

# **All Payer Inpatient Potentially Preventable Complication (PPC) Rates by Hospital (SPARCS): Beginning 2013**

## **OVERVIEW**

**New York State Department of Health  
Office of Quality and Patient Safety  
Division of Information and Statistics**

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**Health Data NY**

## **General Description:**

Potentially Preventable Complications (PPCs) measure harmful events (e.g. accidental laceration during a procedure, improper administration of medication) or negative outcomes (e.g. hospital-acquired pneumonia) that develop or occur during hospitalization and may result from processes of care and treatment rather than from natural progression of the underlying illness. In general, the occurrence of high rates of complications may indicate opportunities to improve the quality of care within a hospital.

There are three Potentially Preventable Complications (PPCs) datasets on Health Data NY. Each dataset is derived from the Potentially Preventable Complication (PPC) software, and presents observed and risk adjusted rates for all payer beneficiaries by hospital.

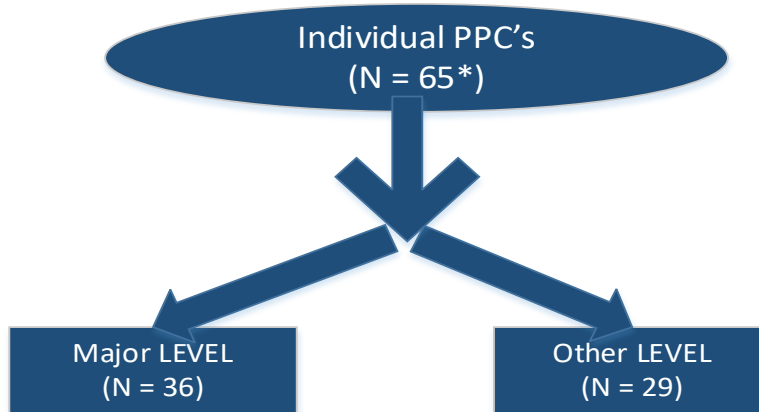
The dataset names are:

- All Payer Inpatient Potentially Preventable Complication (PPC) Individual Rates by Hospital (SPARCS): Beginning 2013
  - This dataset displays PPC rates for each of the 65 individual PPCs by hospital.
- All Payer Inpatient Potentially Preventable Complication (PPC) Major Rates by Hospital (SPARCS): Beginning 2013
  - This dataset groups the 65 individual PPCs into two levels: Major or Other and displays only the Major level PPC rates by hospital.
- All Payer Inpatient Potentially Preventable Complication (PPC) Group Rates by Hospital (SPARCS): Beginning 2013
  - This dataset groups the 65 individual PPCs into eight categories and displays the group PPC rates by hospital.

See the Data Methodology section for how PPCs are calculated and grouped.

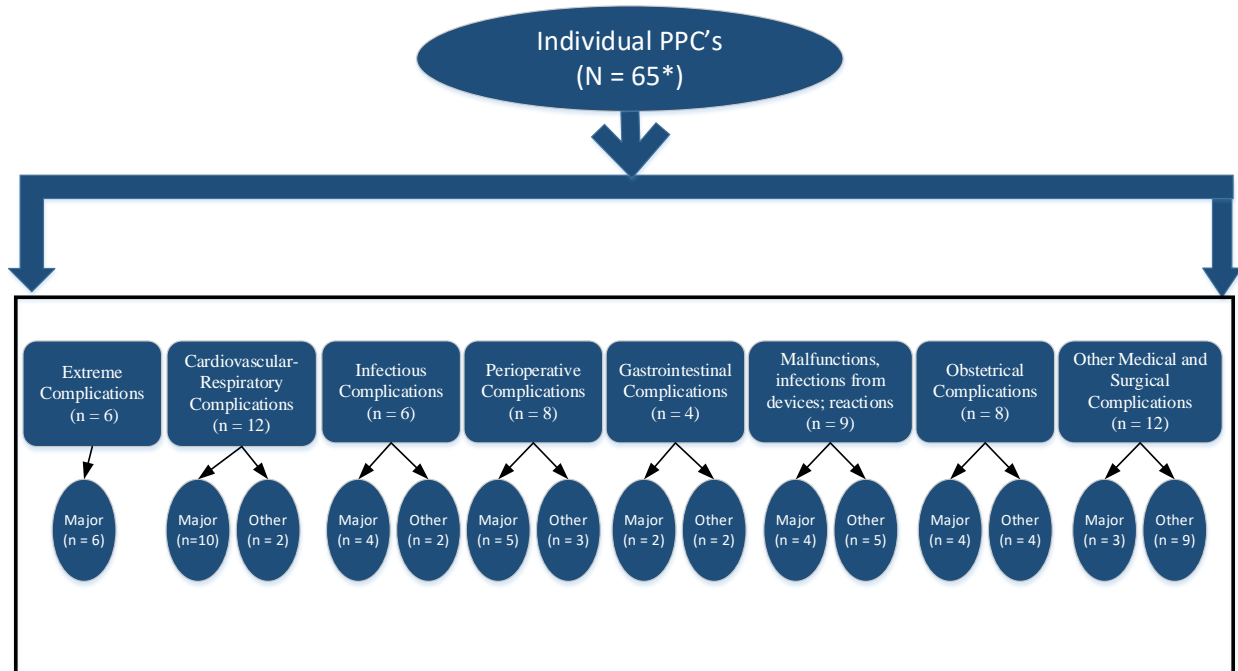
Figures 1 & 2 show a high-level overview of how the 65 individual PPC measures are grouped into Major and Other levels; as well as into 8 complication types.

Figure 1 - Inpatient Potentially Preventable Complication (PPC) Individual Rates by Hospital



\* 65 PPCs numbered from #1 – #66, #22 is missing

Figure 2 - Inpatient Potentially Preventable Complication (PPC) Group Rates by Hospital



\* 65 PPCs numbered from #1 – #66, #22 is missing

## **Data Methodology:**

The goal of PPC assignment is to determine harmful events (e.g. accidental laceration during a procedure, improper administration of medication) or negative outcomes (e.g. hospital-acquired pneumonia) that develop or occur during hospitalization that potentially could have been prevented.

The PPC classification system identifies in-hospital complications from secondary diagnoses identified as not present on admission. The PPC classification system uses the Present on Admission (POA) indicator to determine if a secondary diagnosis was present on admission or occurred after admission. If a condition was present on admission, it cannot be considered an in-hospital complication and would not count as a PPC.

By using the assortment of criteria 3M outlines in their definitions manual, a PPC can be assigned to a discharge in several phases that consist of: 1) Identifying globally excluded admissions (such as HIV), 2) Identifying admissions with complications that are candidates for PPC assignment, 3) Assigning PPCs after applying PPC exclusions and other hierarchical exclusions. The assignment of PPCs takes several factors into account, such as, All Patient Refined Diagnosis Related Groups (APR-DRG), severity of illness, length of stay and existing health conditions upon admission.

The observed (crude) and risk adjusted PPC rates per 10,000 at risk hospital discharges were calculated. PPC rates were risk adjusted by APR-DRG and severity of illness. Statistical significance of the risk adjusted rate relative to the statewide observed rate was determined. A rate that is statistically different from the statewide rate is noteworthy, whether it is statistically above or below the statewide observed rate.

The table below lists the 65 individual PPCs with their PPC level and PPC Group.

**Table 1: Individual PPC Description, Level and Group**

<b>PPC</b>	<b>PPC Description</b>	<b>PPC Level</b>	<b>PPC Group</b>
1	Stroke & Intracranial Hemorrhage	Major PPC	Cardiovascular-Respiratory Complications
2	Extreme CNS Complications	Major PPC	Extreme Complications
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	Other PPC	Cardiovascular-Respiratory Complications
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	Major PPC	Extreme Complications

<b>PPC</b>	<b>PPC Description</b>	<b>PPC Level</b>	<b>PPC Group</b>
5	Pneumonia & Other Lung Infections	Major PPC	Cardiovascular-Respiratory Complications
6	Aspiration Pneumonia	Major PPC	Cardiovascular-Respiratory Complications
7	Pulmonary Embolism	Major PPC	Cardiovascular-Respiratory Complications
8	Other Pulmonary Complications	Other PPC	Cardiovascular-Respiratory Complications
9	Shock	Major PPC	Extreme Complications
10	Congestive Heart Failure	Major PPC	Cardiovascular-Respiratory Complications
11	Acute Myocardial Infarction	Major PPC	Cardiovascular-Respiratory Complications
12	Cardiac Arrhythmias & Conduction Disturbances	Other PPC	Cardiovascular-Respiratory Complications
13	Other Cardiac Complications	Other PPC	Cardiovascular-Respiratory Complications
14	Ventricular Fibrillation/Cardiac Arrest	Major PPC	Extreme Complications
15	Peripheral Vascular Complications except Venous Thrombosis	Major PPC	Cardiovascular-Respiratory Complications
16	Venous Thrombosis	Major PPC	Cardiovascular-Respiratory Complications
17	Major Gastrointestinal Complications without Transfusion or Significant Bleeding	Other PPC	Gastrointestinal Complications
18	Major Gastrointestinal Complications with Transfusion or Significant Bleeding	Major PPC	Gastrointestinal Complications
19	Major Liver Complications	Major PPC	Gastrointestinal Complications
20	Other Gastrointestinal Complications without Transfusion or Significant Bleeding	Other PPC	Gastrointestinal Complications
21	Clostridium Difficile Colitis	Major PPC	Infectious Complications
23	GU Complications except UTI	Other PPC	Other Medical and Surgical Complications
24	Renal Failure without Dialysis	Other PPC	Other Medical and Surgical Complications
25	Renal Failure with Dialysis	Major PPC	Extreme Complications
26	Diabetic Ketoacidosis & Coma	Other PPC	Other Medical and Surgical Complications
27	Post-Hemorrhagic & Other Acute Anemia with Transfusion	Major PPC	Other Medical and Surgical Complications

<b>PPC</b>	<b>PPC Description</b>	<b>PPC Level</b>	<b>PPC Group</b>
28	In-Hospital Trauma and Fractures	Other PPC	Other Medical and Surgical Complications
29	Poisonings except from Anesthesia	Other PPC	Malfunctions, infections from devices; reactions
30	Poisonings due to Anesthesia	Other PPC	Malfunctions, infections from devices; reactions
31	Decubitus Ulcer	Major PPC	Other Medical and Surgical Complications
32	Transfusion Incompatibility Reaction	Other PPC	Malfunctions, infections from devices; reactions
33	Cellulitis	Other PPC	Infectious Complications
34	Moderate Infections	Other PPC	Infectious Complications
35	Septicemia & Severe Infections	Major PPC	Infectious Complications
36	Acute Mental Health Changes	Other PPC	Other Medical and Surgical Complications
37	Post-Operative Infection & Deep Wound Disruption without Procedure	Other PPC	Perioperative Complications
38	Post-Operative Wound Infection & Deep Wound Disruption with Procedure	Major PPC	Perioperative Complications
39	Reopening Surgical Site	Major PPC	Perioperative Complications
40	Post-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Procedure	Other PPC	Perioperative Complications
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Procedure	Major PPC	Perioperative Complications
42	Accidental Puncture/Laceration during Invasive Procedure	Major PPC	Perioperative Complications
43	Accidental Cut or Hemorrhage during Other Medical Care	Other PPC	Other Medical and Surgical Complications
44	Other Surgical Complication - Moderate	Other PPC	Other Medical and Surgical Complications
45	Post-procedure Foreign Bodies	Major PPC	Perioperative Complications
46	Post-Operative Substance Reaction & Non-O.R. Procedure for Foreign Body	Other PPC	Perioperative Complications
47	Encephalopathy	Major PPC	Other Medical and Surgical Complications
48	Other Complications of Medical Care	Other PPC	Other Medical and Surgical Complications
49	Iatrogenic Pneumothorax	Major PPC	Malfunctions, infections from devices; reactions
50	Mechanical Complication of Device, Implant & Graft	Major PPC	Malfunctions, infections from devices; reactions

PPC	PPC Description	PPC Level	PPC Group
51	Gastrointestinal Ostomy Complications	Other PPC	Malfunctions, infections from devices; reactions
52	Inflammation & Other Complications of Devices, Implants or Grafts except Vascular Infection	Major PPC	Malfunctions, infections from devices; reactions
53	Infection, Inflammation and Clotting Complications of Peripheral Vascular Catheters and Infusions	Other PPC	Malfunctions, infections from devices; reactions
54	Infections due to Central Venous Catheters	Major PPC	Malfunctions, infections from devices; reactions
55	Obstetrical Hemorrhage without Transfusion	Other PPC	Obstetrical Complications
56	Obstetrical Hemorrhage with Transfusion	Major PPC	Obstetrical Complications
57	Obstetric Lacerations & Other Trauma without Instrumentation	Major PPC	Obstetrical Complications
58	Obstetric Lacerations & Other Trauma with Instrumentation	Major PPC	Obstetrical Complications
59	Medical & Anesthesia Obstetric Complications	Other PPC	Obstetrical Complications
60	Major Puerperal Infection and Other Major Obstetric Complications	Major PPC	Obstetrical Complications
61	Other Complications of Obstetrical Surgical & Perinatal Wounds	Other PPC	Obstetrical Complications
62	Delivery with Placental Complications	Other PPC	Obstetrical Complications
63	Post-Operative Respiratory Failure with Tracheostomy	Major PPC	Extreme Complications
64	Other In-Hospital Adverse Events	Other PPC	Other Medical and Surgical Complications
65	Urinary Tract Infection	Major PPC	Infectious Complications
66	Catheter-Related Urinary Tract Infection	Major PPC	Infectious Complications

**Table 2. PPC Group Number and Description**

PPC Group Number	PPC Group Description
1	Extreme Complications
2	Cardiovascular-Respiratory Complications
3	Gastrointestinal Complications
4	Perioperative Complications

PPC Group Number	PPC Group Description
5	Infectious Complications
6	Malfunctions, infections from devices; reactions
7	Obstetrical Complications
8	Other Medical and Surgical Complications

## How to Interpret the Rates

The denominator for the calculation of the PPC rate is the sum of hospital discharges at risk for the particular PPC. Discharges are considered at risk for a particular PPC if the patient had no specific global or clinical PPC specific exclusions, such as certain severe or catastrophic illnesses that are particularly susceptible to a range of complications.

The **observed PPC rate** (per 10,000 discharges) is the number of discharges with a PPC divided by the number of at risk discharges for a specific hospital. Lower rates represent better results.

The **statewide PPC rate** (per 10,000 discharges) is the sum of all PPC discharges in the state divided by the sum of all at risk discharges in the state.

The **risk adjusted PPC rate** (per 10,000 discharges) is calculated by dividing the observed PPC rate for the hospital by the expected PPC rate for the hospital, multiplied by the statewide PPC rate.

The **significance** is calculated by determining confidence intervals around each hospital's risk adjusted PPC rate and then comparing it to the statewide PPC rate. If the statewide PPC rate value is within the confidence interval bounds, the hospital's risk adjusted PPC rate is not significantly different from the statewide PPC rate. If the statewide PPC rate value is higher than the upper bound of the confidence interval, the hospital's PPC risk adjusted rate is significantly lower than the statewide PPC rate. If the statewide PPC rate value is lower than the lower bound of the confidence interval, then the hospital's risk adjusted PPC rate is significantly higher than the statewide PPC rate.

## PPC Software

Potentially Preventable Complications (PPCs) were calculated by the Potentially Preventable Complications Classification System software, contained within the 3M™ Core Grouping Software.



<b>Discharge Year</b>	<b>PPC Software Version</b>	<b>Major Changes</b>
2013	Version 32.0	N/A
2014	Version 32.0	N/A
2015	Version 32.0	ICD-10 Included

The NYSDOH used 3M™ developed logic to assess the reporting accuracy and validity of the present on admission (POA) variable reported to SPARCS by Article 28 facilities. Discharges for hospitals that failed POA validation screening criteria were removed from analysis.

**Data Source**

Statewide Planning and Research Cooperative System (SPARCS) inpatient hospital discharge records were used to identify Potentially Preventable Complications.

SPARCS is a comprehensive all payer data reporting system established in 1979 as a result of cooperation between the health care industry and government. Initially created to collect information on discharges from hospitals, SPARCS currently collects patient level detail on patient characteristics, diagnoses and treatments, services, and charges for every hospital discharge, ambulatory surgery, emergency department, and hospital based outpatient clinic visit in New York State.

The enabling legislation and regulations for SPARCS are located under Section 28.16 of the Public Health Law (PHL), Section 400.18 of Title 10 (Health) of the Official Compilation of Codes, Rules, and Regulations of the State of New York (NYCRR).

More information on how SPARCS data is collected may be found at the following direct link: [http://www.health.ny.gov/statistics/sparcs/data\\_collection.htm](http://www.health.ny.gov/statistics/sparcs/data_collection.htm).

More information on SPARCS may be found on the New York State Department of Health’s website at the following direct link: <http://www.health.ny.gov/statistics/sparcs/>.

## **De-Identified Data Use Limitations**

**Transition from ICD-9-CM to ICD-10-CM Coding System:** The ICD-10-CM coding system was implemented starting from October 1, 2015. While the PPCs for the calendar year (CY) 2015 were calculated using one version of the 3M™ PPC grouper (v32), grouper logic was applied to hospitalizations that were reported using both coding schemes (ICD-9 and ICD-10). Therefore, PPC rates calculated for CY 2015 should be treated with caution as they might reflect the change in the coding system and not the trends in PPC rates.

**De-Identified Data Use Limitations:** The dataset contains the observed and risk adjusted PPC rates by discharge year. It does not contain data that is protected health information (PHI) under HIPAA. The health information is not individually identifiable.

## **Contact Information**

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