Background
On August 2, 2007, Governor Jon Corzine signed Senate Bill 2580 into law. P.L. 2007 c.120, codified at N.J.S.A. 26:2H-12.35 et seq., requires that general hospitals implement an infection control program in their facility. Included with other requirements, the law requires hospitals to perform active surveillance testing (AST) for MRSA colonization, done via nasal swab cultures, on patients admitted to a designated patient care area, and to report the number of hospital-onset cases of MRSA in the blood that occur in their facility to the New Jersey Department of Health (NJDOH). NJDOH is responsible for reporting the law’s impact on reducing MRSA infections in hospitals to the extent that funds permit.

CDC National Healthcare Safety Network
The National Healthcare Safety Network (NHSN), managed by the federal Centers for Disease Control and Prevention (CDC), collects national data on healthcare-associated adverse events and their risk factors. NHSN is a web-based surveillance system into which facilities enter facility-specific patient safety data for surveillance, prevention, or mandatory public reporting. The CDC NHSN Multidrug-Resistant Organism (MDRO) module was identified as the mechanism by which hospitals would report the above measures to NJDOH. For the calendar years of 2009 and 2010, NJ hospitals reported to NJDOH via NHSN, hospital-onset MRSA bloodstream infections per 1000 patient days, specified by hospital unit where AST for MRSA was performed (laboratory-identified events, or LabID events). These two years of data were “out of plan” for CDC’s data definitions. Starting in 2011, NJ came “in plan” for CDC reporting requirements, which are described below.

Methods
Hospital MRSA reporting
Hospitals reported to NJDOH via the CDC NHSN MDRO module starting January 2011: (1) all positive blood specimens for MRSA (LabID events) from patients in any in-patient unit along with hospital-wide monthly denominators for the number of admissions and total number of patient days, and (2) the percentage of eligible patients who had a MRSA surveillance test performed on admission to a hospital unit where active surveillance testing for MRSA was performed (AST compliance). Hospital-onset MRSA bloodstream infections are defined by CDC as a positive blood specimen for MRSA in an inpatient-unit, where the date of collection is greater than three days after admission (three or fewer days is considered community-onset). It is important to note that community-onset cases of MRSA are classified solely based upon the date of admission, and not where the person was admitted from (i.e., the patient may have been a transfer from another medical facility and not been admitted directly from home). The NHSN is used to calculate whether a MRSA LabID event is a hospital-onset event. AST compliance values are based on self-reported AST compliance rates, where hospitals report the number of patients who received AST and the total number of AST-eligible patients.

Data confirmation for 2011 Data
Hospitals report their respective facility’s data directly into NHSN. There are currently no resources for NJDOH to perform data validation on either of the MRSA measurements that hospitals are required to report. In September 2012, each hospital was sent a document by NJDOH via e-mail and postal mail that contained their facility-specific NHSN data for both MRSA LabID events and AST compliance for review. Hospitals were asked to confirm the accuracy of their data. Non-responses were considered confirmation of their data, a policy that was communicated to the hospitals.

Results
The 2011 MRSA data in this report are aggregated from 72 (100%) New Jersey acute-care hospitals; however data was complete for both MRSA LabID event and AST data for 67 of 72 (93%) hospitals.

(1) Hospital-onset MRSA bloodstream infections per 1,000 patient days, for all in-patient units, was calculated across all hospitals in New Jersey for 2011:
- There were 466 laboratory-identified hospital-onset MRSA blood specimens reported for 4,896,968 patient days, for a statewide pooled incidence rate: (466/4,896,968)*1000 = 0.095 MRSA infections per 1000 patient days.
For individual hospitals, the incidence rate of hospital-onset MRSA blood specimens range from 0.0 to 1.31 MRSA infections per 1000 patient days.

There were 1148 laboratory-identified community-onset MRSA blood specimens entered for all in-patient units reported for 1,129,528 admissions; the overall pooled MRSA blood stream infection admission prevalence rate: (1148/1,129,528 )*1000 = 1.01 MRSA community-onset infections per 1000 in-patient admissions.

AST compliance for MRSA upon admission to a hospital unit where AST for MRSA is being performed:
- For 2011, an overall monthly AST compliance percentage was calculated across all units where AST was completed in New Jersey hospitals. The overall average monthly compliance is 95.9% (range: 95.2-96.9%), and the median monthly compliance rate is 98.6% (range: 97.8-99.1%). For all hospitals, all units and all months, the range of monthly compliance reported is 21.2-100%
- For 2010, an overall monthly AST compliance percentage was calculated across all units where AST was completed in New Jersey hospitals. The overall average monthly compliance is 95.3% (range: 94.4-96.3%), and the median monthly compliance rate is 98.0% (range: 97.4-98.3%).
- For 2009, an overall monthly AST compliance percentage was calculated across all units where AST was completed in New Jersey hospitals. The overall average monthly compliance was 94.4% (range: 93.6-95.8%), and the median monthly compliance rate is 98.0% (range: 97.1-98.7%).

Comparison to Previous Years
It is important to note that changes in how data were collected make comparisons to previous years difficult to impossible (see “Limitations” below). For these reasons, we believe that a direct comparison to data from 2009 and 2010 is not possible. Results from the previous two years are provided here for historical purposes:
- For 2010, there were 66 laboratory-identified hospital-onset MRSA blood specimens reported for 636,885 patient days in their specified unit(s), for an incidence rate: (66/636,885) *1000 = 0.104 MRSA infections per 1000 patient days.
- For 2009, there were 71 laboratory-identified hospital-onset MRSA blood specimens reported for 500,165 patient days in their specified unit(s), for an incidence rate: (71/500,165) *1000 = 0.142 MRSA infections per 1000 patient days.

Limitations
Per CDC, LabID events are proxies for infection measures of MRSA, healthcare acquisition, exposure burden, and infection burden. Laboratory testing results can be used without clinical evaluation of the patient, allowing for much less labor-intensive means to track MRSA in hospitals. Some data elements, such as date admitted to the patient care location, may require other data sources. While the laboratory and admission data elements can be used together to calculate MRSA bloodstream infection incidence rates in a non-labor intensive manner, the lack of clinical data does decrease accuracy in measuring healthcare acquired infections.

For the 2009 and 2010 reporting years, New Jersey hospitals only reported MRSA bloodstream infections in units where they performed their AST, i.e., New Jersey hospitals used NHSN “out of plan” for 2009 and 2010 because they were only reporting on a minimum of one unit. The data captured from these two years of reporting measure unit-onset for these MRSA bloodstream infections. Hospital-onset cases that occurred in non-reporting units may be missed (e.g., if patient was on a general medical unit for three weeks, acquired MRSA in the second week, was then transferred to the monitored ICU and had a positive culture, this case would not be counted as hospital-onset).

Starting in 2011, all New Jersey hospitals were required to report MRSA LabID events for all blood specimens from in-patient units, including community-onset and hospital-onset. There were many hospitals that had difficulty with this new requirement. Even after working with these hospitals, we believe that there are some hospitals reporting spuriously low MRSA rates because data remained outstanding or entered incorrectly. Because of confusion surrounding the new reporting requirements, we suspect MRSA rates may increase in subsequent years, as the data reporting becomes more accurate. The data reported from hospitals and summarized in this report is not validated due to staffing limitations at NJDOH.

Future plans
MRSA reporting was modified for 2011; these changes remain in-place for the 2012 and 2013 reporting years. With hospitals continuing to report all positive LabID-events, New Jersey is contributing to the national NHSN data on MRSA and will be comparable to other states that are reporting on MRSA LabID events. In following CDC’s reporting requirements, New Jersey will be able to compare hospital-onset rates of MRSA with future benchmarks that will be developed for MRSA reporting. Additionally, The Centers for Medicare & Medicaid Services (CMS) will require reporting across the country beginning in 2013 that will result in new benchmarks that will be useful in comparing hospitals and states nationwide, and that a standardized infection ratio (SIR) will be developed for this measure that will be used in comparing hospitals.