent*
Olanzapine	14	20%
Risperidone	9	13%
Divalproex	8	12%
Quetiapine	8	12%
Ziprasidone	6	9%

Percentage of events where respective drug caused ADRs, out of the total ADRs (69) that were reported to have occurred during the above time period (Jun 2007 ~ May 2008).

IX. Restraint/Seclusion

1. Frequency of Restraint/Seclusion Episodes

The use of seclusion and restraint considerably increased to date in FY 2008 according to the data collected by the nursing supervisor in the civil and forensic program. As shown in **Figure 20** and **Figure 21**, the number of restraint and seclusion episodes reported during the first eight months of the current fiscal year (155 and 69, respectively) exceeds the total number of restraint and seclusion episodes reported during the entire fiscal year 2007 (83 and 25, respectively). **Figure 22** and **Figure 23** below further indicates that this increase mostly took place since February 2008 and reached the highest level at 46 in the month of May 2008. It is suggested that this visible increase in the number of restraint and seclusion events is likely due to instituting a more thorough data tracking mechanism and reinforcing self-monitoring activities that began in February 2008. This suggests that restraint and seclusion incidents may have been underreported prior to February 2008 and the recent trend does not necessarily imply an increase in the use of restraint and seclusion. The contribution of increased reporting verses increased episodes in the trend is unclear. The number of restraint episodes

The DOJ Compliance Office conducted an audit of those reported seclusion and restraint data and unusual incident reports on seclusion and restraint. PID is currently analyzing the data from the DOJ Compliance office and will publish a final report very soon.

Figure 20. Seclusion and Restraint Episodes (FY2007)

	Restraint (N=83)	Seclusion (N=25)
Forensic	14	3
Civil	69	22
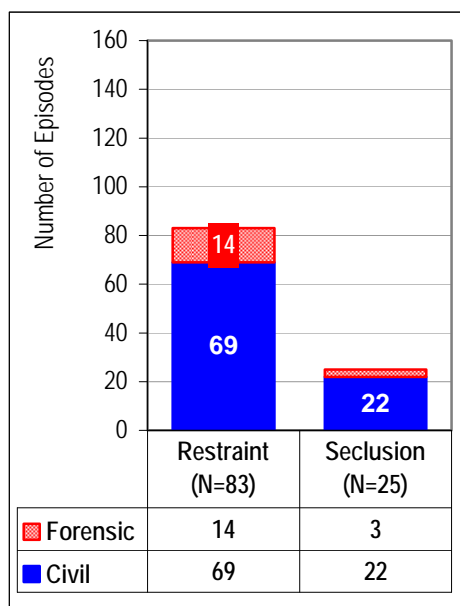
Figure 21. Seclusion and Restraint Episodes (FY2008)
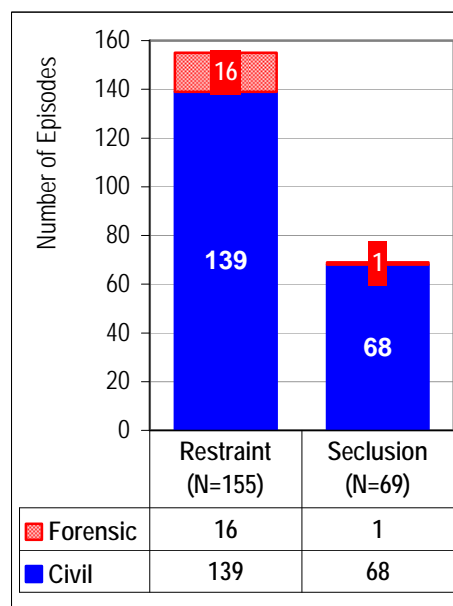
	Restraint (N=155)	Seclusion (N=69)
Forensic	16	1
Civil	139	68

Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008

Figure 22. Number of Restraint Episodes for 12 Months (June 2007 ~ May 2008)
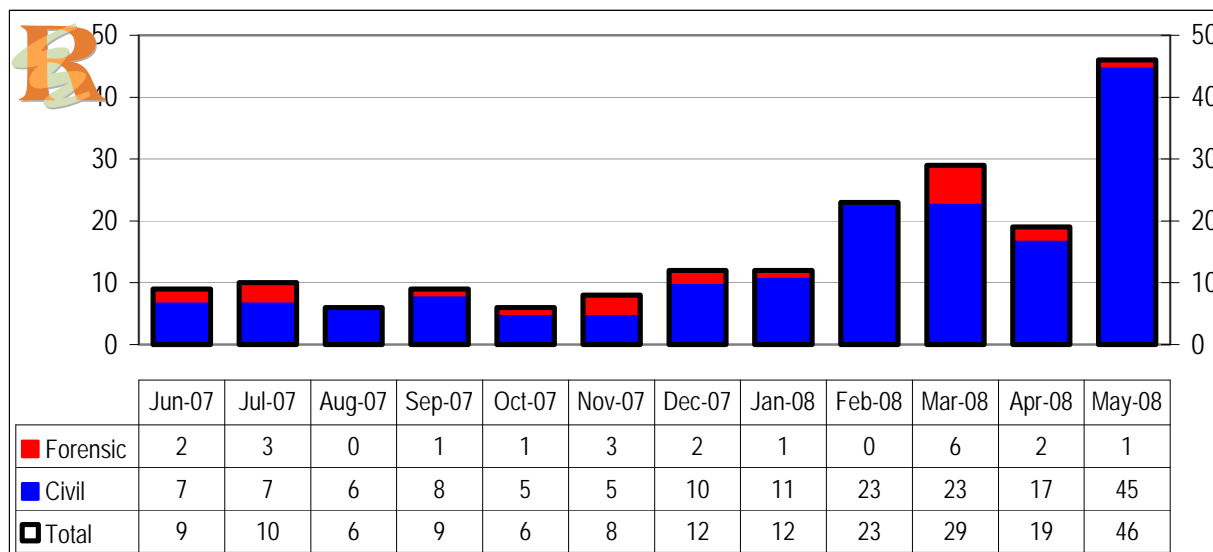
	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
■ Forensic	2	3	0	1	1	3	2	1	0	6	2	1
■ Civil	7	7	6	8	5	5	10	11	23	23	17	45
☐ Total	9	10	6	9	6	8	12	12	23	29	19	46

Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008

Figure 23. Number of Seclusion Episodes for 12 Months (June 2007 ~ May 2008)

|	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08
■ Forensic	0	0	0	0	0	0	0	0	0	0	1	0
■ Civil	2	3	3	2	6	1	10	10	11	23	1	6
☐ Total	2	3	3	2	6	1	10	10	11	23	2	6
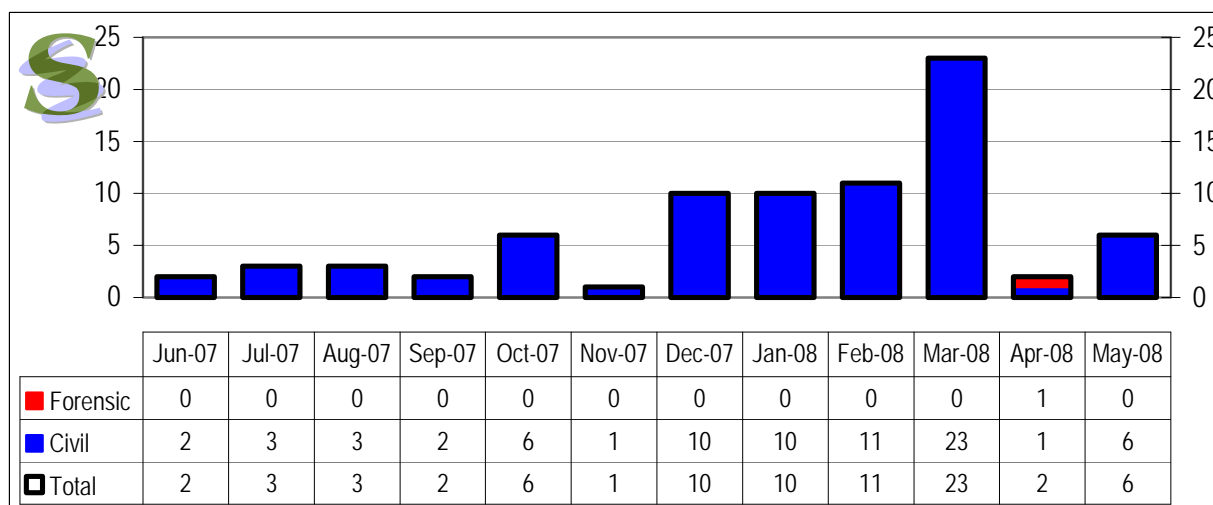
Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008

2. Duration of Restraint/Seclusion Episodes

While seclusion is not used as often as restraint, it results in more hours of use as compared with restraint. In FY 2007, the average duration of a restraint episode was less than 2 hours (**Figure 24**), as compared to an average duration of over four hours for seclusion episodes (**Figure 25**). The average duration per episode slightly increased for restraint and greatly increased for seclusion in FY2008: 3 hours 45 minutes per restraint episode and 5 hours 19 minutes per seclusion episode. This dramatic increase in average duration of seclusion was caused by one single seclusion incident that lasted for 112 hours.

Figure 24. Average Hours per Restraint Episode (FY2007)
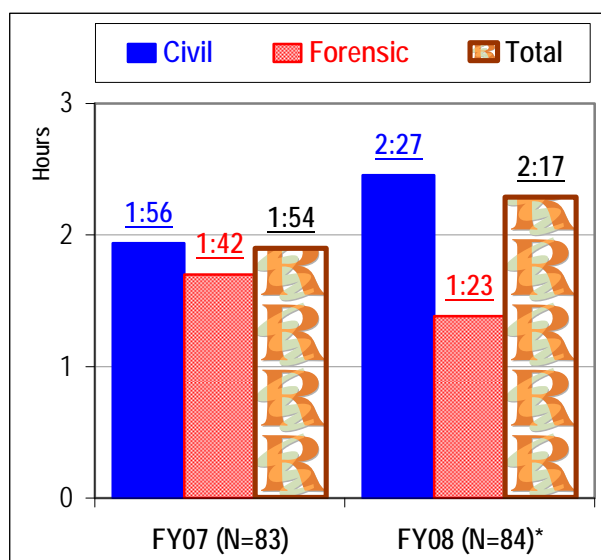
* Hours of four restraints used as daily protective measure are not included.

Figure 25. Average Hours per Seclusion Episode (FY2008: 8 Months)
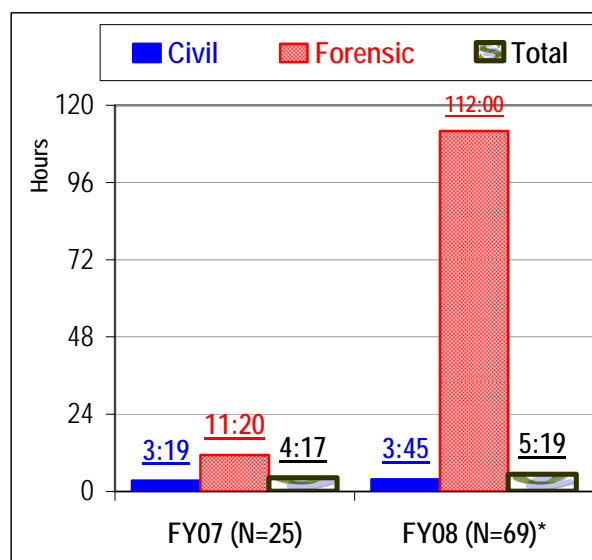
* One individual patient alone had 112 hours of inclusion in April, 2008
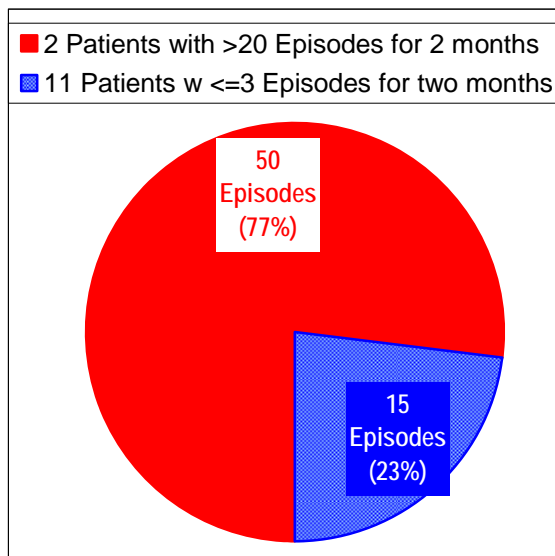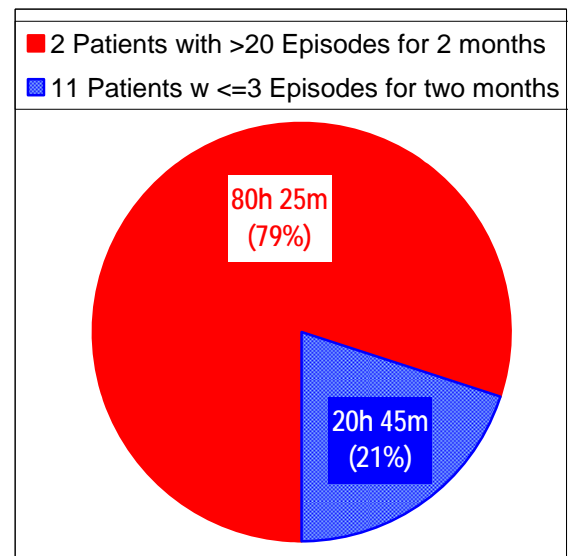
3. Patients with Multiple Restraint/Seclusion Episodes

The use of restraint and seclusion is skewed by significant use for a few patients. (See **Table 13**, **Figure 26** and **Figure 27**.) During the months of April and May in 2008, a total 65 restraint episodes were reported for a total of 13 patients. However, of those 65 episodes, 50 (77%) were used only for two (2) patients: one patient had 26 restraint episodes and the other one had 24 episodes during a two-month time period. The remaining 15 episodes (23%) were used for 11 patients (**Figure 26**), most of whom had only single episode or at most three episodes during the respective time period. The total duration of restraint episodes recorded for those two patients with more than 20 episodes (80 hours and 25 minutes) accounts for 79% of the total duration accumulated from all restraint episodes (**Figure 27**).

Table 13. Frequency and Duration of Restraint Use (April 2008 ~ May 2008)

Patient Category by Frequency Level		Frequency of Restraint Use				Total Duration of Restraint			
		Number		Percent		Duration (hh:mm)		Percent	
2 patients with >20 restraint episodes for 2 months	Pt A	26	**50**	40%	**77%**	39:30	**80:25**	39%	**79%**
	Pt B	24		37%		40:55		40%	
11 patients with =< 3 restraint episodes for 2 months		15		23%		20:45		21%	
Grand Total (13 Patients)		65		100%		101:10		100%	

Source: Analysis of Seclusion/Restraint Log, OMS

Figure 26. Frequency of Restraint Episodes (April ~ May 2008)

- 2 Patients with >20 Episodes for 2 months
- 11 Patients w <=3 Episodes for two months

50 Episodes (77%)

15 Episodes (23%)

Figure 27. Total Duration of Restraint Use (April ~ May 2008)

- 2 Patients with >20 Episodes for 2 months
- 11 Patients w <=3 Episodes for two months

80h 25m (79%)

20h 45m (21%)

4. Restraint and Seclusion Episodes by Unit

Both restraints and seclusions are used primarily by the civil service units: 95% of restraint episodes and 88% of seclusion episodes occurred on the civil side. **Table 14** shows the distribution of restraint and seclusion episodes by unit during April and May of 2008. RMB 3, the behavior management unit accounted for 83% of all the restraints and 82% of all the seclusion episodes for April and May 2008. The other Civil Units involved in the restraint episodes are RMB 5, RMB 6 and RMB 7 and the number of episodes occurred in these Units are ranging from 1 to 4 episodes in the months of April and May.

Table 14. Distribution of Units by episodes (April 2008 ~ May 2008)

Program	Unit	Restraint		Seclusion		Total	
		Number	Percent	Number	Percent	Number	Percent
Civil	**RMB-3**	**54**	**83%**	**6**	**75%**	**60**	**82%**
	RMB-5	4	6%		0%	4	5%
	RMB-6	1	2%		0%	1	1%
	RMB-7	3	5%	1	13%	4	5%
	Sub-total	*62*	*95%*	*7*	*88%*	*69*	*95%*
Forensic	JHP-6	1	2%	1	13%	2	3%
	JHP-10	1	2%		0%	1	1%
	JHP-12	1	2%		0%	1	1%
	Sub-total	*3*	*5%*	*1*	*13%*	*4*	*5%*
Grand Total		*65*	*100%*	*8*	*100%*	*73*	*100%*

5. Restraint & Seclusion Incidents by Time and Shift

Figure 30 displays frequency of restraint and seclusion incidents that occurred during the past two months by time of the day as well as by shift. Few incidents occurred after late evening through very early morning. Incidents started very early morning at around 4:00am ~ 5:00am and rose more after 8:00am. Frequency decreased in the early afternoon but substantially increased at around 3:00pm, reaching the highest point between 4:00pm and 5:00pm. This is the result of observation only for the two-month time period and it may be too early to generalize the pattern. We will continue to analyze incidents by time and will be able to present more compelling data within the next few months.

Figure 28. Frequency of R & S Incidents by Shift and Time of the Day (Apr ~ May 2008)
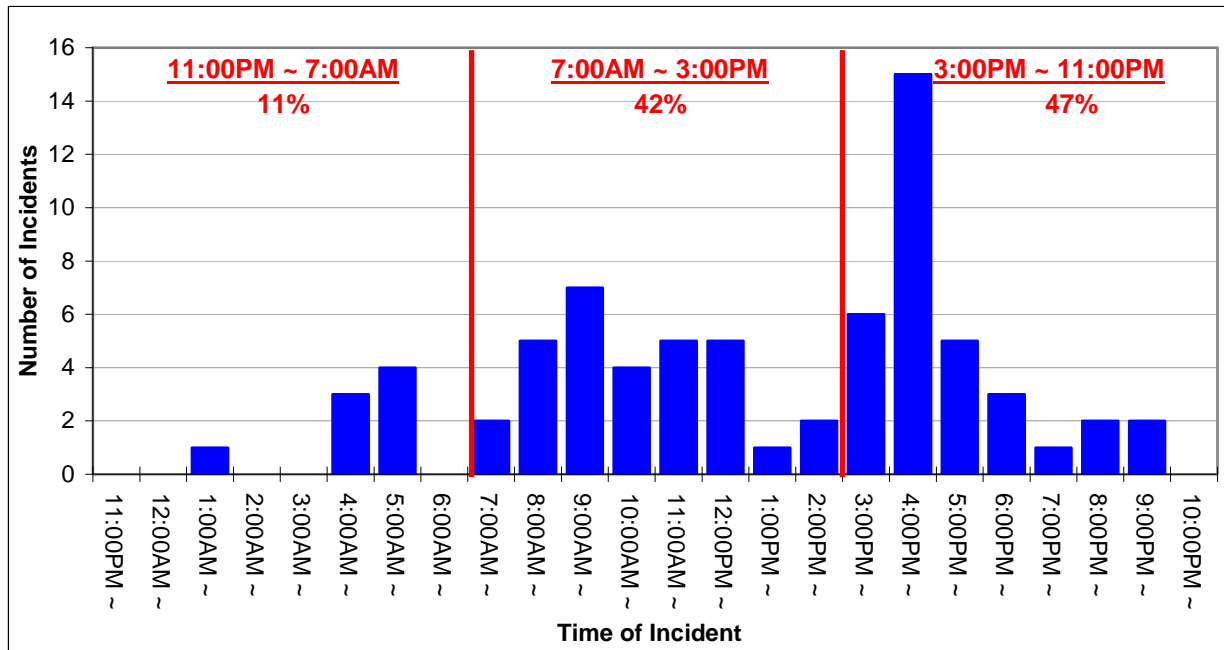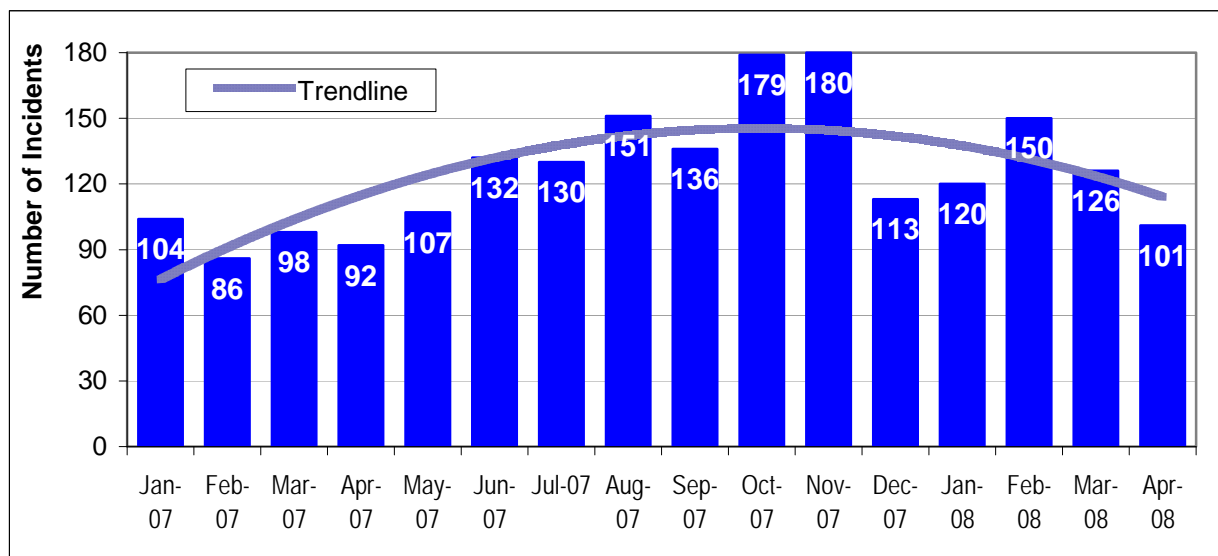
X. Unusual Incidents

1. Number of Unusual Incidents (UIs)

As illustrated in **Figure 29**, in 2007, the number of reported unduplicated unusual incidents (UI) consistently increased until it reached a peak in November before significantly dropping in December 2007. In February 2008, the number of reported incidents increased again to 150, but dropped to 126 and 101 in March and April 2008, respectively. There is some belief that UIs tend to occur more frequently during the summer months. Unfortunately, the Hospital does not yet have sufficient data to support this view.

Over the past 16 months, between January 2007 through April 30, 2008, a total of 1992 unique incidents, an average of approximately 125 incidents per month, occurred and were reported to the Hospital's Risk Manager. Of those, 94% (1890) or an average of 118 incidents are those where patients are involved.

Figure 29. Volume of Reported UIs (Jan 2007 ~ Apr 2008)

Data Source: Analysis of Unusual Incident Database, OMS

2. UIs by Type

Two out of five incidents (40%) reported over the past 16 months were categorized as high severity (MUI – Major Unusual Incident), which includes unauthorized leave (UL or elopement) and medical emergency (see **Table 15**). The proportion of high severity incidents gradually increased throughout the year 2007 and a further upsurge occurred early this year. In the first half of 2007, high severity incidents comprised 29% of the total incidents. During the second half of 2007 (July through December 2007), the percentage of high severity incidents was 41%. In January and February 2008, high severity incidents increased to 62% and 57%, respectively,

of the total incidents. March and April 2008 showed a decrease to 39% and 47%, respectively. These numbers still are notably higher than the percentage of high severity incidents for the same months in 2007.

Table 15. Number of UIs by Type and Month (Apr 2007 ~ Apr 2008)															
UI Type		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Average (16 Mths)	Percent
High Critical Severity	Abuse/Neglect	2	2	1	1	3	2	3	1	0	2	2	3	1	**2**	1%
	Assault/ Altercation	0	0	1	1	1	0	2	0	0	3	1	0	1	**1**	1%
	Contraband	1	1	0	5	2	6	10	10	8	9	2	0	5	**4**	3%
	Death	0	0	1	2	2	0	5	0	1	0	0	0	1	**1**	1%
	Injury	0	0	2	1	0	0	0	3	0	1	4	1	0	**1**	1%
	Medical Emergency	14	9	20	11	31	18	29	25	12	8	29	12	7	**17**	14%
	Restraint/Seclusion*										1		8	9	**9**	7%
	Suicide Attempt	1	1	0	0	0	0	0	0	0	0	1	0	0	**0.2**	0.1%
	UL/ Elopement	10	15	18	24	27	27	36	29	23	45	43	25	20	**23**	19%
	Other (Highly Severe)	0	2	1	1	1	1	0	0	0	6	4	0	3	**1**	1%
	Sub-total	*28*	*30*	*44*	*46*	*67*	*54*	*85*	*68*	*44*	*75*	*86*	*49*	*47*	*50*	*40%*
Less Critical Severity	Assault/Altercation	32	37	45	42	38	48	47	59	46	24	37	52	27	**40**	32%
	Minor Injury, Fall, etc.	15	24	22	21	19	19	31	28	12	14	15	11	13	**19**	15%
	Other (Less Severe)	17	16	21	21	27	15	16	25	11	7	12	14	14	**16**	13%
	Sub-total	*64*	*77*	*88*	*84*	*84*	*82*	*94*	*112*	*69*	*45*	*64*	*77*	*54*	*75*	*60%*
Grand Total		*92*	*107*	*132*	*130*	*151*	*136*	*179*	*180*	*113*	*120*	*150*	*126*	*101*	*125*	*100%*

*Data Source: Analysis of Unusual Incident Database, OMS. January thru March 2007 are not shown but the totals are included in calculated average and percentage. *Restraint & Seclusion totals were added in March 2008*

Reference: UI Code Numbers

High Critical Severity	Abuse: 1~8 Assault/Altercation: 9~14 Contraband: 15~19 Death:20~21 Injury: 26~31 Medical Emergency: 35~37 Restraint/Seclusion 40~42 Suicide Attempt: 44 UL/Elopment: 45~47 Other: 32 (lose), 38 (med-error), 39 (neglect), 49 (other)
Less Critical Severity	Assault/Altercation: 52~56 Minor/Fall: 57~62 Other: 51 (administrative), 63~65 (loss), 66 (med-error), 67 (suicide gesture), 68 (other)

Such an increase of high severity incidents is ascribed primarily to a substantial increase of medical emergencies and ULs. The volume of ULs significantly increased from early summer through October 2007. The spike during the summer time may have been due in part to the warm weather and expansion of privileged hours from daylight saving time. However, the data dose not necessarily support the view that the number of ULs is seasonal as the months of January and February 2008 marked the highest numbers of ULs in the past 16 months. In January 2008, the number of reported ULs peaked at 45 and it remained high at 43 in February as well. It dropped to 25 and 20 in March and April 2008.

The volume of medical emergency incidents exhibits a similar trend. Medical emergency incidents noticeably increased in June 2007 and were reported almost once per day during the months of August through November 2007. The number dropped to a total of 8 in January 2008, but increased again in February 2008 to 29.

Based on the DOJ's recommendation following their site visit review conducted in February 2008, the Hospital is in the process of revising the UI policy to require all restraint & seclusion episodes to be reported as UIs. The existing policy requires an UI report only when a seclusion or restraint did not follow policy or caused injury. The number of restraint and seclusion incidents reported to the Risk Manager as an UI as of April 2008, is far fewer than the restraint & seclusion episodes recorded in the monthly log. As presented in the Chapter *IX. Restraint/Seclusion* above, the number of restraint & seclusion that occurred in April 2008 was 21 whereas the number of restraint & seclusion UI reports for the same month is nine.

An assault/altercation reported as a less critical severity incident is the most commonly reported incident, comprising 32% of the entire reported incidents (40 per month). Less severe injuries from falls or minor accidents constitute about 15% of the reports: on average 19 per month. The number of reported falls and minor injuries dropped over the past few months.

3. UIs by Time and Shift

Figure 30 displays frequency of incidents by time of the day as well as by shift. Few incidents occur after midnight through early morning hours. The number of incidents substantially rises from 6:00 a.m. and continues to increase until 10:00 a.m. It decreases in the late morning but increases again in the afternoon and reaches the highest point between 6:00 p.m. and 7:00 p.m.

Figure 30. Frequency of UIs by Shift and Time of the Day (Jan 2007 ~ Apr 2008)
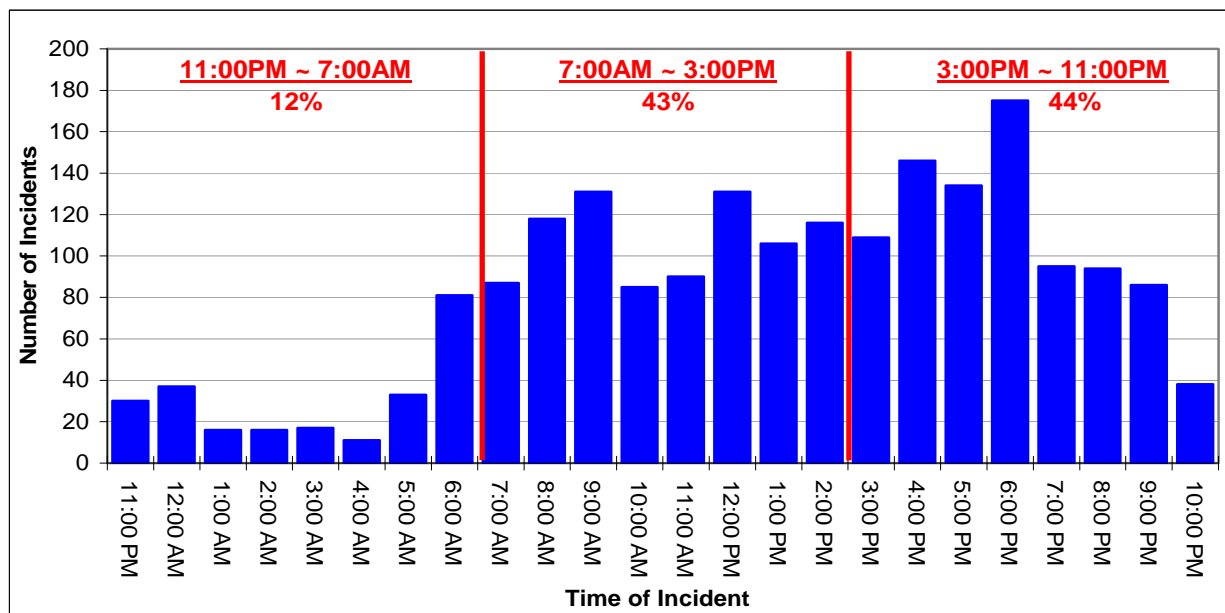
Data Source: Analysis of Unusual Incident Database, OMS

4. Delay in UI Reporting

The current Hospital policy requires an unusual incident to be reported to the Risk Manager within 72 hours (or 3 days) after the incident occurs. However, **Table 16** below illustrates that many incidents are not reported within the required timeframes.

Table 16. Delay in Reporting Unusual Incidents (Jan 2008 ~ Apr 2008)

Length of Report Delay*	Jan-08		Feb-08		Mar-08		Apr-08		Total (4 Months)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1 Day	2	2%	18	12%	15	13%	9	10%	44	9%
2 Days	7	6%	9	6%	10	9%	15	17%	41	9%
3 Days	12	10%	4	3%	17	15%	7	8%	40	9%
4~5 Days	30	25%	27	19%	29	25%	18	20%	104	22%
6~10 Days	53	44%	84	58%	21	18%	30	33%	188	40%
11~30 Days	8	7%	3	2%	22	19%	10	11%	43	9%
31~42 Days	8	7%	0	0%	0	0%	1	1%	9	2%
Total	120	100%	145	100%	114	100%	90	100%	469	100%
N/A (Data Error)	0		5		12		11		28	
Average Length (Days)	8.3	**Days**	5.5	**Days**	5.7	**Days**	8.0	**Days**	5.9	**Days**
Median Length (Days)	6.0	**Days**	6.0	**Days**	5.0	**Days**	5.0	**Days**	5.0	**Days**

Data Source: Analysis of Unusual Incident Database, OMS

Note: The length of report delay has been calculated by subtracting the time an incident occurred from the time the report received by the Risk Manager in the Januay 2008 UI Database. It needs to be further noted that errors might have inadvertently occurred in some cases in the process of documenting reports or entering data into the UI database. Currently, each UI report is entered by program assistant staff and some reports have illegible hand-writing, which contributes to more chances of data entry errors.

A total of 469 incidents[16] were analyzed to assess the length of UI report delay during the first four months of 2008. Of those, approximately one out of four incidents (125 out of 441 or 27%) was reported to the Risk Manager within 3 days after the incident occurrence. The majority of reports (292 or 62%) were submitted between 4 days and 10 days after the occurrence. The percentage of incidents reported within 3 days increased from 18% in January to 37% in March. In April, the percentage was 35%. However, the percentage of those reported more than 10 days after the incident occurrence also increased in March and April. In sum, about half of incidents were reported within 6 days and the other half were reported more than 6 days after the incident occurrence.
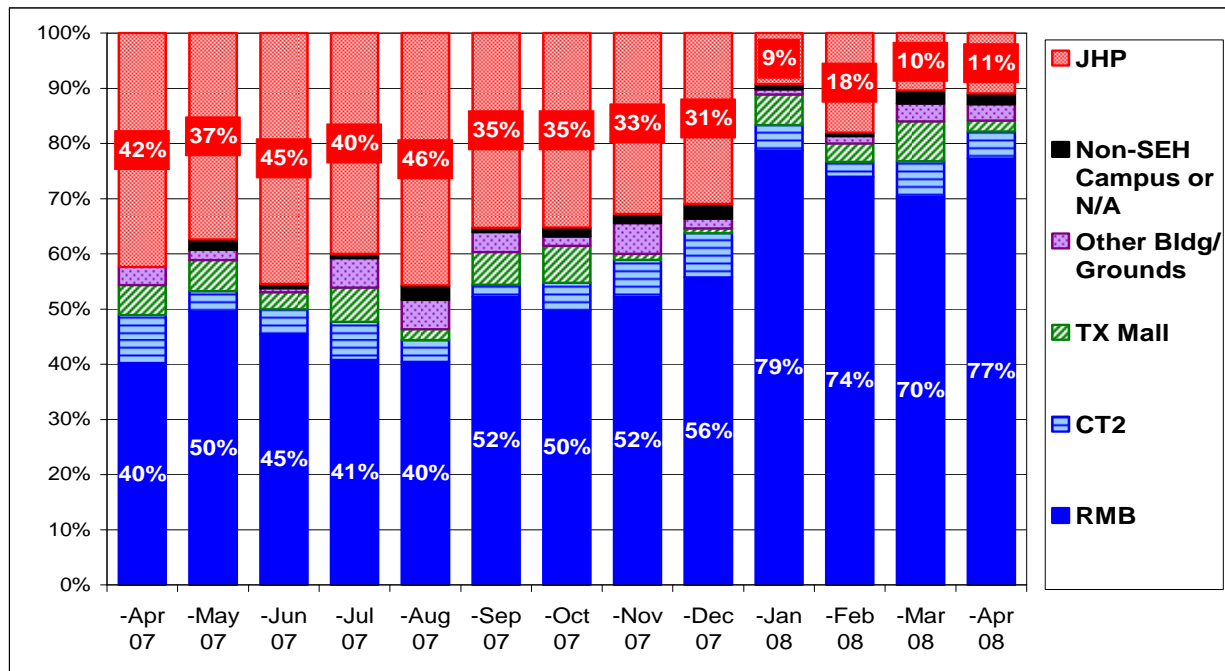
5. UIs by Location

Most of the UI reports originate from RMB building. According to observation of reported UI location data over the past 16 months, on average, more than half (55%) of the UIs occurred in the RMB building, 31% in the JHP building, 5% in the CT2 building, 5% in the treatment mall building, 3% in other buildings or grounds on the Hospital's campus, and the remaining 1% occurred outside the campus (i.e. court, transport, medical visits, etc.).

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[16] The analysis excluded 28 reports whose reporting date/time information was missing or inaccurately documented.

Figure 31 further illustrates that the percentage of reported UI occurrences from the RMB building increased since early fall and jumped to the highest level in January 2008, when almost four out of five (79%) UI reports were related to incidents that occurred in the RMB building.

Figure 31. Trend of UIs by Location (Apr 2007 ~ Apr 2008)

Data Source: Analysis of Unusual Incident Database, OMS

Figure 32. UIs by Location at Unit Level (Jan 2008 ~ Apr 2008)
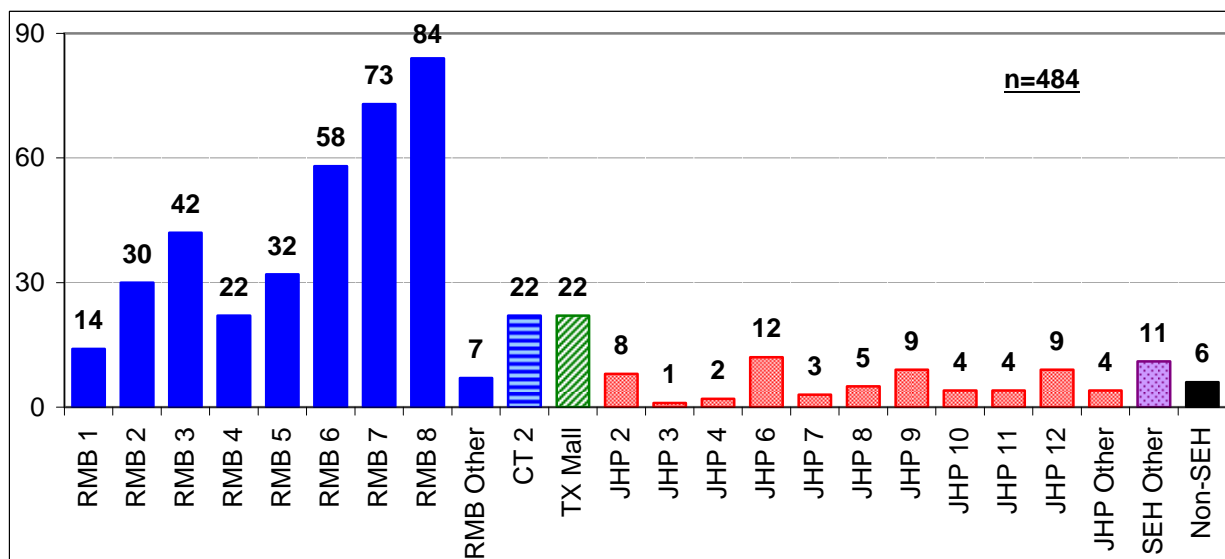
Data Source: Analysis of Unusual Incident Database, OMS

Note: 'RMB Other' includes lobby, cafeteria or other areas that don't belong to a particular unit within the RMB building. 'SEH Other' includes all other buildings on the campus except those identified above. 'Non-SEH' means outsider the campus.

Figure 32 presents the number of reported UIs for the past four months, beginning January 2008 through April 2008, by incident location at the unit level. Units that reported UIs most frequently were RMB-8 (84) and RMB-7 (73). RMB-6 also experienced a high number of UIs at 58. Some units in the forensic program had no reported UIs in some months and the number of UIs for the other forensic units range between one and three per month.