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Department of Mental Health (DMH)**



**December 2008
Trend Analysis
- Hospital Statistics -**

March 2, 2009

**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 leadership of the Hospital further recognized the urgency of performance monitoring using data and the importance of data collection. In response to the need of a regular data reporting mechanism, the Office of Monitoring Systems (OMS) in the Performance Improvement Department (PID) analyzed the Hospital's key data available and published the first edition of the Trend Analysis Report on December 19, 2007 and every two months thereafter. 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 clinical and management staff with critical information regarding patients and the Hospital's performance in delivering timely and effective services.

Compiling data and conducting analysis for this report is a challenge for the PID. Until recently, the Hospital lacked a functioning information system, from which reliable administrative and performance data could be efficiently obtained. The Hospital's previous client information system was outdated and could not generate the list of patients served in any usable format. Methods of data collection are often manual; aggregate numbers are hand counted; and the accuracy of those numbers is not easily verifiable. Departments and offices who maintain their own databases do lack training and skilled staff to utilize the database efficiently.

On July 22, 2008, the Hospital launched its new client information management system AVATAR¹. It is anticipated that this new system will significantly expand our data tracking and reporting capacity. AVATAR is already playing an essential role in reforming the Hospital's overall data management culture. AVATAR not only provides real-time patient data in a variety of formats but also promotes more frequent use of technology among clinical and administrative staff in tracking and management of information in other systems as well. OMS further provides different programs and disciplines of the Hospital with technical assistance to improve their data tracking capacity, reconstructing their data collection system, database creation, and their compiled data analysis. The Trend Analysis Report, as a major vehicle of sharing outcomes of these processes, is aimed at 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 to improve. This will support best practice and ultimately improve the quality of patient care. However, it should be noted that as we phase in AVATAR over the next six to nine months, we will be comparing data extracted from AVATAR with that from a previous data collection system. Using different data sources will likely affect the reliability of the trends presented to some extent and the reader should caution not to draw a definitive conclusion about the degree of change.

Areas covered in this edition include the Hospital's census, demographic characteristics of the patient population, Treatment Mall group activities, Infection Control, Pharmacy data, Restraint/Seclusion, and Unusual Incidents.

¹ 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 Spring 2009.

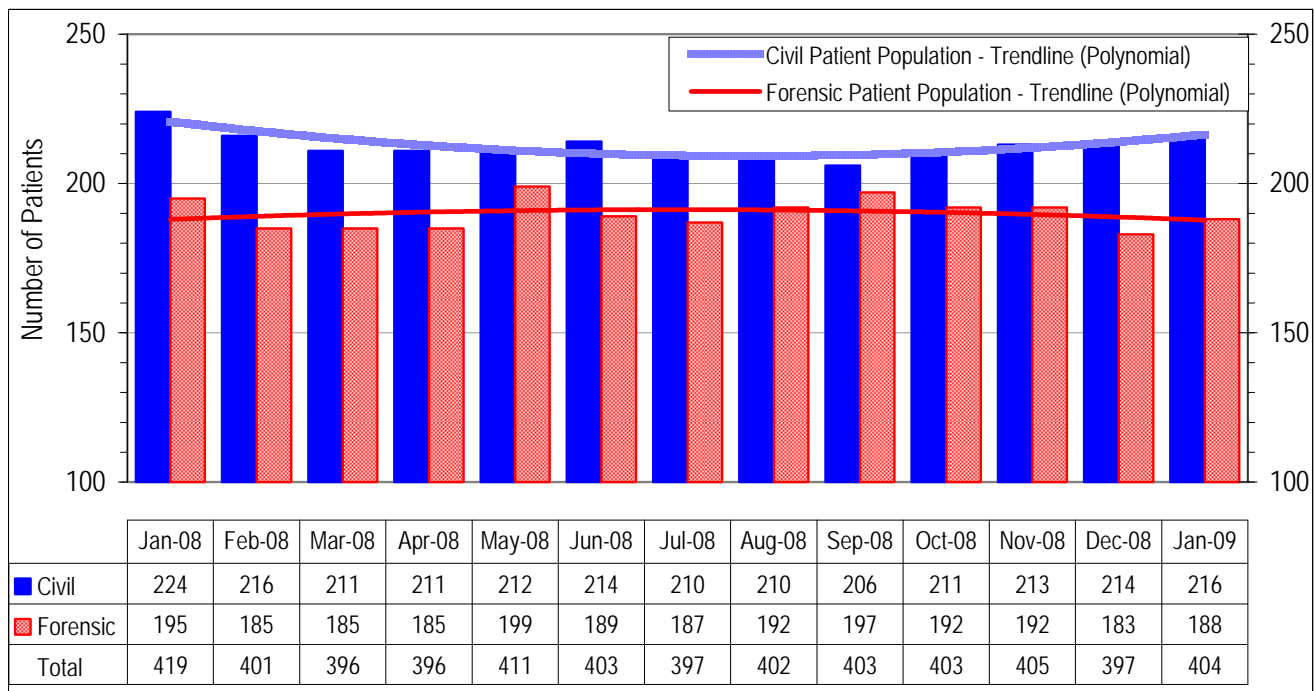
II. Census

Currently, the Hospital operates 19 inpatient units, 10 in Civil Services and 9 in Forensic Services². (See **Table 2.**) Patients in the civil program are housed in RMB and CT3 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.

1. SEH Inpatient Population

As of January 31, 2009, the Hospital was serving a total of 404 inpatients³: 216 inpatients in the civil program and 188 inpatients in the forensic program. This is a reduction of 15 patients from the number exactly one year ago (419 as of January 31, 2008). **Figure 1** displays the trend of the census for each program. It illustrates that the civil patient population has slightly increased whereas the forensic patient population has slightly decreased since last summer. Overall, however, the total census has hovered at around 400 with minor fluctuations.

Figure 1. Number of Patients Served by SEH on a Given Day (Jan 2008 ~ Jan 2009)



Note: Data for the months of January 2008 through July 2008 reflects a point-in-time number reported on the last day of each month extracted from STAR, the Hospital's previous client information management system, and verified by the nursing office and the forensic department. Data since August 2008 has been generated from AVATAR, the Hospital's new client information management system launched on July 22, 2008.

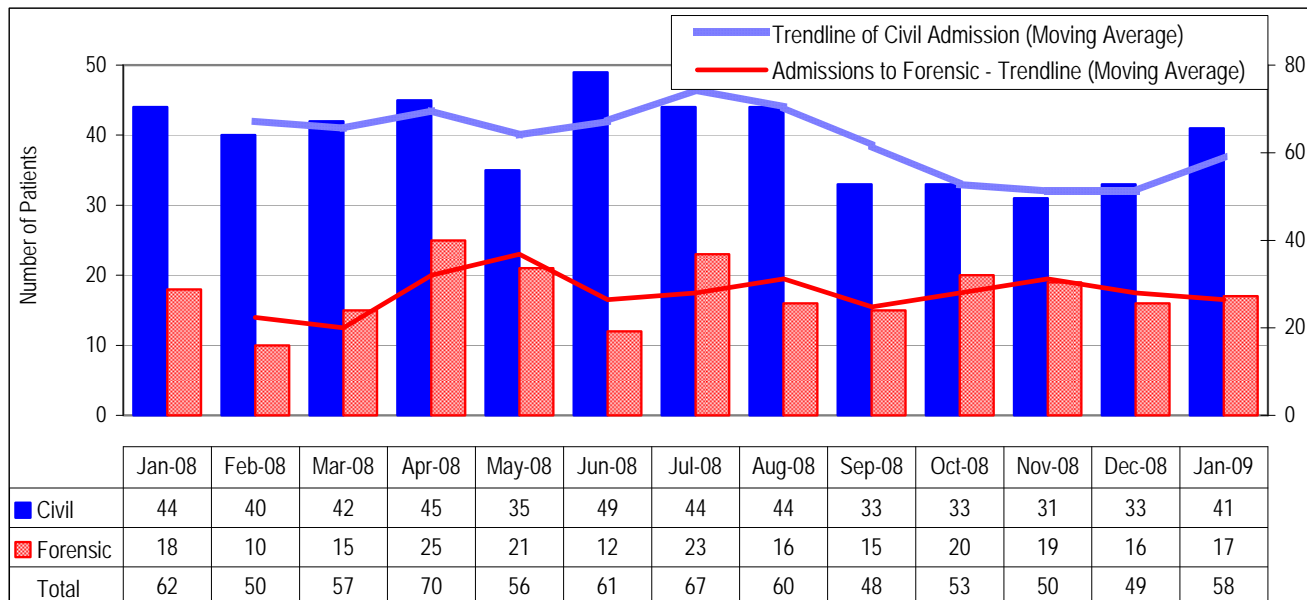
² The forensic program used to operate a total of 10 inpatient units until January 14, 2009, when it closed JHP-4.
³ It does not include patients on unauthorized leave or on court ordered conditional release.

2. Admissions and Transfers between Programs

The number of admissions to the Hospital often fluctuates from month to month. **Figure 2** displays the number of admissions by program over the past 13 months since January 2008. During this period, the average number of admissions to the civil program was 40 per month. It was at its highest (49) in June 2008 and notably dropped in the fall, remaining at the lowest end (right above 30) from September through November 2008. The number increased back to 41 as of January 2009.

Admissions to the forensic program for the past 13 months ranged from 10 to 25 per month, resulting in the average of 17 per month. In January 2009, the forensic program saw 17 admissions, including two patients who had been served as outpatients in the community prior to the re-admissions to the Hospital. In total, during the Month of January 2009, there were 58 admissions, which is slightly lower than the total admissions that occurred in January 2008.

Figure 2. Admissions (Jan 2008 ~ Jan 2009)



Source: STAR, Nursing Office Daily Census Report and Forensic Department (Jan-08~Jul-08); AVATAR (Aug-08~Jan-09)

Note: Prior to the launch of AVATAR, the number of forensic patients who were served as outpatients but who were returning to the Hospital following the termination of convalescent leaves was not counted as an admission and the above data up to August 2008 do not reflect those movements.

Table 1. Number of Transfers between Programs (Jan 2008 ~ Jan 2009)

Transferred	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09
Civil to Forensic	2	0	0	0	0	0	0	0	0	1	0	0	1
Forensic to Civil	2	2	5	1	2	2	1	0	1	2	2	2	1

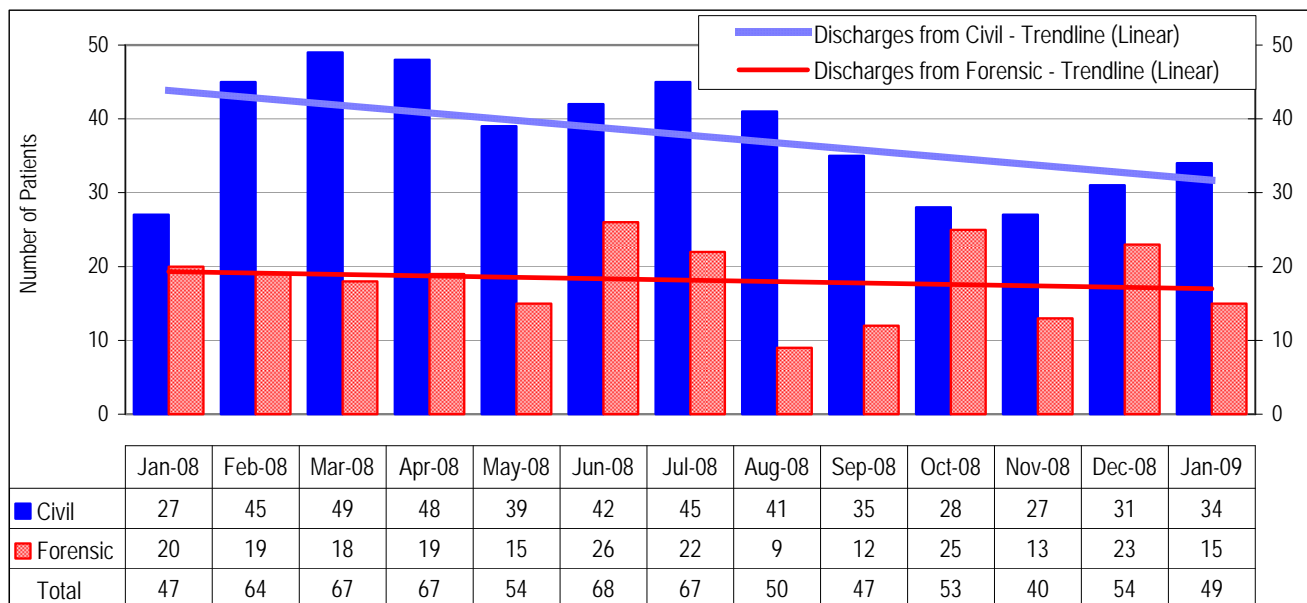
Some patients who initially enter the forensic program may be subsequently transferred to the civil program. This occurs when inpatients are civilly committed following a determination by the court that they cannot be restored to competency in the foreseeable future. According to **Table 1**, a total of 22 patients during the calendar year 2008, and one patient during the month of January 2009, were transferred from the forensic program to the civil program under these circumstances. Those patients are not considered to be new admissions to the civil programs, nor are they considered discharges by

the forensic program. In January 2008, two patients were transferred to JHP as their behaviors significantly jeopardized the safety of patients and staff in the civil program, requiring more structured security setting. Since then, however, the Hospital has made a determination to stop this practice and civil inpatients will no longer be transferred to the forensic program for behavioral reasons. They will only be transferred to JHP if they are charged with a criminal complaint while residing in the Hospital. During the months of October 2008 and January 2009, two patients (in total) who were arrested while in the civil program and were transferred to the forensic program.

3. Discharges

Overall, total discharges, particularly in the civil program, significantly increased since January 2008 and remained at around 40 until August 2008 (see **Figure 3**). However, the number of discharges of civil patients gradually declined since July, reaching the lowest level of discharges at 27 in November 2008. Since then, the number of discharges slightly increased again and there were 34 discharges that occurred in the month of January 2009. Forensic inpatient discharges fluctuated from month to month, ranging between nine (9) and 26 per month. In January 2009, there were 15 discharges from the forensic program. In total, discharges from the Hospital in January 2009 were 49, which is lower than the average number of discharges for FY08 (57) by eight.

Figure 3. Discharges (Jan 2008 ~ Jan 2009)



Source: STAR, Nursing Office Daily Census Report and Forensic Department (Jan-08~Jul-08); AVATAR (Aug-08~Jan-09)
 Note: Prior to the launch of AVATAR, the number of forensic patients who were conditionally released to the community and who were no longer served as inpatients was not counted as a discharge and above data up to August 2008 do not reflect those movements.

4. Admissions vs. Discharges

Figure 4 illustrates that admissions and discharges decreased over the last four fiscal years and the decline in the number of discharges is steeper than that of admissions. During FY2006, the average

number of discharges per month (73) was higher than total admissions (71). During both FY2007 and FY2008, the monthly average of admissions exceeded that of discharges. During the first four months of FY2009, the gap has increased to a difference of four (4): during this time period, the Hospital had a net gain of four more patients each month. As reflected in **Figure 5**, the Hospital discharged a total of 196 patients while admitting 210 patients during FY2009. The gap is wider in the civil program as the total number of discharges in the forensic program (76) exceeds the volume of admissions (72).

Figure 4. Admissions vs. Discharges (Monthly Average, FY06 ~ FY09 YTD)

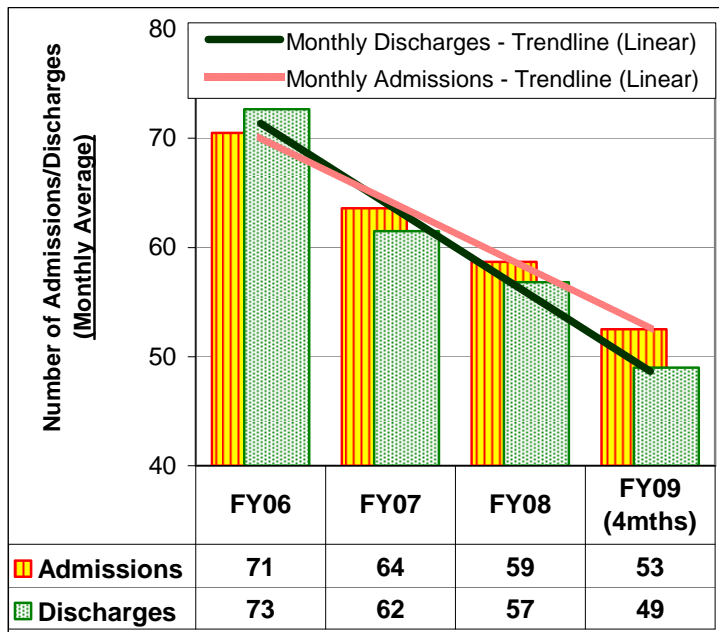
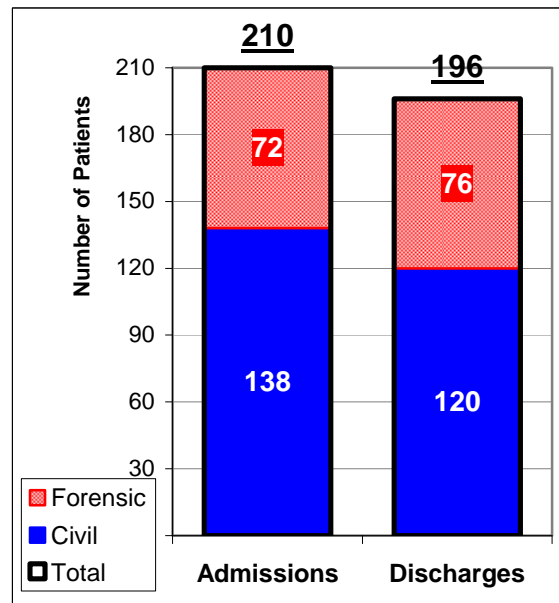


Figure 5. Admissions vs. Discharges (FY09 YTD: 10/1/08~1/31/09)



5. Readmissions

A significant proportion of the patients admitted to the Hospital have previous admissions to SEH. **Figure 6** below indicates that of the 258 admissions that occurred during the past four months, September to December 2008, 45% or 117 admissions are readmissions that have records of at least one or more previous hospitalizations with SEH. The other 55% or 141 are first time admissions. By program, 54% of the civil admissions and 28% of the forensic admissions are readmissions.

While this data provides a snapshot on the proportion of readmissions from the admission cohort, in general the 'readmission rate'⁴ is more commonly used as a quality indicator that measures the pattern of returns of discharged patients. Analyzing the readmission rate requires us to observe discharge cohort data retrospectively for a certain time period. AVATAR allows us to be able to monitor this indicator and we have observed discharge cohort data for the past four months.

⁴ 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.

According to the findings, of the total of 121 patients discharged from the civil program between September 2008 and January 2009, 16% or 19 patients were readmitted to the civil inpatient program within 30 days of their discharges. Those 19 patients do not include twelve additional patients who returned to the Hospital after more than 30 days following discharge⁵. **Figure 7** shows the Readmission Rate of those patients discharged from the civil program for this four month period. According to a national study findings⁶ introduced by the U.S. Department of Health and Human Services in 2007, the national mean of the Medicare hospital 30-day readmission rate was 18% from data collected in 2003.

Figure 6. First-time Admission vs. Readmission (Sep 2008 ~ Dec 2008)

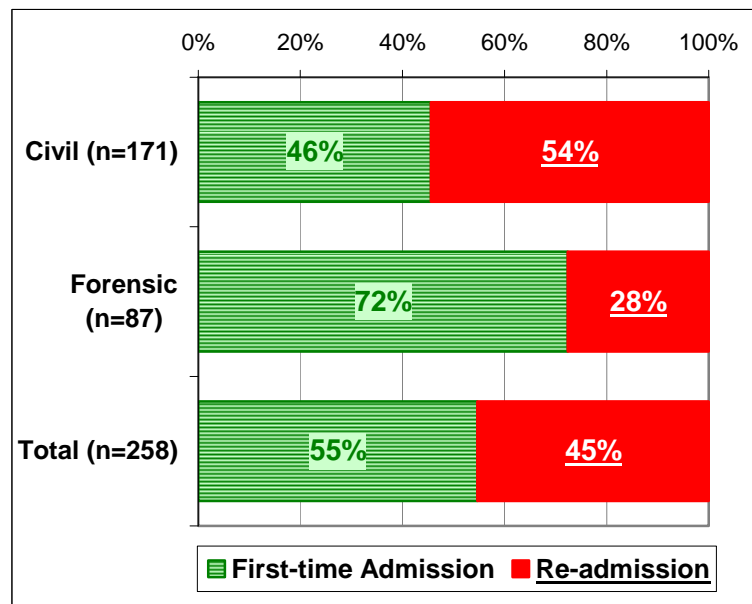
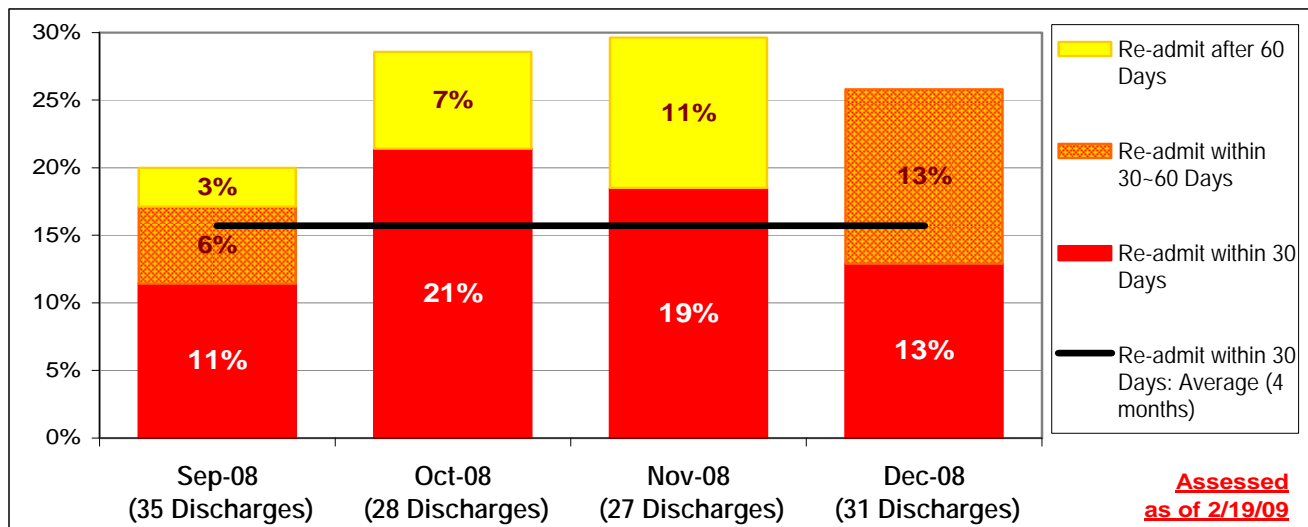


Figure 7. Readmission Rate, Civil Program (Sep 2008 ~ Dec 2008)



* Note: >60 day readmission rate from the December discharge cohort data is not available yet at the time of analysis.

Of the 65 forensic discharges that occurred for the same time period, two patients were readmitted to the civil program within 30 days and three patients were returned after more than 30 days following discharge. In addition, three forensic discharges were readmitted to the forensic program within 30 days and one patient was returned after more than 30 days.

⁵ This data also does not take into account readmissions of SEH previous patients to community psychiatric units as that data is not available to the Hospital.

⁶ Data: G. Anderson and R. Herbert, Johns Hopkins University analysis of 2003 Medicare Standard Analytical Files (SAF) 5% Inpatient Data (<http://www.ahrq.gov/>)

III. Demographic Characteristics of Patient Population

Since the Hospital launched AVATAR on July 22, 2008, the AVATAR report workgroup is working to develop automated reports that will generate real-time data in a variety of areas, including census and demographic information of the patient population. This trend analysis report used data extracted from AVATAR.

1. Patients by Program and Unit

As of December 31, 2008, the Hospital was serving 397 inpatients: 214 on the civil side and 183 on the forensic side (see **Table 2**). On average, each civil unit serves about 21 patients and each forensic unit serves 18 patients. The unit populations range from 16 to 23. Of the 214 patients in the civil program, 42 or 20% were being served in behavior management units (RMB 3 and 4), 64 or 30% in geriatric care units (RMB 1 and 2, and CT 3D), 46 or 21% in transitional units (RMB 7 and 8), 17 or 8% on a cognitively impaired unit (CT 3C), and the remaining 45 or 21% in admission units (RMB 5 and 6). Of the 183 inpatients in the forensic program, at least 50 or 27% were in pre-trial status⁷.

Table 2. Number of Patients Served by Program Area and Unit (as of 12/31/08)

Civil Program				Forensic Program			
Unit	Female	Male	Total	Unit	Female	Male	Total
CT-3C Cog. Impaired	7	10	17	JHP-1 Post-trial		20	20
CT-3D Geriatric	11	7	18	JHP-2 Post-trial		19	19
RMB-1 Geriatric	14	9	23	JHP-3 Post-trial		19	19
RMB-2 Geriatric	11	12	23	JHP-4 Post-trial		16	16
RMB-3 Beh. Mgmt.	8	11	19	JHP-6 Pre & post trial	17 & 2		19
RMB-4 Beh. Mgmt.	7	16	23	JHP-7 Pre-Trial		16	16
RMB-5 Admission	12	11	23	JHP-8 Pre & post trial		17	17
RMB-6 Admission	10	12	22	JHP-9 Pre-Trial		17	17
RMB-7 Transitional	11	12	23	JHP-10 Post-trial		20	20
RMB-8 Transitional	12	11	23	JHP-12 Post-trial		20	20
Civil Total – Number	103	111	214	Forensic - Number	19	164	183
Percent	48%	52%	100%	Percent	10%	90%	100%
				Grand Total – Number	122	275	397
				Percent	31%	69%	100%

Source: Analysis of 12/31/08 AVATAR

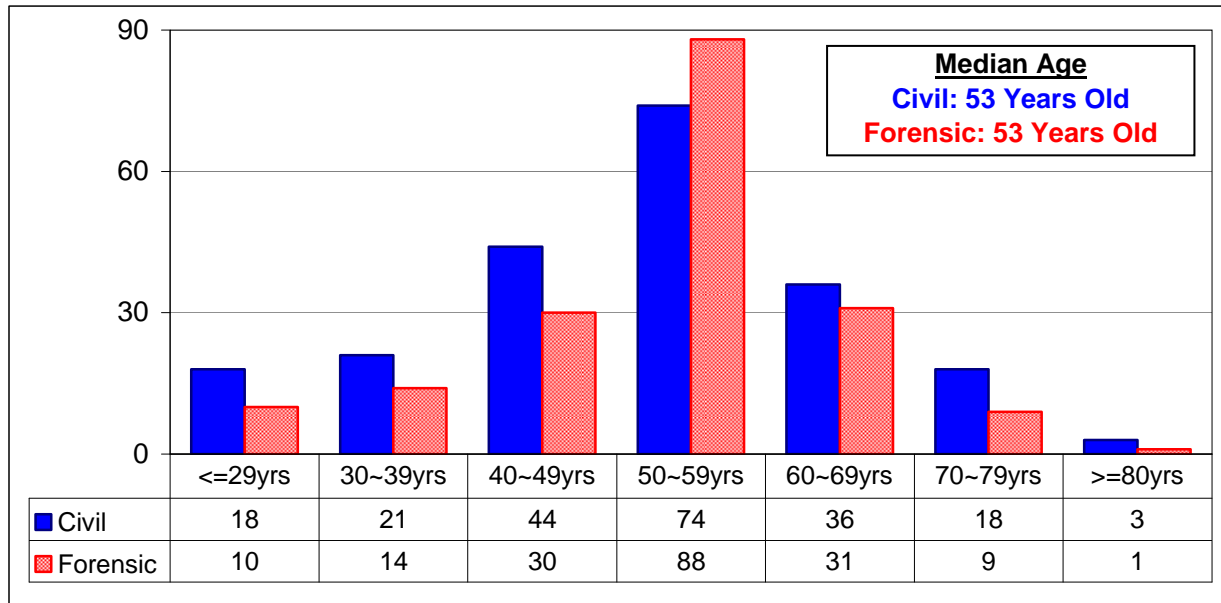
2. Age & Gender Distribution

The age distribution of the Hospital's patients reflects a bell curve. As seen in **Figure 7**, the majority of patients are within the 50-59 age range and a significant proportion of patients are 60 years or older; over one out of four patients in the civil program (27%) and over one out of five patients in the forensic program (22%). The median age is 53 years for the civil patients and 53 years for the forensic patients. **Figure 9** and **Figure 11** demonstrate that the Hospital's population has been aging over the past year. Patients aged 50 years and older vastly increased both in the civil and forensic

⁷ JHP-8 serves primarily as a post-trial unit but may have a few pre-trial patients, who are not included in the 50.

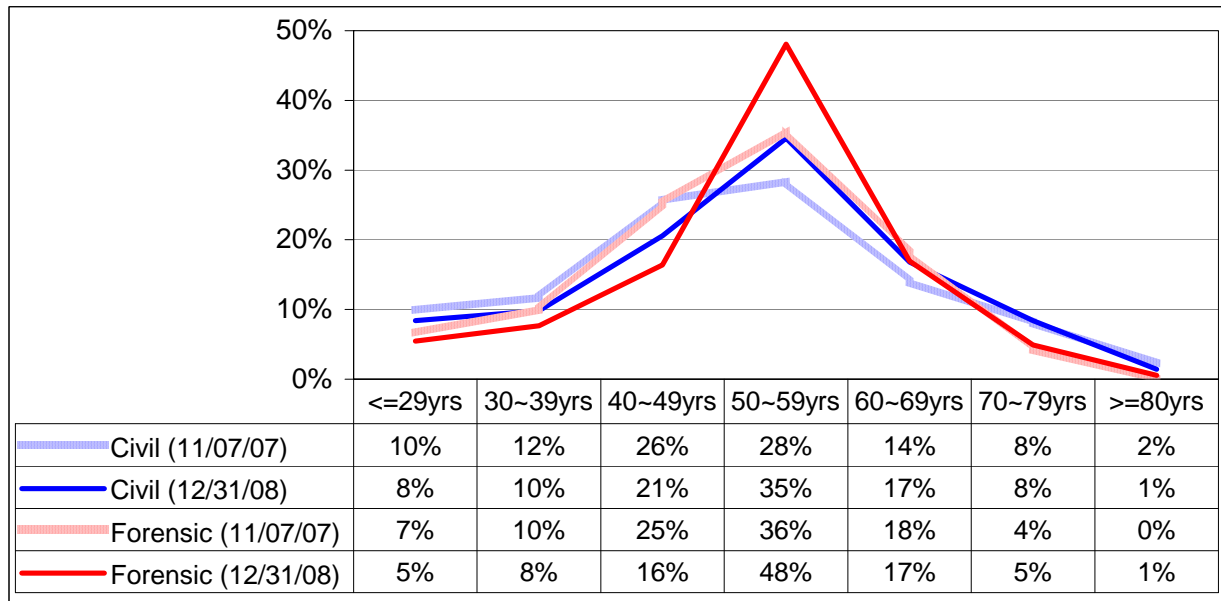
program: from 52% to 61% in the civil program and from 58% to 71%, contributing to the increase of median age from 51 years to 53 years old for less than a year time period.

Figure 8. Age Distribution (as of 12/31/08)



Source: Analysis of 12/31/08 AVATAR

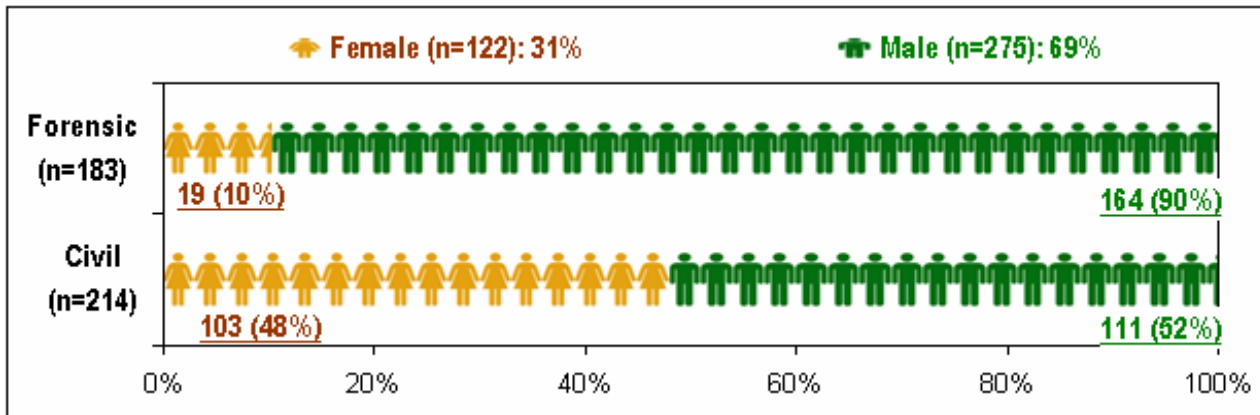
Figure 9. Trend of Age Distribution (11/07/07 vs. 12/31/08)



Source: Analysis of 12/31/08 AVATAR

The majority of the Hospital's patients are male: 69% are male and 31% are female. However, as illustrated in **Figure 8** below, there is a significant difference in gender distribution between the civil program and the forensic program: only 10% of the forensic patients are female whereas 48% 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 10. Gender Distribution (as of 12/31/08)



Source: Analysis of 12/31/08 AVATAR

Figure 11 shows a change in the male versus female ratio in the civil program. As of November 7, 2007, female constituted 42% of the civil inpatient population. The gap has closed to an almost equal proportion as of December 31, 2008. There is little change in the forensic program.

Figure 11. Change in Median Age (11/7/07 vs. 12/31/08)

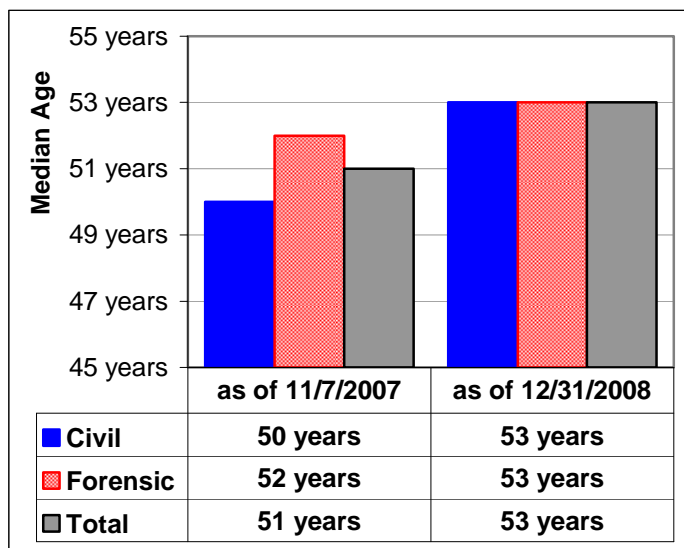
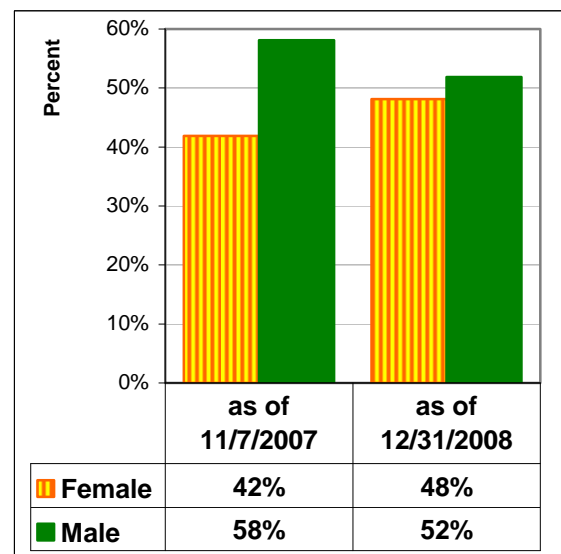


Figure 12. Change in Gender Distribution, Civil Program (11/7/07 vs. 12/31/08)



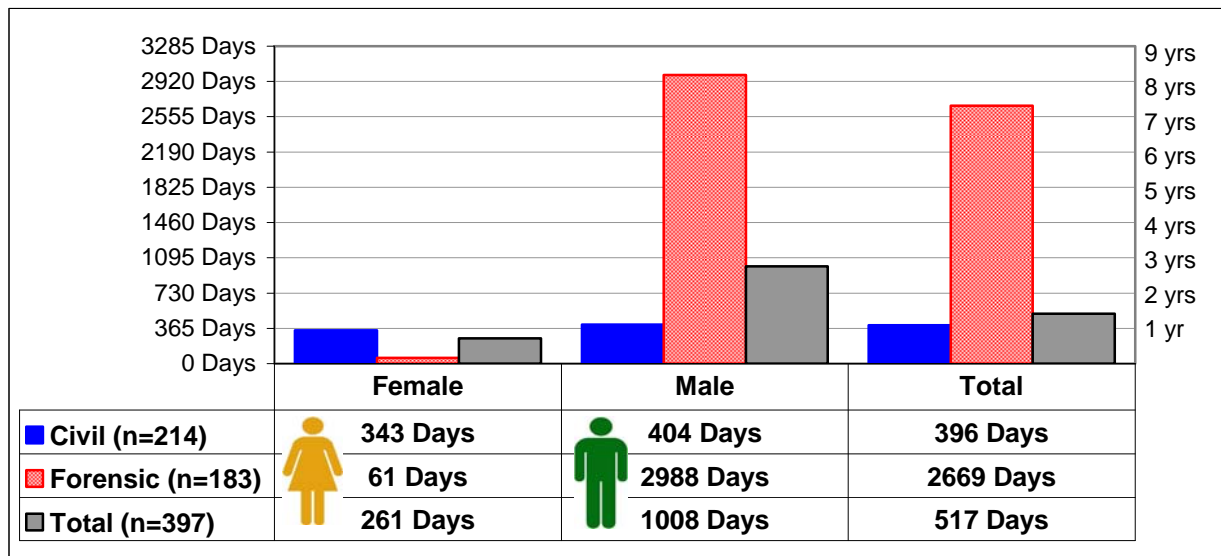
3. Length of Stay of Current Inpatient Population

Not surprisingly, the length of stay (LOS) for forensic patients is much longer than that of civil patients. The median⁸ LOS is 396 days (13 months) for civil patients and 2669 days (88 months or eight years)

⁸ 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 forensic patients (**Figure 13**). Male patients are more likely to stay in the Hospital for a longer period than female patients. The median LOS for female patients is 261 days (9 months) whereas that for male patients is 1008 days (34 months). It should be noted that the median LOS for civil patients slightly increased over the past several months. As displayed in **Figure 14** below, as of November 7, 2007, the median LOS of the civil patients was 392 days (13 months), which is 4 days shorter than the current median LOS (396 days). On the other hand, the median LOS of the forensic patients significantly increased from 1170 days to 1801 days as of October 31, 2008. This trend continued with the median LOS at 2669 days for December 2008. This may be a contributing factor of forensic population aging aforementioned.

Figure 13. Median Length of Stay by Program and Gender (as of 12/31/08)



Source: Analysis of 12/31/08 AVATAR

Table 3 below further provides median, average (mean), and maximum LOS breakdown by unit. Patients served in RMB-5 or RMB-6, admission units, have the shortest median LOS in the civil program, at 55 and 29 days, respectively, whereas almost half the patients served in CT3-D, one of the geriatric units, have been in the Hospital for longer than 1120 days (37 months or three years). The LOS for the patients in JHP-6, JHP-7 & JHP-9, which serve primarily as pre-trial units, is much shorter than the rest of forensic units that serve as post-trial units.

Figure 14. Change in Median Length of Stay by Program (11/7/07 vs. 12/31/08)

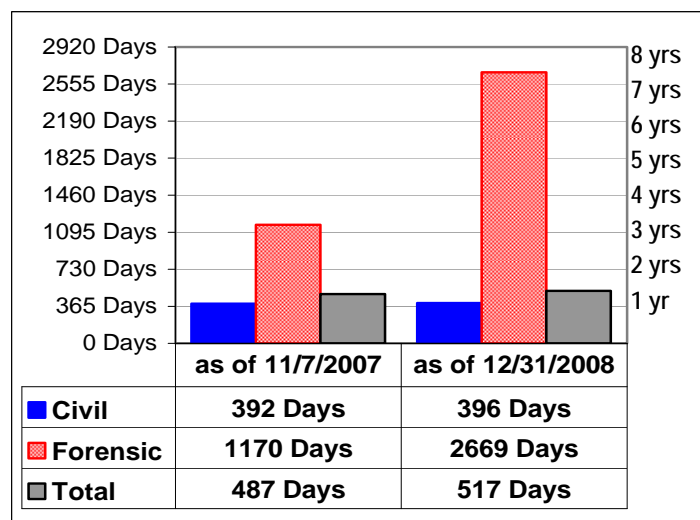


Table 3. Length of Stay (Months) by Program and Unit (as of 12/31/08) Unit: Months

Civil Program				Forensic Program			
Unit	Median	Average	Maximum	Unit	Median	Average	Maximum
CT-3C Cog. Impaired	23	58	473	JHP-1 Post-trial	104	131	370
CT-3D Geriatric	27	59	287	JHP-2 Post-trial	88	125	499
RMB-1 Geriatric	17	64	452	JHP-3 Post-trial	197	232	419
RMB-2 Geriatric	17	70	578	JHP-4 Post-trial	244	217	411
RMB-3 Beh. Mgmt.	23	63	337	JHP-6 Pre & post trial	2	11	133
RMB-4 Beh. Mgmt.	27	54	336	JHP-7 Pre-Trial	3	4	15
RMB-5 Admission	2	4	15	JHP-8 Pre & post trial	168	154	510
RMB-6 Admission	1	3	30	JHP-9 Pre-Trial	3	4	18
RMB-7 Transitional	7	21	122	JHP-10 Post-trial	127	168	598
RMB-8 Transitional	9	69	344	JHP-12 Post-trial	225	200	405
Civil (n=214)	13	46	578	Forensic (n=183)	88	127	598
				Grand Total (n=397)	17	83	598

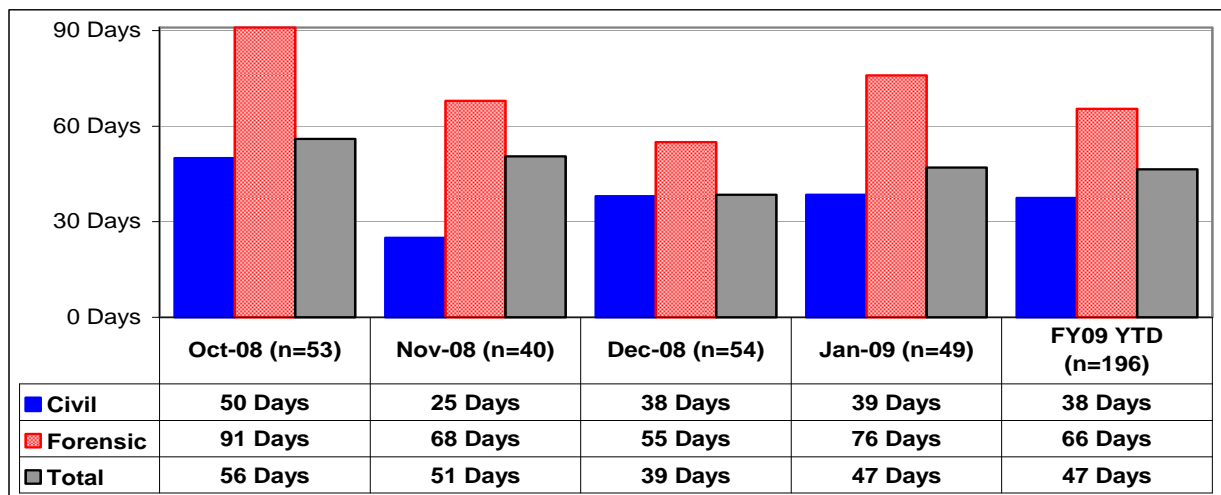
4. Length of Stay of Discharged Population

Table 4 and Figure 15 illustrate that the length of stay (LOS) for the discharged population is much shorter than the LOS of those who are remaining in the Hospital. The median LOS of those who are leaving the

Program	Median	Average	Maximum
Civil (n=120)	38 Days	121 Days	1115 Days
Forensic (n=76)	66 Days	369 Days	7724 Days
Total (n=196)	47 Days	213 Days	7724 Days

Hospital is 38 days for the civil program and 66 days for the forensic program (mostly discharged from the pre-trial branch). The median LOS of the current inpatient population is 396 days (13 months) and 2669 days (88 months) for civil and forensic, respectively. This contrast means that a majority of the patients who are discharged are those who have been hospitalized for a short time whereas those who have been residing in the Hospital for a long time continue to remain in the Hospital. PID will conduct further study on the LOS and the pattern of discharges and re-admissions. This will help the Hospital to develop strategies of effective case management for patient progress toward discharge.

Figure 15. Median Length of Stay of Discharged Population (Oct-2008 ~ Jan-2009)



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, in which information collected in January 2008 was transferred and additional clinical data, including diagnosis in Axis 1 through Axis 5, Body Mass Index (BMI), Risk Assessment, and medication information, were collected, primarily to prepare the DOJ's September 2008 site visit and conversion to AVATAR. The OMS analyzed the new clinical data collected and presented summary of findings in the July 2008 Trend Analysis Report.

As of today, all of the above data is available in the AVATAR. OMS will conduct the next analysis of data collected from the AVATAR in preparation of the DOJ's next site visit scheduled in late March 2009 and introduce findings in the trend analysis report as soon as analysis findings become available.

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 Office of Monitoring System (OMS) compiled and analyzed available infection data. The scope of the available data was 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). We have continued to collect the infection data directly from the laboratory test results and manually process the data. Currently, the Laboratory TDSynergy, the laboratory information management system, is in the process of integration with the AVATAR that will generate the infection data electronically through the AVATAR management system. We also expect that once the interface of the management reports is developed and used for monitoring, the overall integrity of infection control data will drastically improve.

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, daycares and hot spas, and healthy people can carry MRSA on their fold skin areas or in anterior parts of the nose with no symptom of infection.

During the last 12 months beginning January 2008 through December 2008, a total of 29 patients who were identified by their treating physician to be at risk of being a MRSA carrier were tested for MRSA infections. Of those, 12 patients (41%) had a MRSA skin infection detected and their infection was confirmed through antibiotic susceptibility testing (**Table 5**). There have been two MRSA skin infections detected since August 2008, one in the civil program in October and the other one in the forensic program in December. Additionally, there were 37 patients identified with positive nares colonization. They are potentially at risk of MRSA infection if exposed to an open wound or cut. The number of patients who were tested for nares colonization is not available at this time.

Table 5. Patients Positive for MRSA Infection or Nares Colonization (Jan 2008 ~ Dec 2008)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
MRSA Skin Infections Tested	4	0	0	4	4	3	5	1	3	3	0	2	29
MRSA Skin Infections Detected	1	0	0	0	4	2	3	0	0	1	0	1	12
Nares Colonization Tested	Data Not Available												
Nares Colonization Detected ⁹	2	2	1	13	8	1	3	2	0	2	2	1	37

Source: Infection Control Coordinator; TDSynergy, Blackburn Laboratory

⁹ The nose (anterior nares) is considered the primary site of colonization with Staphylococcus aureus, an important indicator to identify likely MRSA infections

2. Hepatitis B Virus (HBV)¹⁰

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 6** presents the result of these tests by civil and forensic services. These patients have been tested at different times for all the three categories of HBV tests for Surface Antigen, Surface Antibody and Core Antibody.

Table 6. HBV Test Results (Jan 2008 ~ Dec 2008)

Civil Patients														
HBV Tests	Result	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Surface Antigen	Reactive	0	0	0	0	0	0	0	0	0	1	1	0	2
	Non-react.	2	6	4	9	1	1	4	19	17	21	9	19	112
	Total	2	6	4	9	1	1	4	19	17	22	10	19	114
Surface Antibody	Reactive	2	5	2	6	1	1	4	11	7	7	3	2	51
	Non-react.	0	1	2	3	0	0	0	14	10	16	7	17	70
	Total	2	6	4	9	1	1	4	25	17	23	10	19	121
Core Antibody	Reactive	1	2	4	8	1	8	1	5	1	6	5	8	50
	Non-react.	1	4	0	1	0	1	0	20	11	19	5	11	73
	Total	2	6	4	9	1	9	1	25	12	25	10	19	123
Forensic Patients														
Surface Antigen	Reactive	0	0	1	0	1	0	0	0	0	1	1	0	4
	Non-react.	7	7	7	14	9	2	6	17	15	21	25	10	125
	Total	7	7	8	14	10	2	6	17	15	22	26	10	129
Surface Antibody	Reactive	7	6	8	6	6	2	3	10	7	3	7	1	65
	Non-react.	0	1	0	8	4	0	3	11	26	18	19	11	65
	Total	7	7	8	14	10	2	6	21	33	21	26	12	130
Core Antibody	Reactive	4	5	7	11	8	0	6	8	9	6	7	3	67
	Non-react.	3	2	1	3	2	2	0	13	26	15	19	9	63
	Total	7	7	8	14	10	2	6	21	35	21	26	12	130

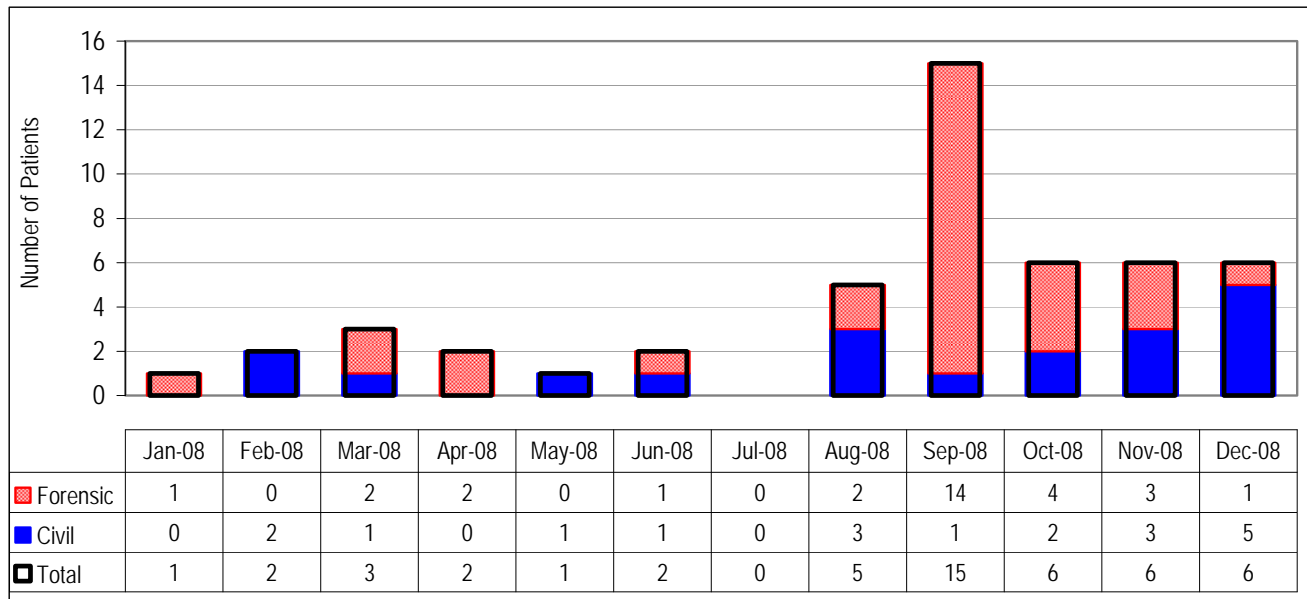
Of the three categories of HBV tests, *Hepatitis B surface antigen (HBsAg)* is the most critical indicator to identify HBV infection as individuals who remain *HBsAg* positive for at least six months are considered to be HBV carriers. Of the total 243 (114 civil & 129 forensic) *Hepatitis B surface antigen (HBsAg)* tests conducted for the past 12 months, a total of four (2%), two for civil patients and two for forensic patients, were found to be positive for *HBsAg*. Out of 251 tested 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, 46% or 116 patients were found to be positive. Also, a total of 117 patients (46%) were positive for *Anti-hepatitis B core antigen (anti-HBc)* out of 253 patients tested. Patients identified reactive for *anti-HBc* are considered to be at low risk to develop the adverse sequel of chronic hepatitis B.

¹⁰ 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)*.

3. Hepatitis C Virus (HCV)¹¹

There are several blood tests that can be used to detect Hepatitis C Virus (HCV) infection. The Hospital Laboratory conducts EIA (Enzyme immunoassay) antibody test¹². During the past 12 months, between January 2008 and December 2008, there were a total of 49 patients (19 civil patients and 30 forensic patients) who were tested positive for Hepatitis C. This is an increase from 34 patients (16 civil patients and 18 forensic patients) tested positive during the calendar year 2007.

Figure 16. Patients with HCV Infection (Jan 2008 ~ Dec 2008)



As seen in **Figure 16**, the number of patients tested for HCV notably increased beginning August 2008. It is due in part to a change of data collection method. Data prior to August 2008, provided by the Infection Control Coordinator who has left the agency, excluded the existing HCV positive patients from the original laboratory results whereas the number provided by the laboratory for the last five months beginning August includes all patients with positive HCV results regardless of their previous test history.

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-

¹¹ 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.

¹² 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.*

threatening opportunistic infections. During the past 12 months, a total of 308 patients were tested for HIV infection. Of those, 7% or 23 cases (about two patients per month) were reported to be positive with HIV. **Table 7** indicates that the number of patients who were tested for HIV infection increased in the recent months but the number of patients who were newly identified to be HIV positive declined. There were only three new cases reported to be positive in the last six (6) months.

Table 7. Patients with HIV Infection Tested (Jan 2008 ~ Dec 2008)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
HIV Positive	2	3	2	2	7	4	0	0	1	1	0	1	23
Total Tested	23	18	31	31	25	17	17	26	19	38	34	29	308

VI. 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 education, physical health education, medication education, 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 8**.

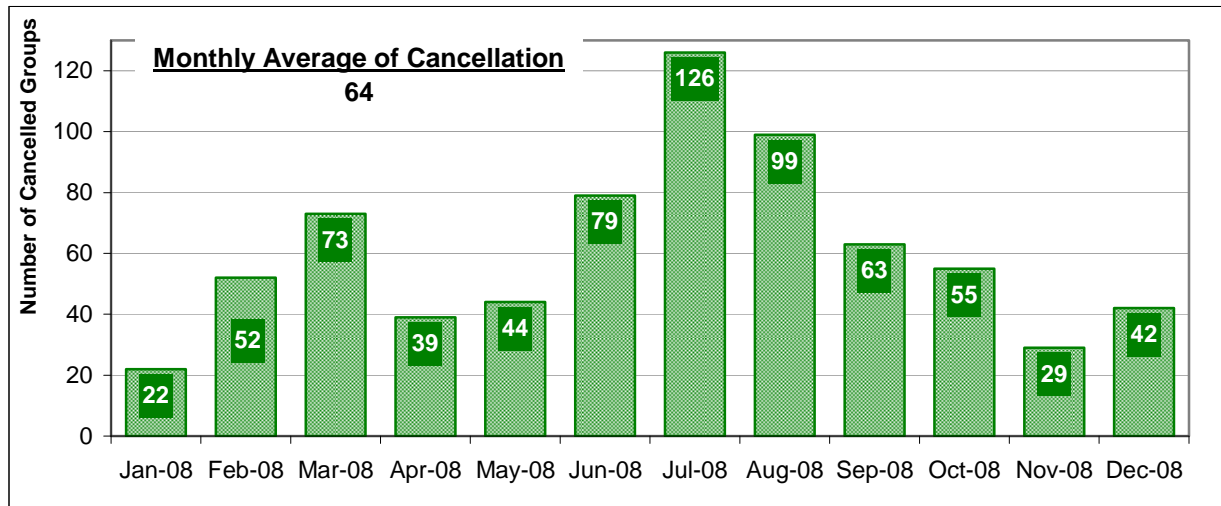
Data herein is extracted from the treatment mall group cancellation tracking log maintained by treatment mall staff and it has limited information. The Hospital has already launched a transformation plan in treatment mall as three learning centers will be developed in the coming months to focus on psychiatric rehabilitation and life enrichment for the consumers in the hospital. The treatment mall scheduling/cancellation data on activities run at the unit level are not yet available. However, currently the priority for the treatment mall data is shifting from group cancellations to patients' participation, emphasizing support of and synthesis with the Individualized Recovery Plan (IRP). A series of meetings took place in the months of December'08 and January'09 to retrain staff for fully utilizing the AVATAR and entering data more accurately and consistently. We expect this to be implemented shortly and we will be able to analyze more useful data within the next few months. Planning is also underway to define, explain and communicate the objectives of each offering in the treatment mall, to allow treatment teams to make informed referrals of patients to specific types of therapeutic offerings in the mall; supporting the individualized focus areas for each individual patient.

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 October, November and December 2008, a total of 986, 948 and 1066 sessions, respectively, were scheduled for non-holiday weekdays. Of those, 40 sessions (4%) in October, 220 sessions (30%) in November and 100 sessions (10%) in December were cancelled as the treatment mall was closed due to holiday, field trip, electrical outage etc. As a result, the treatment mall had a total of 946, 728 and 966 group sessions expected to be held in October, November, and December respectively.

Of the 946 sessions that were expected to be held in October, 55 sessions (5.8%) were reported¹³ to have been cancelled or affected by the leaders' absence: group leaders called to cancel or did not show at the scheduled time, and as a result, attendance at these sessions was negatively affected¹⁴. In November, 29 sessions (4%) of the 728 expected sessions were either cancelled or had no group leaders as planned. In December, 42 sessions (4.3%) of the 966 expected sessions were either cancelled or had no group leaders as planned. It is observed that the cancellation rate has significantly gone down in the recent months.

Figure 17. Group Activities Cancelled by Group Leaders (Jan 2008 ~ Dec 2008)



Data Source: Analysis of Treatment Mall Group Cancellation Data, Office of Monitoring Systems

The number of cancelled group sessions in the past 12 months (Nov-2007~Oct-2008) is on average about 64 in a given month, ranging from 22 to 126. The number reached to the highest in July at 126, which was 10% of the total expected sessions and dropped to 29 in November. The cancellation number and rate both significantly dropped in the past three months: October (55, 5.8%), November (29, 4%) and December (42, 4%). Cancellation of scheduled group activities adversely affects the compliance with the DOJ requirement that patients should have at least 20 hours of treatment activities each week.

3. Group Cancellation by Discipline of Group Leader

In order to provide more meaningful pattern of cancellation data, we combined data over the past three months, October 2008 through December 2008, and compared it with data collected for the months of July through September 2008 as seen in Table 8. Data illustrate that the number and percentage of cancelled group sessions run by leaders in the Nursing, Psychiatry and Rehabilitation Services Disciplines have been consistently high. During October through December 2008, of the

¹³ The current monitoring system lacks a structured process to ensure that the result of all scheduled sessions are reported and documented.

¹⁴ These sessions were not held at all, covered by staff, or combined with other sessions. For more information regarding cancelled sessions, go to page 24.

total cancelled sessions (288), 71 sessions (48%) were those scheduled with either nursing or rehabilitation services.

While **Table 8** displays the volume of cancellations by each discipline and the proportion of the cancellations of each discipline out of the total cancellations, **Table 9** analyzes the cancellation rate, the percentage of cancelled sessions out of the total scheduled sessions, which reflects consideration of the total number of scheduled sessions for each discipline. According to this, sessions scheduled with psychiatry still show the highest cancellation rate (12% out of 232 scheduled sessions) although it is lower than 40% the cancellation rate during the previous quarter, July through December 2008. The social work discipline has the second highest cancellation rate (10% or 9) out of 91 sessions followed by the Dental and psychology that had 3 cancellations (9%) out of 33 sessions and (9% or 13) out of 152 sessions respectively. Group sessions led by Dietary, Medical and Chaplain showed a low cancellation rate. The overall cancellation rate showed a significant reduction from the previous quarter of July through September of 2008.

Table 8. Group Cancellation by Discipline of Group Leader (Jul 2008 ~ Dec 2008)

Discipline	Jul ~ Sep 2008		Oct ~ Dec 2008	
	Number*	Percent	Number	Percent
Chaplain Services	12	4%	4	3%
Dental	10	3%	3	2%
Dietary/ Nutrition	1	0%	1	1%
Medical/ GMO	3	1%	0	0%
Nursing	46	16%	32	25%
Psychiatry	100	35%	27	21%
Psychology	26	9%	13	10%
Rehab Services	49	17%	29	23%
Social Work	21	7%	9	7%
Other	20	7%	8	6%
Total	288	100%	126	100%

*Source: OMS Analysis of Treatment Mall Group Cancellation Data

Table 9. Scheduled vs. Cancelled Sessions by Discipline (Jul 2008 ~ Dec 2008)

Discipline of Group Leader	July 2008 ~ September 2008			October 2008 ~ December 2008		
	# Scheduled	# Cancelled	Cancellation Rate ¹⁾	# Scheduled (Expected) ²⁾	# Cancelled	Cancellation Rate ¹⁾
Chaplain Svcs	210	12	6%	174	4	2%
Dental	36	10	28%	33	3	9%
Dietary/Nutrition	57	1	2%	44	1	2%
Medical/GMO	27	3	11%	3	0	0%
Nursing ³⁾	1129	46	4%	950	32	3%
Psychiatry	249	100	40%	232	27	12%
Psychology	148	26	18%	152	13	9%
Rehab Svcs	960	49	5%	842	29	3%
Social Work	135	21	16%	91	9	10%
Other ⁴⁾	167	20	12%	119	8	7%
Total	3118	288	9%	2640	126	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 10 displays the group cancellation pattern by program area. Sixty-two percent (62%) or 78 of the total cancelled sessions (126) during the past three months belonged to the Dual Diagnosis or Psychosocial Rehabilitation (29%) program. The cancellation rate of groups in those two programs is also the highest: 10% in Dual Diagnosis and 6% in Psychosocial Rehabilitation.

Table 10. Group Cancellation by Program (Oct 2008 ~ Dec 2008)

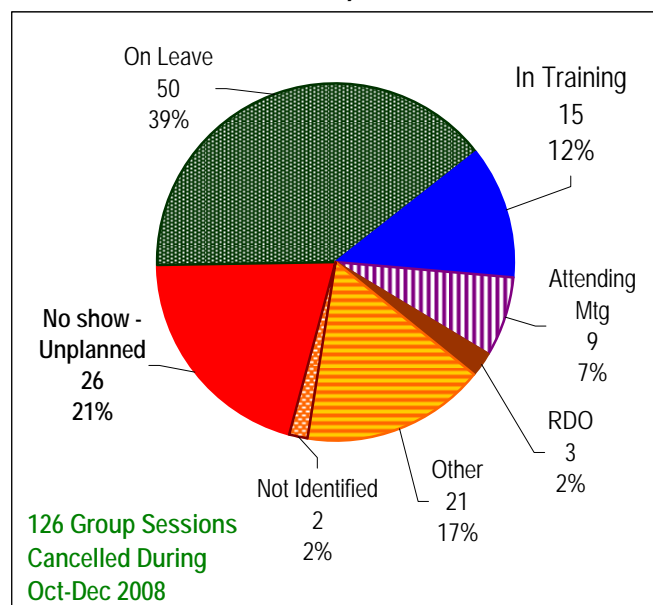
Program	Cancelled		Total Scheduled	Cancellation Rate
	Number	Percent		
Behavior Management	17	13%	404	4%
Cognitive Development	15	12%	514	3%
Dual Diagnosis	42	33%	403	10%
Geriatric Center	16	13%	651	2%
Psychosocial Rehabilitation	36	29%	597	6%
Total	126	100%	2569	5%

5. Coverage of Cancelled Groups

Of the 126 cancellations made between October and December 2008, 50 group sessions (39%) were canceled simply because responsible group leaders were called to cancel as they were on either sick leave or annual leave. Twenty six (26) group sessions (21%) were canceled simply because the leaders did not show up at the scheduled time without prior notice. The Alternative Work Schedule (AWS), which was instituted in July 2008 among supervisory staff, appeared to be a new major reason for cancellation during August through October as 14 sessions cancelled due to the absence of the treatment leaders from their Regular Day off (RDO). Since then, there were no new cancellations reported in November and December due to RDO.

Of the 126 cancellations for the past three months, 12 (10%) group sessions were combined with other group activities, 103 sessions (82%) were covered by other staff and the remaining 11 groups (9%) were not covered at all.

Figure 18. Reason of Group Cancellations (Oct 2008 ~ Dec 2008)



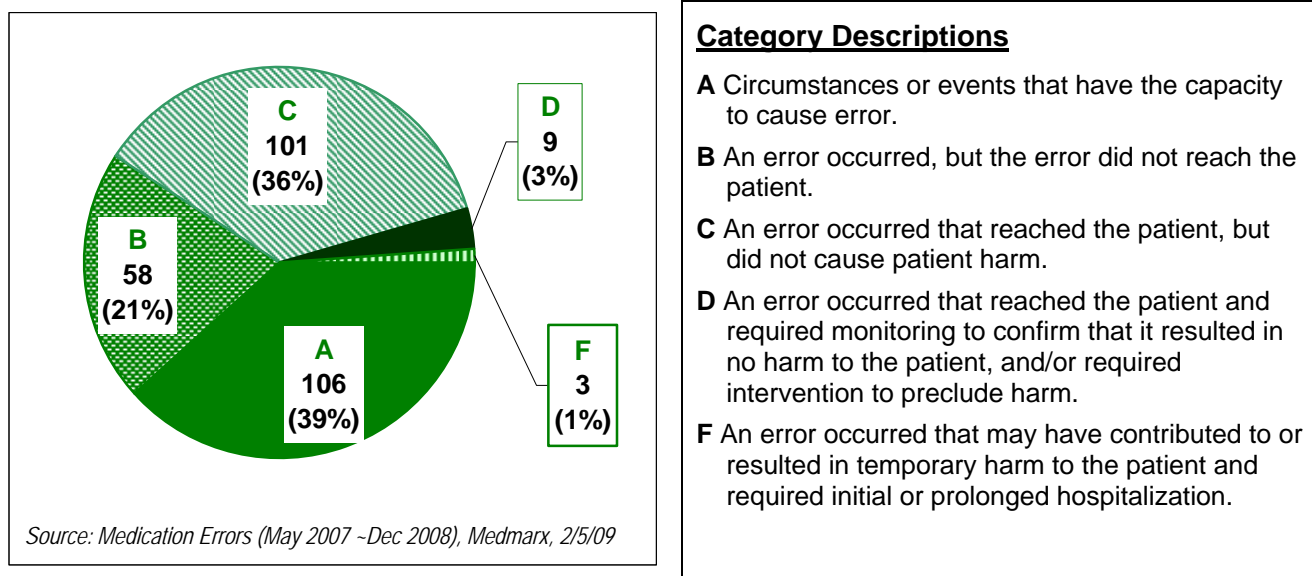
VII. Medication

This Chapter presents data regarding medication variances (formerly “medication errors¹⁵”) and adverse drug reactions (ADRs)¹⁶ documented in MEDMARX. MEDMARX is 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 has been participating since April 2007. The following analysis is based on the data OMS extracted from MEDMARX.

1. Medication Variances

During the past 20 months, from May 2007 through December 2008, a total of 277 medication variances, approximately 15 variances per month on average, were reported and documented in the MEDMARX database (see **Table 11** below). Of those, a total of three occurrences caused patient harm resulting in hospitalization (see the Outcome Category F in **Figure 19**). Nine cases required intervention to preclude harm (Outcome Category D). Over one third (101 or 36%) of the reported variances reached the patient but did not cause patient harm and over one fifth (58 or 21%) did not reach the patient. The remaining 106 cases are considered to have the capacity to cause variances but actual variances did not occur.

Figure 19. Outcomes (Category) of Medication Variances (May 2007 ~ Dec 2008)



¹⁵ 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)*.

¹⁶ 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 11 suggests that the most commonly reported types of variances were prescription writing errors (118 or 43%) and omissions errors¹⁷ (82 or 30%). Improper dose/quantity (17%) or extra dose (8%), and 6% of wrong drug were the next common types of variances.

Table 11. Volume & Type of Reported Medication Variances (May 2007 ~ Dec 2008)

Type of Error	May-07~ May-08	Jun -08	Jul -08	Aug -08	Sep -08	Oct -08	Nov -08	Dec -08	Total	Percent
Prescribing error	51	9	3		3	30	9	13	118	43%
Omission error	50	17	6		7	2			82	30%
Improper dose/quantity	14	12	1		3	3	3	10	46	17%
Unauthorized/wrong drug	7	5			1		1	2	16	6%
Wrong administration technique	6					2	1		9	3%
Wrong patient	4	2	1		1				8	3%
Wrong time	2	2					1	2	7	3%
Extra dose	2	7			1	8	5		23	8%
Deteriorated product						3		1	4	1%
Wrong drug form	1	1					1		3	1%
Expired product						2			2	1%
Mislabeling		1						1	2	0.7%
Drug prepared incorrectly			1						1	0.4%
Total*	135	37	10	0	15	37	15	28	277	100%

Source: Medication Variances, Medmarx, 2/5/09

Note: Numbers in each type of error do not always add up to the total because some incidents contain more than one type of error

Table 11 illustrates that the number of reported medication variances seesawed over the past several months. The number of reported variances peaked at 37 in June 2008 but dropped abruptly in July and there was no single incident reported in August. However, it increased again to 15 and 37 in September and October, respectively. November and December fluctuated again from 15 to 28, respectively. The recent fluctuations appear to be related to the implementation of the new information system AVATAR. The Hospital's Pharmacy reports that the low number of reported variances around the month of August is due in part to a lag and delinquency in reporting and data entry of medication variances as the Hospital started using the AVATAR launched in late July. Doctors, pharmacists, and nurses were consuming their significant time and efforts to learn the new system, and timely and accurate reporting of medication variances were challenging. As they became more familiar with the AVATAR, however, some critical issues that were contributing to an increase of the risk of medication variances were revealed. For example, a medication order could not be verified by pharmacists prior to the nurse's acknowledgement, increasing the risk of administration of erroneous medication orders¹⁸. Also, not all of the significant patient-care information, including

¹⁷ Failure to give an ordered dose.

¹⁸ A new pharmacy verification process to respond to this issue was launched in January 2009.

allergies and diagnosis, was timely entered, increasing the chance of prescribing variances due to inconsistency or lack of such information in the system. Some of the variances may have occurred due to user unfamiliarity with the system and thus reflect user variances. Users are more likely to make unintended mistakes while adjusting to the new system. In addition, as of August, the Pharmacy launched a hospital-wide ADR/Medication Variance Campaign, which may have promoted more prompt reporting of medication variances and variances in the following months.

Despite such a marked increase of reported variances in the month of October 2008, **Table 12**

suggests that not every unit may be routinely reporting medication variances to the Hospital's Pharmacy and/or some units may make similar variances repeatedly. Of the total 95 medication variances reported during the months of September and December 2008, 41 or 43% originated from two units, CT3-C and CT3-D. Except RMB-3 that reported fifteen (15) variances, RMB-4 that reported eight (8) variances, RMB-2 that reported twelve (12) variances all in December, and RMB-8 that reported five (5) medication variances, each of the remaining 16 units reported two or fewer medication variances during those four months: three of them reported two (2) medication variances, five (5) units reported one (1), and the other seven (7) units reported no medication error.

Table 12. Location of Patients Reported in Medication Variances (Sep 2008 ~ Dec 2008)

Civil Program		Number	Forensic Unit		Number
CT3-C	Cog. Impaired	17	JHP-1	Post-trial	1
CT3-D	Geriatric	24	JHP-2	Post-trial	
RMB-1	Geriatric		JHP-3	Post-trial	
RMB-2	Geriatric	12	JHP-4	Post-trial	1
RMB-3	Beh. Mgmt.	15	JHP-6	Pre / post	2
RMB-4	Beh. Mgmt.	8	JHP-7	Pre-Trial	
RMB-5	Admission		JHP-8	Pre / post	1
RMB-6	Admission	1	JHP-9	Pre-Trial	
RMB-7	Transitional	2	JHP-10	Post-trial	2
RMB-8	Transitional	5	JHP-11	Post-trial	1
			JHP-12	Post-trial	
Civil Total		84	Forensic Total		8
Not Identified		3	Grand Total (4Months)		95

According to **Table 13**, the most common contributing factors to the medication variances were system safeguards and computer related issues (27%), workflow disruption (22%), and knowledge deficits (16%). System safeguards and computer related issues have become the major contributing factors to the recent medication variances. In fact, of the 52 medication variances reported during the months of September and October 2008, 28 or 54% were identified as those caused by computer or information management system related issues. These causes for variances continued to increase. During the months of November and December when 43 variances were reported 29 or 67% had computer related causes.

Table 13. Frequently Reported Causes of Variances (May 2007 ~ Dec 2008)

Cause of Error	Number	Percent
System safeguards & computer related issues	74	27%
Workflow disruption	61	22%
Knowledge deficit	44	16%
Monitoring inadequacies/lacking	41	15%
Performance (human) deficit	40	14%
Communication	37	13%
Documentation	28	10%

Source: Medication Variances, Medmarx, 2/5/09

2. Adverse Drug Reaction (ADR)

MEDMARX database documents a total of 89 Adverse Drug Reactions (ADRs) reported by the Hospital during the past nineteen months, between June 2007 and December 2008. This is equivalent to an average of five (5) reports per month. The 89 reported ADRs include four life-threatening cases and four cases that required hospitalization (see **Table 14**). Twenty-nine (29) or 33% brought about other medically significant conditions and 22 or 25% required interventions to prevent incapacity.

Table 14. Reported ADRs by Severity & by Month (Jun 2007 ~ Dec 2008)

Severity	Jun-07~ Apr-08	May -08	Jun -08	Jul -08	Aug -08	Sep -08	Oct -08	Nov -08	Dec -08	Total	Percent
Results in death										0	0%
Is life-threatening	3		1							4	4%
Requires initial/prolonged hospitalization	4									4	7%
Is a congenital anomaly or birth defect										0	0%
Other medically important condition	21	2	2	2		2				29	33%
Intervention to prevent incapacity	16	1			2	1	2			22	25%
Results in persistent/significant incapacity										0	0%
<i>Not serious (none of the above apply)</i>	20	2	3	2	1	2				30	34%
Total*	64	5	6	4	3	5	2	0	0	89	100%

Source: ADRs (Jun 2007~Dec 2008), Medmarx, 2/5/09

Note: One patient experienced 5 ADRs, one patient experienced 4 ADRs, three patients experienced 3 ADRs and 17 patients each experienced 2 ADRs during the reported time period (19 months). In total, 63 patients are involved in a total of 89 medication variances.

Table 15 presents reported ADRs by location of patients involved in those events and suggests that some units, particularly in the civil program, may not be routinely reporting the ADR events to the Hospital's Pharmacy. There are only six units (RMB-2, RMB-3, RMB-4, RMB-6, RMB-7, and CT2-A¹⁹) from the civil program that reported at least one ADR over the past 19 months. In total, over the past 19 months, the civil program units reported 26 ADRs whereas the forensic units reported 52 ADRs. Among the forensic units, JHP-6, JHP-7 and JHP-9, the pre-trial units where the number of patients served throughout the year is much larger than post-trial units, reported greater number of ADRs. During the last two months, there were not any ADRs reported.

Table 15. Location of Patients Involved in ADR (Jun 2007 ~ Dec 2008)					
Civil Program		Number	Forensic Unit		Number
CT2-A	Cog. Impaired	1	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	7
RMB-3	Beh. Mgmt.	1	JHP-7	Pre-Trial	19
RMB-4	Beh. Mgmt.	1	JHP-8	Pre / post	5
RMB-5	Admission		JHP-9	Pre-Trial	8
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	4
Civil Total		26	Forensic Total		52
Not Identified		11	Grand Total		89

The most common reaction of those reported ADRs was extra pyramidal/movement disorder at 26 cases (29%) (see **Figure 20**). Abnormal laboratory values incurred in 16 cases (18%) and tremor has been reported in 14 cases (16%).

The medications most commonly reported to cause ADRs included Olanzapine (17%), Risperidone (13%), Quetiapine (12%), Divalproex (10%) and Ziprasidone (9%) as seen in **Table 16**.

Figure 20. Most Common Reactions of ADRs (Jun 2007 ~ Dec 2008)

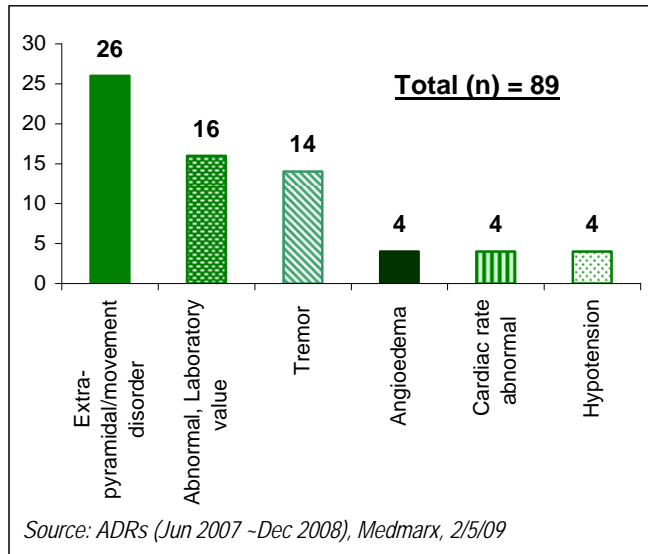


Table 16. Drugs that Caused >=8 ADRs (Jun 2007 ~ Dec 2008)

Generic Name	Number	Percent*
Olanzapine	15	17%
Risperidone	12	13%
Quetiapine	11	12%
Divalproex	9	10%
Ziprasidone	8	9%

* Percentage of events where respective drug caused ADRs, out of the total ADRs (89) that were reported to have occurred during the above time period (Jun 2007 ~ Dec 2008).

¹⁹ CT2-A is no longer operated.

VIII. Restraint/Seclusion

1. Frequency of Restraint/Seclusion Episodes

Figure 21 and **Figure 22** indicate that the number of restraint and seclusion episodes notably increased in FY2008 but has dropped in the current fiscal year. During FY2008, on average approximately 18 restraint and 7 seclusion episodes were reported each month. During the first four months of FY2009, however, the average number of restraint and seclusion episodes reported per month is 12 and 6, respectively. The below figures further illustrates that a majority of restraint and seclusion are used in the civil program. Over the past four months, the civil program documented a total of 46 restraint and 23 seclusion episodes, which is translated into 12 restraint and 6 seclusion episodes per month whereas the forensic program reported a total of two restraint episodes for the same time period.

Figure 21. Monthly Average of Restraint Episodes (FY2007 ~ FY2009 YTD)

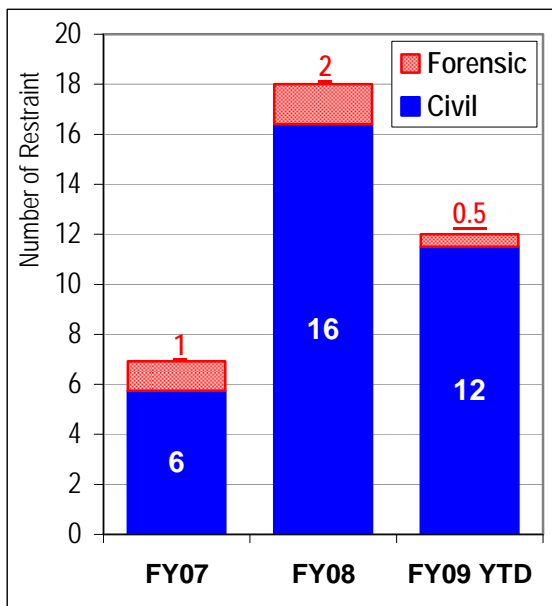
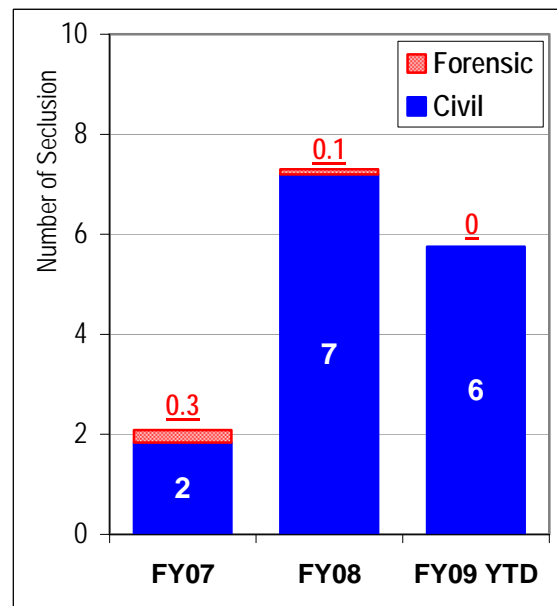


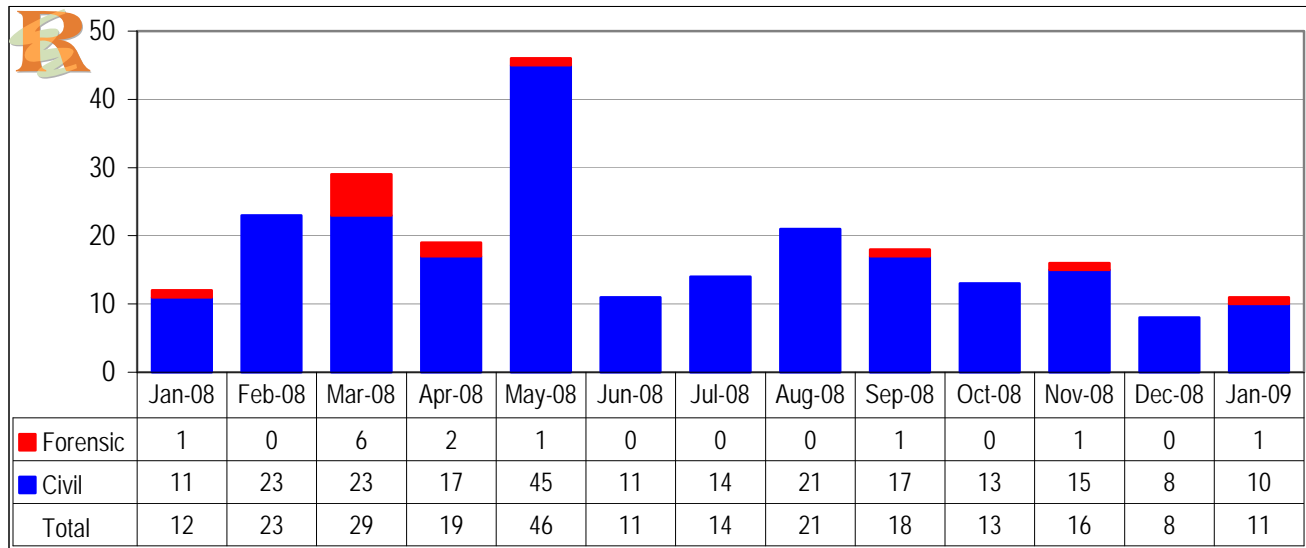
Figure 22. Monthly Average of Seclusion Episodes (FY2007 ~ FY2009 YTD)



Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008~FY2009

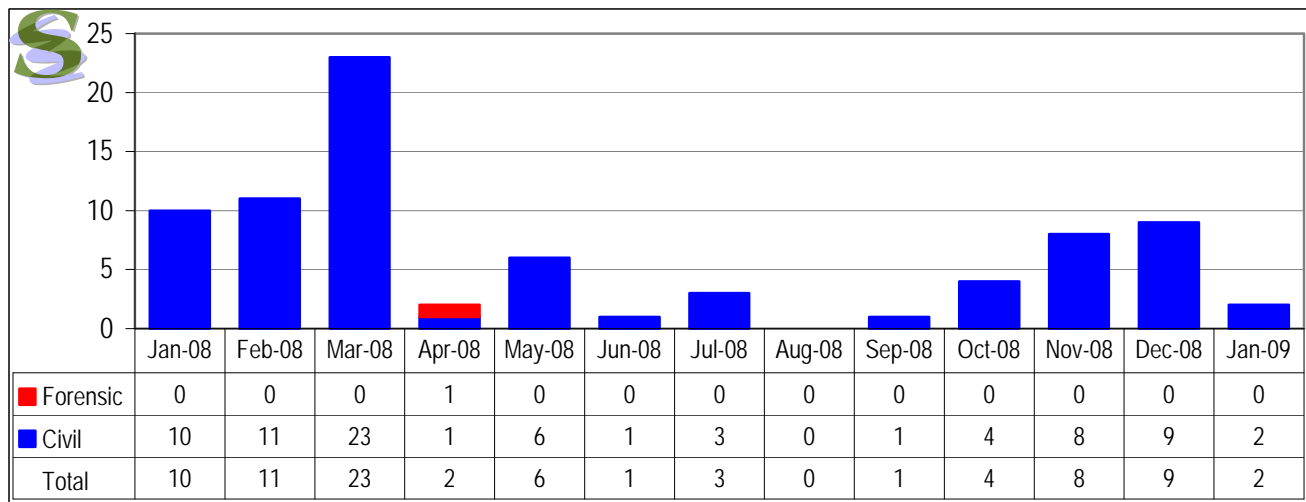
Figure 23 and **Figure 24** displays this trend more discernibly. The number of reported restraint and seclusion episodes significantly increased during the early months of the year 2008: the number of restraint episodes reached the highest level at 46 in May and the highest number of seclusion episodes was 23 in March 2008. It was suggested that the notable increase during this time period was likely due to instituting a more thorough data tracking mechanism and reinforcing self-monitoring activities that began in February 2008. The number of seclusion and restraint episodes considerably fell in April and June, respectively. Thereafter, the total number of restraint and seclusion episodes together remained at around or below 20 per month throughout the year.

Figure 23. Number of Restraint Episode (Jan 2008 ~ Dec 2009)



Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008 *One restraint incident in November recorded as R/S, it has been categorized as Restraint.

Figure 24. Number of Seclusion Episodes (Jan 2008 ~ Dec 2008)

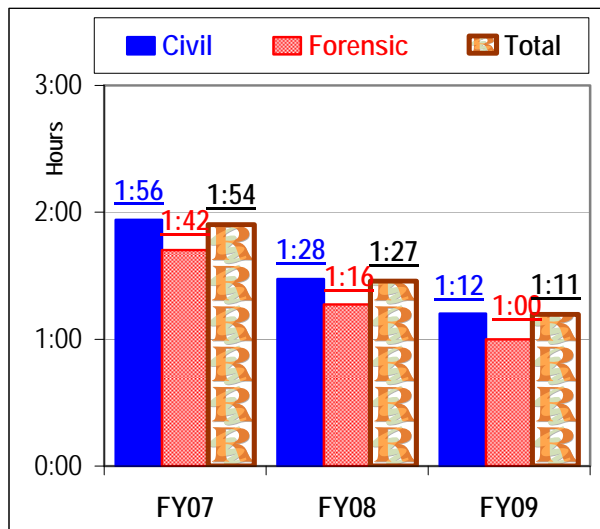


Source: Seclusion/Restraint Quarterly Reports, FY2007; Seclusion/Restraint Log, FY2008

2. Duration of Restraint/Seclusion Episodes

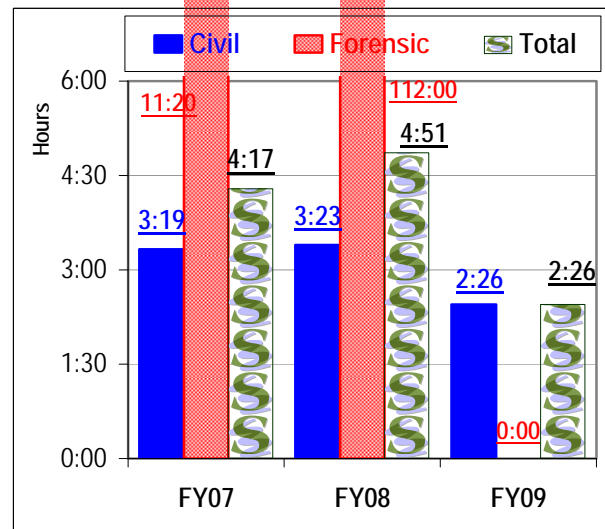
The average duration per episode declined for both restraint and seclusion from F2008 to FY2009 year to date: from 1 hour 27 minutes to 1 hour 11 minutes per restraint episode (**Figure 25**) and from 4 hours 51 minutes to 2 hours 26 minutes per seclusion episode (**Figure 26**). Apparently, although seclusion is not used as often as restraint, it results in more hours of use as compared with restraint.

Figure 25. Average Duration (h:mm) per Restraint Episode (FY07~FY09)



* Hours of five restraints used as daily protective measure are not included.

Figure 26. Average Duration (h:mm) per Seclusion Episode (FY07~FY09)



* One patient alone had 112 hours of seclusion in April, 2008.

3. Patients with Multiple Restraint/Seclusion Episodes

When used, restraint and seclusion tend to involve a small number of patients, who required frequent use of the intervention, skewing the volume and duration of restraint and seclusion episodes. As displayed in **Table 17**, almost every month there are a few patients who have restraint and/or seclusion episodes repeatedly. For example, in May 2008, there were 51 restraint or seclusion episodes reported. Of those 51, 37 or 73% were reported to be used just for three patients. This issue, however, appears to have waned overall during the recent months except December 2008, when two patients were involved in a total of 13 episodes. In January 2009, there was no patient who had more than 3 episodes.

Table 17. Number of Patients & Episodes by Frequency Level, Civil (Jan 2008 ~ Jan 2009)

Frequency Level		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
Total Patients Involved		12	12	19	3	14	7	10	5	9	10	14	6	10	
A	Patients with >3 Episodes during month	#	1	1	3	2	3	1	1	2	1	0	1	2	0
		%	8%	8%	16%	67%	21%	14%	10%	40%	11%	0%	7%	33%	0%
B	Patients with <=3 Episodes during month	#	11	11	16	1	11	6	9	3	8	10	13	4	10
		%	92%	92%	84%	33%	79%	86%	90%	60%	89%	100%	93%	67%	100%
Total R&S Episodes		#	21	34	46	18	51	12	17	21	18	17	24	13	
A	Episodes of Pts in Group A	#	6	19	22	17	37	5	5	15	8	0	5	13	0
		%	29%	56%	48%	94%	73%	42%	29%	71%	44%	0%	21%	76%	0%
B	Episodes of Pts in Group B	#	15	15	24	1	14	7	12	6	10	17	19	4	13
		%	71%	44%	52%	6%	27%	58%	71%	29%	56%	100%	79%	24%	100%

Source: Analysis of Seclusion/Restraint Log, OMS

4. Restraint and Seclusion Episodes by Unit

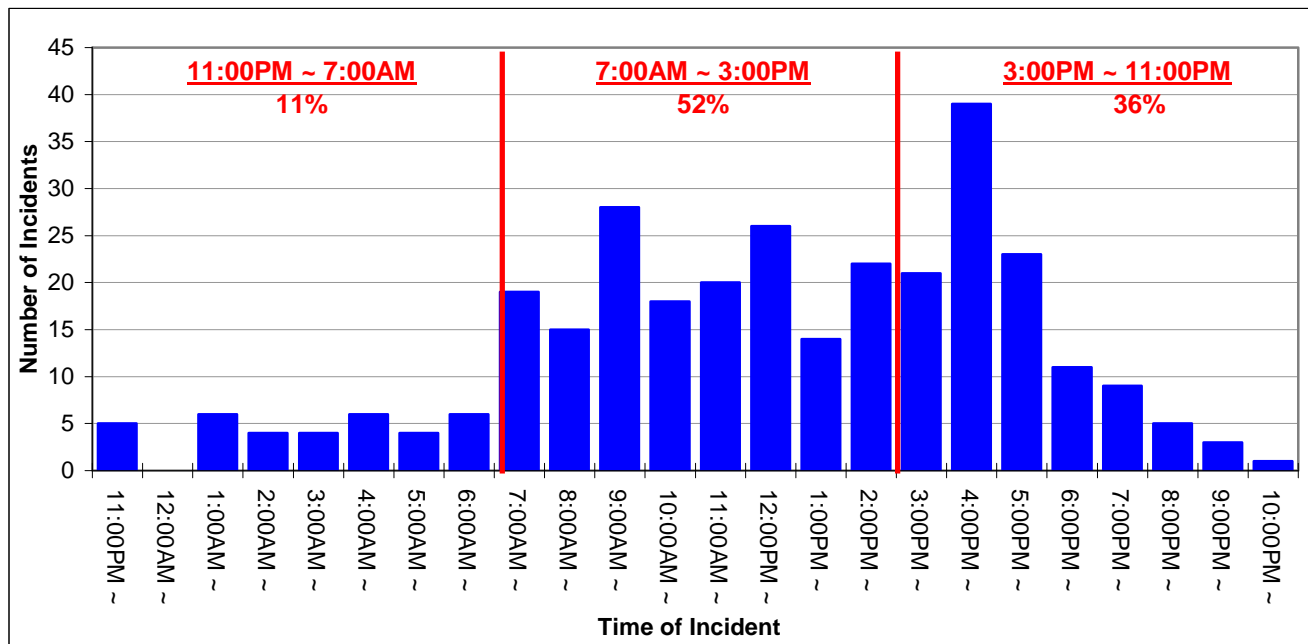
As aforementioned, both restraint and seclusion were used mostly by the civil service units. **Table 18** presents the distribution of restraint and seclusion episodes by unit. RMB-3, served primarily as the behavior management unit, accounted for a half of the total restraint and seclusion episodes reported for the past 13 months. Though, **Table 18** also demonstrates that the frequency of use in RMB-3 significantly dropped in the recent months. Instead, RMB-6, one of the admissions units, has become a unit with frequent use of restraint and seclusion.

Table 18. Number of Episodes by Unit, Civil (Jan 2008 ~ Jan 2009)

Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Total	%
CT3-C/D	1										2	6		9	3%
RMB-1	1													1	0%
RMB-3	3	5	7	14	46	9	12	18	13	11	10	4	1	153	50%
RMB-4							2			5	4		3	14	5%
RMB-5	1	20	4		4	3	1	1			1	1	1	37	12%
RMB-6	8		17	1			2	2	5	1	6	6	6	54	18%
RMB-7	5	5	14	3	1									28	9%
RMB-8	2	4	4										1	11	4%
Total	21	34	46	18	51	12	17	21	18	17	23	17	12	307	100%

5. Restraint & Seclusion Incidents by Time and Shift

Figure 27. Frequency of R & S Incidents by Shift & Time of the Day, Civil (Jan 2008 ~ Jan 2009)



Source: Analysis of Seclusion/Restraint Log, OMS

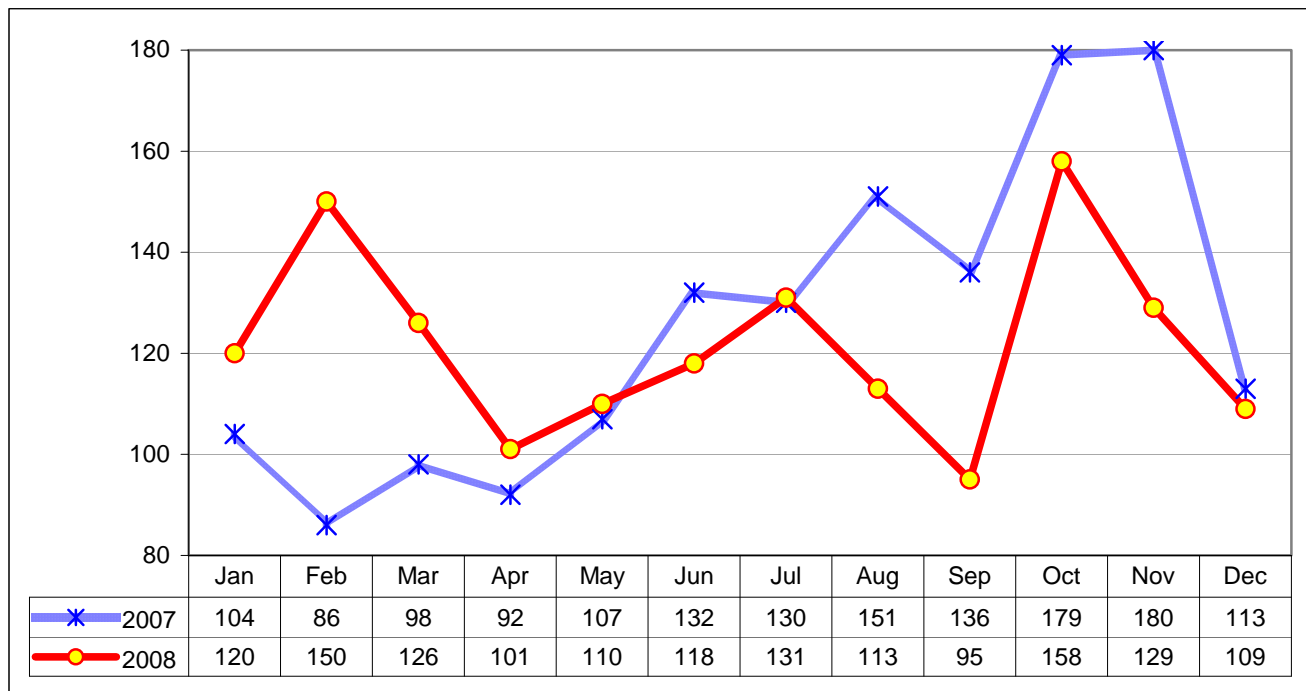
Figure 27 displays frequency of restraint and seclusion incidents that occurred during 2008 by time of the day as well as by shift. It is apparent that few incidents occur from late evening through very early morning. Incidents tend to rise from 7:00 a.m., drops in the early afternoon but increase again, reaching its peak between 3:00 p.m. and 5:00 p.m. By shift, more than half (52%) of the restraint and seclusion episodes took place during the day shift hours, between 7:00 a.m. to 3:00 p.m., and 36% during the evening shift hours, between 4:00 p.m. to 11:00 p.m.

IX. Unusual Incidents

1. Number of Unusual Incidents (UIs)

In 2008, the number of reported unusual incidents (UI) peaked in October at 158 but declined over the past few months and in the month of December 2008 we recorded a total of 109 unduplicated incident reports. As illustrated in **Figure 28**, the trend in the volume of UIs for the last two years shows similar tendencies with increases during the early summer months and a peak in October. However, we will need further study to confirm this as a seasonal trend.

Figure 28. Volume of Reported UIs and Seasonal Trend (Jan 2007 ~ Dec 2008)



Data Source: Analysis of Unusual Incident Database, OMS

The average number of UIs reported each month in 2008 is slightly lower than that of 2007. Between January 2008 through December 31, 2008, a total of 1460 unique incidents, an average of approximately 122 incidents per month, occurred and were reported to the Risk Manager. Of those, 93% (1365) or an average of 114 incidents are those where at least one or more patients are involved.

2. Patients and Employees Involved in UIs

Our findings reveal that we have several incidents each month that involve the same patient(s). Since the Hospital instituted a new UI report form and modified the UI policy in the beginning of the current fiscal year, we have been able to track the frequency of incident involvements by individual patient(s). During the first quarter of FY2009, between October 1, 2008 and December 31, 2008, an average of

109 patients were identified in one or more incidents each month. The majority (71% or 78 patients) of those patients were involved in one incident (see **Figure 29**). An average of 17 patients (16%) were involved in two incidents, and the remaining 14 patients (13%) were involved in three or more incidents.

As these patients are involved in multiple reports, on average, a total of 168 patient records were created each month. **Figure 30** indicates, of those 168, one third were reported to be aggressors and 26% were identified as victims. The average number of staff listed in the UI reports is 118 per month, the majority of whom are identified as witnesses to an incident.

Figure 29. Patients by Frequency of Incident Involvements during Month (FY09 YTD)

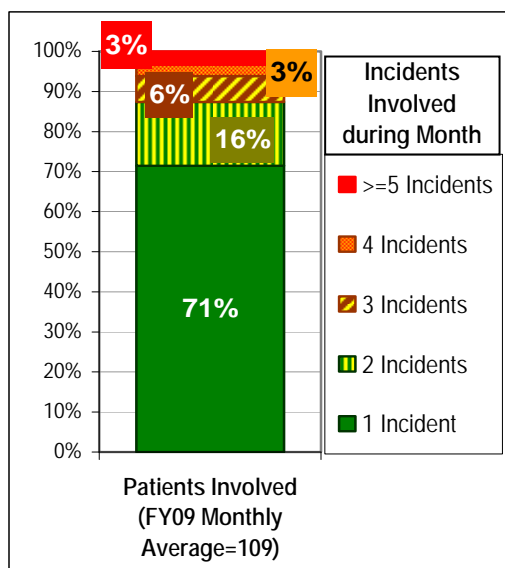
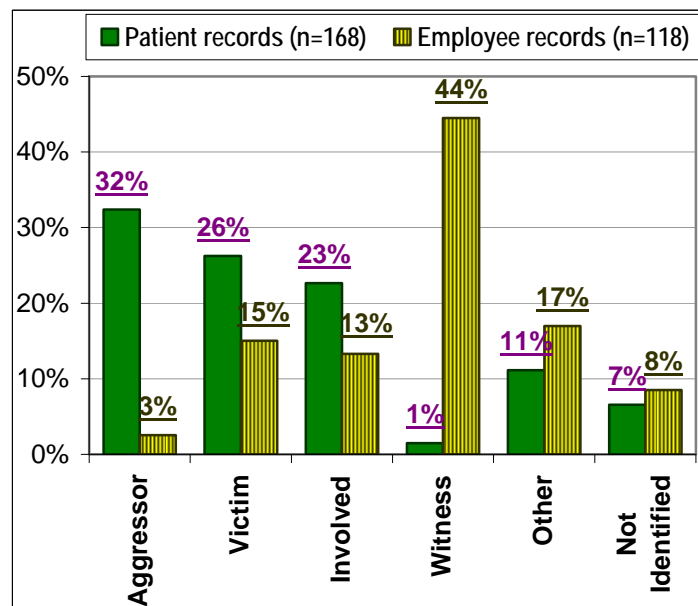


Figure 30. Role of Patients and Employees in Incidents as Identified in UI Reports (FY09 YTD)



3. UIs by Type

The revised UI policy and the new UI reporting form changed the procedure of reporting and categorizing UI types. For example, under the previous policy, each form could identify only one patient or one employee involved in a particular incident. This led staff to make duplicate reports if an incident involved two or more patients and/or staff. This also made it difficult to conduct investigations and design follow-up actions and presented significant challenges to accurate data tracking. Under the revised policy, however, all patients and staff involved can be included in one report. Another major change is related to the type of incidents. Prior to the implementation of this revised policy, an incident would only be reported in one category. For example, if a patient was involved in a physical assault, resulting a serious physical injury and a medical emergency, this incident still had to be categorized with only one coding, which could be either 1) physical assault, 2) physical injury, or 3) medical emergency. The code number selected was dependent on the reporter’s judgment. In the revised policy, this incident can now be categorized in all of those four types. Data presented in **Table 19** reflects this change.

Table 19. Number of Incidents by UI Type (Oct 2008 ~ Dec 2008)

UI Type	Oct-08	Nov-08	Dec-08	FY 09 Total	Monthly Average	Percent
Abuse/Neglect/Exploitation	10	8	2	20	7	5.1%
<u>Assault/Altercation</u>	<u>49</u>	<u>53</u>	<u>37</u>	<u>139</u>	<u>46</u>	<u>35.1%</u>
Contraband	11	9	3	23	8	5.8%
Crime	2	0	0	2	1	0.5%
Death	0	1	0	1	0.3	0.3%
Environment	1	0	0	1	0.3	0.3%
<u>Falls</u>	<u>19</u>	<u>14</u>	<u>11</u>	<u>44</u>	<u>15</u>	<u>11.1%</u>
Fire	0	0	1	1	0.3	0.3%
<u>Medical Emergency</u>	<u>19</u>	<u>16</u>	<u>20</u>	<u>55</u>	<u>18</u>	<u>13.9%</u>
Medication Error	1	2	0	3	1	0.8%
<u>Physical Injury</u>	<u>23</u>	<u>25</u>	<u>26</u>	<u>74</u>	<u>25</u>	<u>18.7%</u>
Psychiatric Emergency	13	16	6	35	12	8.8%
Reportable Disease	0	0	0	0	0	0.0%
Restraint/Seclusion	7	12	2	21	7	5.3%
Security Breach	3	7	2	12	4	3.0%
Suicide Attempt/Gesture	1	0	0	1	0.3	0.2%
<u>UL/Disappearance</u>	<u>22</u>	<u>8</u>	<u>14</u>	<u>44</u>	<u>15</u>	<u>11.1%</u>
Vehicle Accident	1	0	0	1	0.3	0.2%
Other	10	2	9	21	7	5.3%
Total (Unique Incidents)	158	129	109	396	132	100.0%
- Major Incidents	58	88	80	226	75	57.1%

* Source: Analysis of Unusual Incident Database, OMS.

* Note: One incident may be selected in more than one category and thus the sum of the numbers in each category is not equal to the total number, which is a distinct count of unique incidents in each month.

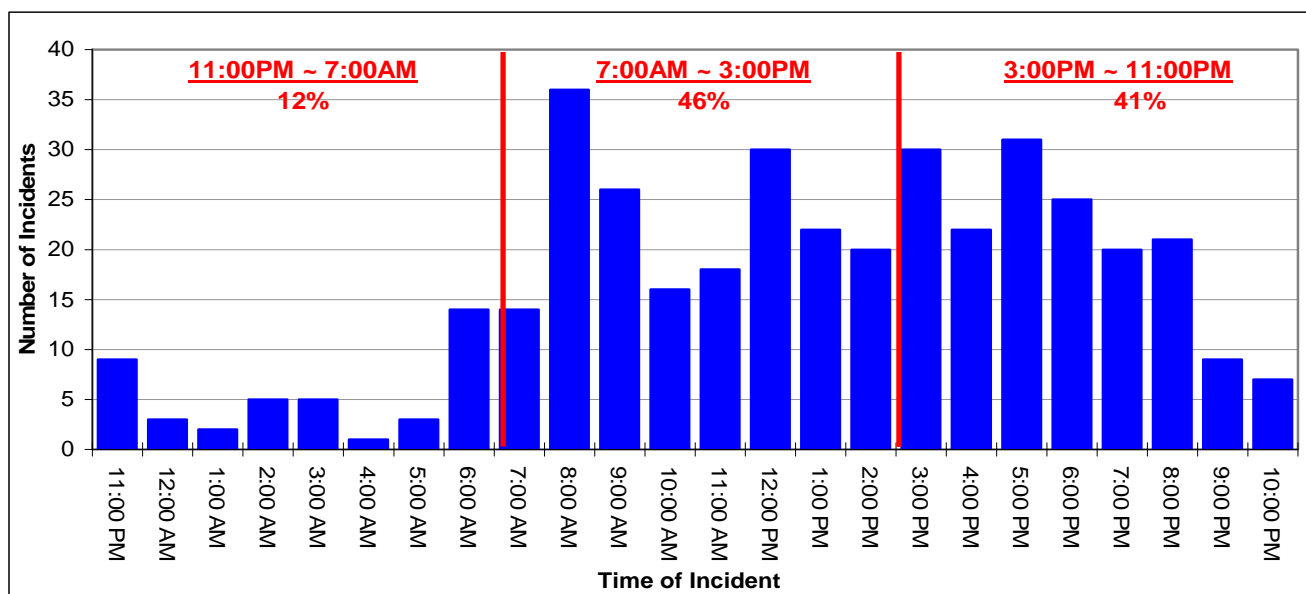
According to **Table 19**, during the first quarter of FY2009, 132 unique incidents were reported to have occurred per month and of those 57% or 75 incidents were handled as major incidents that required extensive investigations and follow-up actions by the Risk Manager. **Table 19** illustrates that more than one third (35%) of the reported incidents involved assault and/or altercation, and almost one out of five incidents involved physical injury. On average, approximately 18 medical emergencies and 12 psychiatric emergencies occurred each month. The number of fall incidents and that of unauthorized leaves or disappearances is about 15 per month, respectively. The number of reported abuse or neglect incidents is about seven per month on average during the past three months. During FY08, the Risk Manager received only two abuse or neglect reports each month on average. This increase may be partly a result of the hospital-wide effort to increase awareness of the patient abuse and neglect along with the revised policy.

The revised UI policy requires all restraint & seclusion episodes to be reported as UIs while the previous policy required a UI report only when a seclusion or restraint did not follow policy or caused injury. Since the implementation of the policy, the number of restraint and seclusion incidents reported to the Risk Manager as an UI increased. In the previous fiscal year, on average, only three (3) restraint or seclusion episodes were reported as UIs each month. During the first three months of FY09, a total of 21 incidents were reported to involve restraint or seclusion: 7, 12 and 2 in October, November, and December 2008, respectively. However, this number is still far lower than the number of restraint and seclusion episodes recorded in the nursing manager’s restraint & seclusion tracking log, which listed 17 episodes for October, 24 for November and 17 for December. This may indicate that the revised policy may require further clarification for staff.

4. UIs by Time and Shift

Figure 31 displays the frequency of incidents that occurred between January 2007 and September 2008, by time of the day and by shift. Few incidents occur after midnight through early morning hours. The number of incidents visibly rises from 6:00 a.m. and peaks at 8:00 a.m. It decreases in the late morning but increases again in the afternoon. There are three times in the afternoon where there is a cluster of incident occurrences: 12:00 pm, 3:00 pm, and 5:00 pm. This pattern differs from previous data where incident occurrences peaked between 6:00 p.m. and 7:00 p.m. (Refer to the previous trend analysis report.) Data below reflects observations from a three month period, and does not at this time confirm a trend. We will continue to monitor this data. However, we can still correlate these major incident times with four significant daily events: 8 a.m., 12 p.m., and 5 p.m. when patients congregate for meals and/or receive their medications; and 3:00 p.m. when patients are returning to their units from the treatment mall. It has been noted anecdotally that at these times patients are less prepared to deal with demands and minor conflict as they have just completed group treatment activities that may be often rigorous and anxiety producing.

Figure 31. Frequency of UIs by Shift and Time of the Day (Oct 2008 ~ Dec 2008)

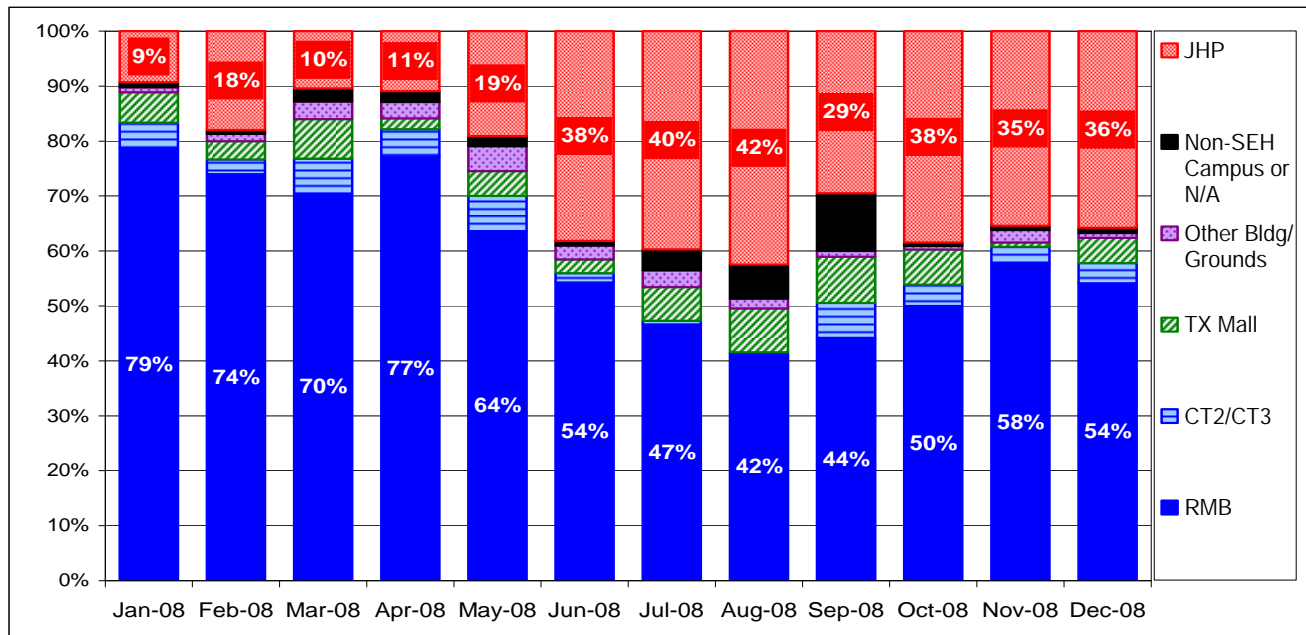


Data Source: Analysis of Unusual Incident Database, OMS

5. UIs by Location

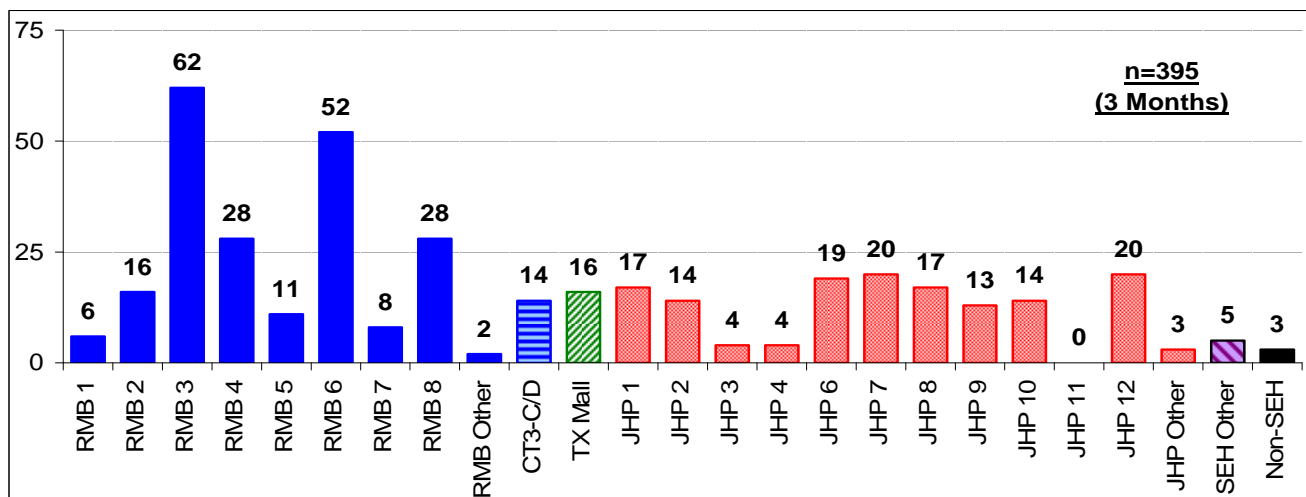
A majority of UI reports originate from the RMB building. The review of UI location data for the past 3 months indicates that 54% of the UIs occurred in the RMB building, 37% in the JHP building, 4% in the CT2/3 building, 4% in the treatment mall building, 1% in other buildings or grounds on the Hospital's campus, and the remaining 1% occurred outside the campus (i.e. court, transport, medical visits, etc.)

Figure 32. Trend of UIs by Location (Jan 2008 ~ Dec 2008)



Data Source: Analysis of Unusual Incident Database, OMS

Figure 33. UIs by Location at Unit Level (Oct 2008 ~ Dec 2008)



Note: 'RMB or JHP Other' includes lobby, cafeteria or other areas that don't belong to a particular unit within the building. 'SEH Other' includes all other buildings on the campus and 'Non-SEH' means outside of the campus.

Figure 32 above shows the trend of UI occurrences by location over time and indicates the percentage of occurrences in major buildings is overall stable in the past three months. **Figure 33** shows the number of reported UIs by incident location at the unit level. During the past three months, RMB-3 and RMB-6 reported UIs most frequently: 62 and 52, respectively. The forensic units each reported between 14 and 20 incidents except JHP-3 and JHP-4 which had only 4 incidents in total. PID and the Risk Manager will initiate an in-depth review of the reporting processes on all units to determine the cause for differences in reporting frequency or UI instances among different units and programs.

6. Delay in UI Reporting

A total of 396 incidents were analyzed to assess the length of UI report delay during the first three months of FY2009. As a total, almost half of the incidents (178 or 45%) were reported to the Risk Manager within one day after the incident occurrence. Our historical data demonstrates that the percentage of incidents reported within one day consistently and significantly increased throughout the year. In January 2008, there were only 2% of the then incidents were reported within one day. (Refer to the previous trend analysis reports.) On the contrary, 39% of the October incidents were reported within one day, 46% in November, and 52% in December 2008 (see **Table 2**). The median length of report delays used to be six (6) days in January 2008 and it is now one day as of December 2008. Despite such a considerable improvement, however, many incidents are not still reported within the required timeframes. The current Hospital policy requires an unusual incident to be reported to the Risk Manager within 24 hours (and verbally within one hour in the event of a major incident) after the incident occurs. This delay in reporting remains as a focus of the Risk Management at PID. Pending the implementation of the automated UI reporting system, we will conduct an in-depth review of delays in reporting and other variation from policy.

Length of Report Delay*	Oct-08		Nov-08		Dec-08		Total (3 Months)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0~1 Day	62	39%	59	46%	57	52%	178	45%
2 Days	20	13%	27	21%	21	19%	68	17%
3 Days	16	10%	14	11%	10	9%	40	10%
4~5 Days	33	21%	19	15%	11	10%	63	16%
6~10 Days	15	9%	7	5%	4	4%	26	7%
11~30 Days	10	6%	1	1%	5	5%	16	4%
31~42 Days	2	1%	2	2%	1	1%	5	1%
Total	158	100%	129	100%	109	100%	396	100%
Average Length (Days)	4.2 Days		3.1 Days		2.8 Days		3.4 Days	
Median Length (Days)	2.0 Days		2.0 Days		1.0 Days		2.0 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.