Table S1. General Severity Scale with Examples (Adapted from Folli et al.)[a]

Severity	Category	Description	Drug Example	Non-Drug Example
Non Major Adverse Event	**Significant** (e.g., rash)	An adverse event that caused unnecessary harm but, patient was able to easily recover	Patient was prescribed gentamicin without an order for renal function and developed an AKI but recovered over a 2-day period without dialysis	Patient was discharged and diagnosed with C. diff a week later but recovered at home with oral antibiotics
Major Adverse Event	**Serious** (e.g., gastrointestinal bleed requiring Blood transfusion)	An adverse event that has the potential to cause the patient a severe reaction, acute distress, or exacerbate the patient's condition	Patient had a history of GI bleed but was prescribed high dose of Diclofenac and developed a GI bleed that required transfusion	Patient fell while inpatient and broke their wrist. Patient recovered after surgery and months of physical therapy
	Life Threatening (e.g., haemorrhagic stroke)	An adverse event that caused a potentially fatal situation that required immediate intervention	Patient had a documented allergy to Penicillin but was given amoxicillin, developed anaphylaxis, and required ICU care	Sponge left inside patient after abdominal surgery, causes sepsis, and required ICU care
	Fatal	An adverse event that caused the death of the patient	An adverse drug event that caused the death of the patient	Laceration of artery during surgery causing patient death

[a] Folli HL, Poole RL, Benitz WE, Russo JC. Medication error prevention by clinical pharmacists in two children's hospitals. *Pediatrics* 1987;79:718-722.

Table S2. Preventability Scale with Examples (Adapted from Dubois et al.)[a]

Adverse event may be preventable or non-preventable. Preventable adverse event can be defined as "avoidable by any means currently available unless that means was not considered standard care". Preventable also describes an event that could have been anticipated and prepared against but occurs because of an error or other system failure. The table below lists the preventability categories, their descriptions, and examples.

Preventability		Category	Description	Drug Example	Non-Drug Example
Potentially Preventable Adverse Event	Preventable Adverse Event	Definitely preventable	The adverse event was definitely preventable	Patient given penicillin, with known allergy, suffered anaphylaxis	Sponge left in after abdominal surgery, causes sepsis, requires ICU care
		Probably preventable	More likely than not the adverse event could have been prevented	Patient developed DVT, had not received prophylaxis	Pt falls after slipping on urine on floor in bathroom while inpatient, breaks wrist
		Possibly preventable	There is some chance adverse event could have been prevented	Patient did not receive aspirin for secondary prevention due to possible GI bleed, suffered MI	Colon cancer found in patient who had not been appropriately ordered for colorectal cancer screening
Non-preventable Adverse Event		Not preventable	The event was definitely not preventable	Patient given penicillin, with no known allergy, suffered anaphylaxis	Surgeon nicks a vessel during an emergency abdominal surgery performed on someone who has had 3 prior abdominal surgeries
		Unable to determine	The reviewer was unable to determine if the adverse event was preventable	Patient suffered DVT, but unclear whether prophylaxis was given	Surgeon lacerated blood vessel during surgery, but unclear if due to error

[a] Dubois RW, Brook RH. Preventable deaths: who, how often, and why? *Ann Intern Med* 1988;109(7):582-589.

Table S3. Confidence Scale that Adverse Events is Caused by Healthcare Management with Examples of Harm Not Considered Caused by Healthcare Management (Adapted from Harvard medical practice study)[a]

Adverse events are unintended injuries or complications (patient harm) that are caused by healthcare management rather than by the patient's underlying disease. Healthcare management includes the actions of individual hospital staff as well as the broader systems and care processes and includes both acts of omission (failure to diagnose or treat) and acts of commission (incorrect diagnosis or treatment, or poor performance).

The SafeCare study confidence rating was adopted from the Harvard medical practice study. Confidence that an adverse event occurred is scored on a 6-point scale as shown in the table below. A confidence score of 4 or higher indicated an adverse event had occurred, aligning with the confidence threshold used in the Harvard medical practice study.

		Confidence that adverse event is due to healthcare management
No Adverse Event	1	Little or no evidence for management causation
	2	Slight to modest evidence for management causation
	3	Management causation not quite likely; less than 50-50 but close call
Adverse Event	4	Management causation more likely than not; more than 50-50 but close call
	5	Strong evidence for management causation
	6	Virtually certain evidence for management causation

[a] Brennan TA, Leape LL, Laird NM, et al. Incidence of adverse events and negligence in hospitalized patients. Results of the Harvard Medical Practice Study I. *N Engl J Med* 1991;324(6):370-6.

The table below lists examples of harm not considered to be caused by healthcare management.[b]

Harm Category/Type	Harm Description	Severity[c]	Preventability[d]
Surgical Events			
Surgical/Procedural ->Cardiovascular ->Hypotension	Patient with rib fractures from mechanical fall requiring epidural anaesthesia. Patient admitted to ICU. with hypotension requiring phenylephrine. Readmitted to ICU two days later of another episode of hypotension and treated with neosynephrine.	Significant	Non-Preventable
Surgical/Procedural ->Urinary retention	When the patient's foley was discontinued, patient was unable to void and required straight catheter. Later patient was able to void independently.	Significant	Non-Preventable
Medication Events			
Medication ->Cardiovascular ->Hypotension	Patient had been working with PT, ambulating approximately 1 mile daily on floor. On one occasion after walking 7 minutes with PT, patient felt ill, was safely lowered to a chair & briefly became unresponsive with BP 60/40. Patient quickly regained consciousness & was transferred back to bed with nurses & physician at bedside. Probable vasovagal episode. Patient given 1 Liter normal saline bolus, required another 1 Liter lactated Ringer's bolus later that afternoon for low BP. Lorazepam order for nausea discontinued; patient had no further episodes of hypotension/orthostasis.	Significant	Non-Preventable
Medication ->Nervous System ->Over-sedation/Delirium/ Confusion/Mental status change	Patient with history of Parkinson's admitted with subdural hematoma and other injuries due to a fall, Patient was not following commands and combative. Patient given Keppra for 3 days before discontinued considering persistent delirium and somnolence. Patient became more alert and oriented though still showing signs of concussion through discharge rehab hospital. Per neurology there is no need for MRI.	Significant	Non-Preventable

Blood Transfusion Reaction Events			
Blood Transfusion Reaction ->Febrile non-haemolytic transfusion reaction	Patient has had multiple historical blood transfusions with no previously reported reactions; after no premedication, patient (Group O, Rh positive) was transfused one unit of compatible (Group O, Rh positive), leuko-reduced packed red blood cells for symptomatic anaemia (haemoglobin of 6.0 g/dL). Transfusion was stopped after approximately 195ml of blood had been transfused and patient's temperature increased from 99.8 F to 101.7 F. No other symptoms were reported, and all vital signs were stable. Patient had a fever to 102.5 F earlier in the day (preceding transfusion) and to 101.7 F the following day when not receiving a transfusion. There were no clerical discrepancies detected by the blood bank. An internal investigation as launched by the healthcare facility; post-transfusion plasma was yellow with negative direct antibody testing. It was concluded by investigation that the patient may have experienced a febrile non-haemolytic transfusion reaction (FNHTR), despite leuko-reduced status of transfused product. Otherwise, given the fevers in the 24 hours preceding and following, it seemed most likely that the patient's immediate post-transfusion fever in question is most likely due to patient's underlying illness and not due to the transfusion reaction.	Significant	Non-Preventable

[b] Events were selected to provide examples of harm not considered to be caused by healthcare management during surgical admissions. Events were then selected based on succinctness and ability to be de-identified.

[c] Events were categorized as significant (i.e., an event that caused unnecessary harm but resulted in rapid recovery).

[d] Non-Preventable Adverse Events included events coded as not preventable or unable to determine.

Table S4. Examples of Adverse Events by Severity and Preventability[a]

Adverse Event Category/Type	Adverse Event Description	Severity[b]	Preventability[c]
Surgical Adverse Events			
Surgical/Procedural ->Cardiovascular ->Hypotension	Post-procedure, patient developed low blood pressure, below 70 mm/Hg. Was started on IV norepinephrine overnight to maintain mean arterial pressure > 65. Also received 3 liters Lactated Ringer's solution. Nitroglycerin also used intermittently for blood pressure control. By night patient off all norepinephrine and nitroglycerin drips, on metoprolol and started furosemide diuresis.	Serious	Non-Preventable
	Pre-procedure patient blood pressure was 133/85. Uncomplicated surgery but overnight patient post operative day patient became hypotensive to 70s systolic. Given 500 ml intravenous fluids x2 (BPs remained 80/40). Electrocardiogram was stable with no ischemic changes. Blood pressure remained low with intermittent periods of light-headedness over post operative days 1 & 2. Patient had some periods of tachycardia, given metoprolol.	Significant	Preventable
	Patient became hypotensive during placement of epidural catheter. Patient became hot and lightheaded, requiring supine positioning. Touhy needle removed to quickly get patient supine. Given boluses of fluid and phenylephrine, symptoms resolved. 2nd attempt with patient sitting was successful.	Significant	Potentially Preventable
Surgical/Procedural ->Urinary retention	Patient had indwelling Foley post operatively, then failed voiding trials. Foley was replaced for urinary retention. Patient had had recent bilateral stents removed 1 week prior to event. The new 16F Foley could not be flushed. A new 18 F catheter was placed by urology, w/ 800 cc return. Thought was that previous Foley was tugged down to patient's urethra. Patient with mild right renal nephrosis thought may be due to distal right ureteral stricture formation from devascularisation during his multiple pelvic procedures. Patient requiring intermittent catheterization. Patient taught by Urology how to self-straight catheter for long term management of neurogenic bladder.	Serious	Potentially Preventable
	Patient had 16F Foley catheter placed for surgery and was removed 2 days post-surgery. Documentation at first stated patient was "voiding well" but 1 day after foley removal patient had post void residual of 760ml with Foley reinserted and drained 1100ml. Urine analysis and urine culture were sent and both within normal limits. Flomax started. No order for voiding trial found. Foley again removed 2 days later, patient failure to void, bladder scanned for post void residual 330ml, patient was given Lasix 10mg x1 with "minimal void" 125ml. 18F Foley was reinserted.	Significant	Preventable

	Patient in PACU unable to void, bladder scan for 750 ccs, patient straight catheterized for 950cc. On floor, patient utilizing urinal independently overnight with intermittent incontinence; patient had post void residual of 660cc, Foley replaced. Patient started on tamsulosin and sent home with Foley the next day, with follow up plans to see urologist.	Significant	Non-Preventable
Surgical/Procedural ->Hematoma	Post operative day #0 following leg surgery, patient developed worsening right calf pain with tender, tense right calf compartments and elevated compartment pressures, taken back to the operating room for 4-compartment right lower extremity fasciotomies. Patient found to have a hematoma within the posterior superficial compartment that was evacuated. The compartments were then free without tension, and all muscle was viable, so the skin incisions were closed loosely. Post-operatively, patient was again transferred to the PACU in stable condition, and then to the surgical Step Down Unit for the night. Adverse event: hematoma with possible compartment syndrome	Serious	Preventable
	Patient experienced symptomatic haematocrit drop from approximately 26 to 18 with systolic blood pressure of 80. Patient given 2 units of blood. Patient found to be bleeding from rectal incision. Day 2 patient found to have new bulging and redness from rectal incision area concerning for a hematoma. CT scan showed 2 large hematomas. Day 3 patient returned to surgery for evacuation of hematoma with 2 drains placed. Cultures from the surgery also grew Staphylococcus aureus and Corynebacterium. Infectious disease consulted, patient started on Daptomycin and Augmentin. At discharge patient was continued on Bactrim and Augmentin.	Serious	Non-Preventable
	Patient underwent attempted triple-lumen catheter in right neck, complicated by inability to thread wire and hematoma. Patient then underwent right midline placement of catheter.	Significant	Preventable
	Patient INR noted to be ranging between 1.3-1.4. Received 5 mg Vitamin K by mouth on day 1 & 5 mg Vitamin K intravenously on day 2 several hours prior to biopsy same day. Review of history showed INR of 1.3-1.4 as baseline. Ultrasound done immediately post biopsy showed trace perirenal hematoma. Haematocrit/Haemoglobin pre-biopsy 32/9.8 & post-biopsy 29.4/9.2.	Significant	Non-Preventable
Medication Adverse Events			
Medication ->Nervous System ->Altered mental status	After 2nd surgery the patient became acutely delirious and combative with multiple attempts to get out of bed. Received lorazepam at 1AM. Woke up at 4AM and was not moving left side. Code stroke was called but negative for any intracranial abnormalities. Per the nursing documentation and the ortho-spine progress notes patient was delirious requiring assistance from psych for med management until when her delirium cleared.	Significant	Non-Preventable

Medication ->Renal ->Acute kidney injury	Rapid increase in creatinine 24 hours after exposure to iodinated contrast on a second consecutive day, likely contrast induced neuropathy. Patient's losartan and furosemide were then held. Patient became markedly hypertensive and then developed acute respiratory failure. Transferred to ICU, briefly received BiPAP and blood pressure was controlled on nitroglycerin drip.	Serious	Preventable
	Patient triggered for low blood pressure and newly developed acute kidney injury with creatinine of 2.0. Physician note states that both are likely due to over diuresis. Patient was receiving furosemide and metolazone.	Serious	Potentially Preventable
	Postoperative patient experienced rising creatinine over several days, 30% increase. Computed tomography angiography of the aorta with runoff was not obtained due to concern for acute kidney injury.	Significant	Preventable
	Patient's baseline creatinine was 1.4. Patient was treated with furosemide after surgery to return to baseline weight. 24 hours after treatment, creatinine rose to 2.7.	Significant	Non-Preventable
Healthcare Acquired Infection Adverse Events			
Healthcare Associated Infection ->Urinary tract infection	Patient had foley catheter placed in angiogram lab. Developed subsequent UTI related to Foley with pseudomonas, enterococcus. Pt given 1 dose Fosfomycin. This was only documented in nursing notes. Per culture sensitivities pseudomonas was resistant. Remained symptomatic at discharge.	Significant	Preventable
	Patient had foley placed to monitor intake and output for acute kidney injury. Three days later developed Klebsiella urinary tract infection, treated with trimethoprim/sulfamethoxazole for 7 days. Foley removed.	Significant	Non-Preventable
Healthcare Associated Infection ->Pneumonia	Postoperative patient developed laboured respirations which persisted despite Lasix and nebulizers. Started on vancomycin and cefepime for 7-day course for presumed healthcare associated pneumonia. After initial improvement and transfer to floor, patient became hypoxic and tachypneic, WBC increased, CXR revealed pulmonary oedema with possible aspiration. Transferred back to ICU for respiratory monitoring, failed speech and swallow evaluation. Gradually improved, ultimately on room air only and ambulating without desaturation.	Serious	Preventable

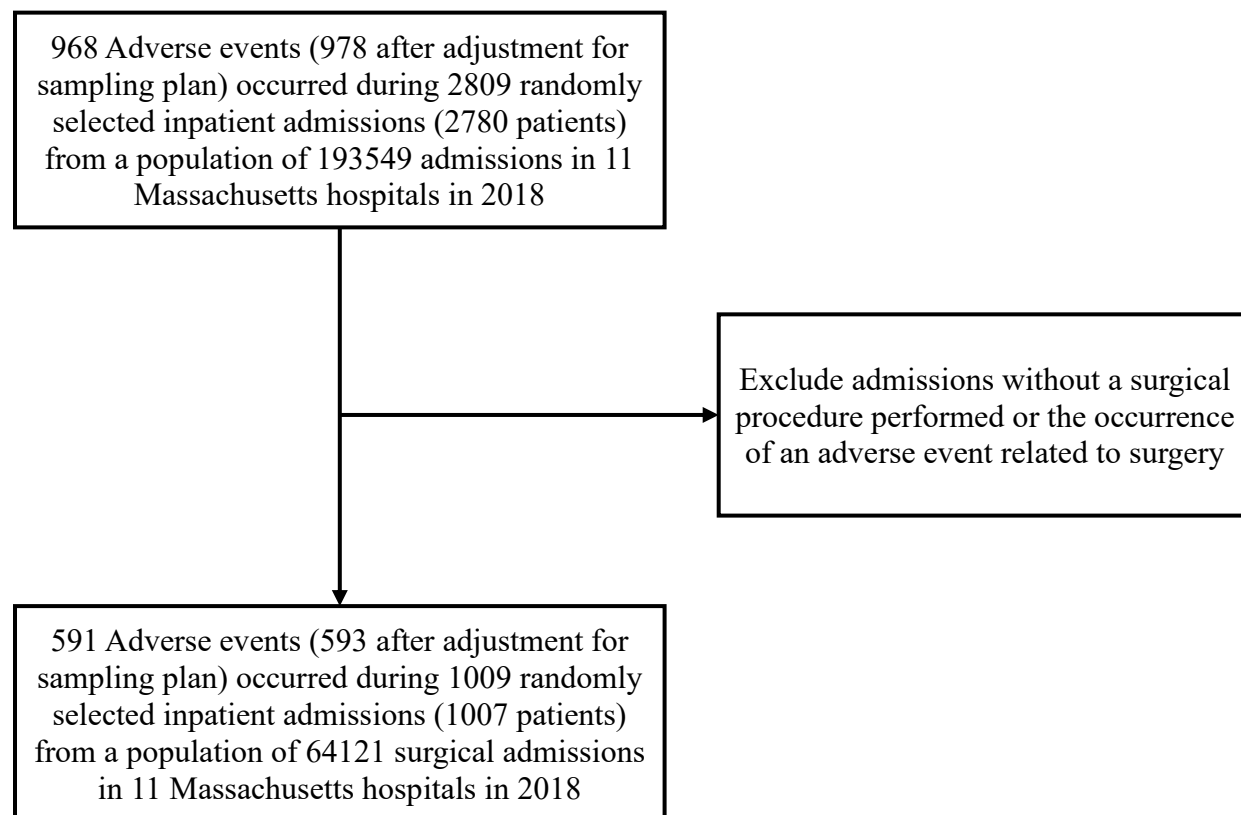|			
	Post motor vehicle accident, patient taken to operating room for a C2-T8 decompression and fusion, Patient remained intubated postoperatively and transferred to the ICU for continuous neurological surveillance and SBP control requiring IV pressors with pneumonia. Patient underwent daily SBT and was ultimately extubated. Chest X-rays were monitored and were gradually improving. Patient was encouraged to continue using MIE/incentive spirometer & was successfully weaned from supplemental oxygen. Patient then developed fevers, new O2 requirement (nasal cannula) and chest x-ray with concern for bilateral pneumonia/consolidation vs. atelectasis. Patient was started on vancomycin and cefepime for empiric pneumonia coverage. Pan cultured only staph epidermidis and continued pulmonary toileting, MIE, Chest PT and able to transfer to floor.	Serious	Non-Preventable
	Patient spiked fever to 101 F, all lines removed. Chest CT demonstrated focal consolidation concerning for ventilator associated pneumonia. Started on Cefepime for Citrobacter in sputum. After completion of course of antibiotics, patient resumed baseline 2 Liters nasal cannula supplementation.	Significant	Potentially Preventable
Healthcare Associated Infection ->Colitis (*C. difficile*, etc.)	Patient febrile (102.4 F), started on empiric vancomycin/cefepime. Cultures negative, antibiotics discontinued. Later C. Diff positive, started on IV Flagyl/PO Vancomycin. Patient complained of increased abdominal pain with unremarkable CT scan, switched to oral Flagyl, continued post discharge.	Serious	Non-Preventable
	On hospital day 7, patient had abdominal pain and loose stool. C. Diff sample positive, patient started on oral Flagyl and abdominal pain resolved.	Significant	Potentially Preventable
Patient Care Adverse Events			
Patient Care ->Cardiovascular ->IV infiltration	Patient's IV infiltrated during vancomycin infusion. The IV was removed. Patient's right arm was elevated, and ice applied. No other indication of harm/need for further intervention.	Significant	Non-Preventable
Patient Care ->Pressure Ulcer	Patient status/post left below knee amputation without complication. Wound healing, ace wrap used for compression and elevated. Day 6 documentation states, "Left knee-deep tissue injury: The nursing staff and physicians have documented a left knee deep tissue injury that they suspect was caused by a compressed ace wrap. Modifications were made in the ace wrap to relieve the pressure. The physicians are aware of this deep tissue injury currently the patient is open to air with no additional treatment."	Serious	Preventable
Patient Care ->Cardiovascular	Bleeding related to presenting condition with 7-point haematocrit drop to 24, transfused.	Serious	Potentially Preventable

->Anemia	Decreased haematocrit from 32 to 24 soon after transfer from outside hospital. Transfused two units. Felt to be secondary to phlebotomy draws during long stay at outside hospital prior to transfer.	Significant	Potentially Preventable
Blood Transfusion Reaction Adverse Events			
Blood Transfusion Reaction ->Febrile non-hemolytic transfusion reaction	In the cardiology consult note, it states that the patient was receiving 1unit packed red blood cells overnight and that the transfusion was stopped due to presumed transfusion reaction in which the patient developed a fever of 105 F. Per the ICU nursing note, the patient had a temperature of 102.5 F at the start of the transfusion and per the physician they were ok giving the blood with starting temp this elevated. The nurse completed a transfusion reaction form/protocol per note.	Serious	Potentially Preventable

[a] Events were selected to provide as many examples as possible of events occurring during surgical admissions with varying levels of severity and preventability. Events were then selected based on succinctness and ability to be de-identified.

[b] Events were categorized as significant (i.e., an event that caused unnecessary harm but resulted in rapid recovery), serious (i.e., an event that caused harm that resulted in substantial intervention or prolonged recovery), life-threatening (i.e., an event that caused a potentially fatal situation that required immediate intervention), or fatal (i.e., an event that caused the death of the patient)

[c] Preventable Adverse Events included events coded as definitely preventable or probably preventable; Potentially Preventable Adverse Events included events coded as definitely preventable, probably preventable, or possibly preventable; Non-Preventable Adverse Events included events coded as not preventable or unable to determine.

Figure S1. Study Population Flow Chart[a]

```
┌─────────────────────────────────────┐
│ 968 Adverse events (978 after        │
│ adjustment for sampling plan)        │
│ occurred during 2809 randomly        │
│ selected inpatient admissions        │
│ (2780 patients) from a population    │
│ of 193549 admissions in 11           │
│ Massachusetts hospitals in 2018      │
└─────────────────────────────────────┘
                │
                │────────────────────────────►┌──────────────────────────────────┐
                │                              │ Exclude admissions without a       │
                │                              │ surgical procedure performed or    │
                │                              │ the occurrence of an adverse event │
                │                              │ related to surgery                 │
                ▼                              └──────────────────────────────────┘
┌─────────────────────────────────────┐
│ 591 Adverse events (593 after        │
│ adjustment for sampling plan)        │
│ occurred during 1009 randomly        │
│ selected inpatient admissions        │
│ (1007 patients) from a population    │
│ of 64121 surgical admissions         │
│ in 11 Massachusetts hospitals in 2018│
└─────────────────────────────────────┘
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[a] Details on the study, including information on the review and the adjudication process, and the weighted random sample of inpatient admissions, are available at: *Bates DW, Levine DM, Salmasian H, Syrowatka A, Shahian DM, Lipsitz S, Zebrowski JP, Myers LC, Logan MS, Roy CG, Iannaccone C, Frits ML, Volk LA, Dulgarian S, Amato MG, Edrees HH, Sato L, Folcarelli P, Einbinder JS, Reynolds ME, Mort E. The Safety of Inpatient Health Care. N Engl J Med. 2023 Jan 12;388(2):142-153.*

Figure S2. Weighted Distribution of Adverse Events Location of Occurrence According to the Type of Event[a]
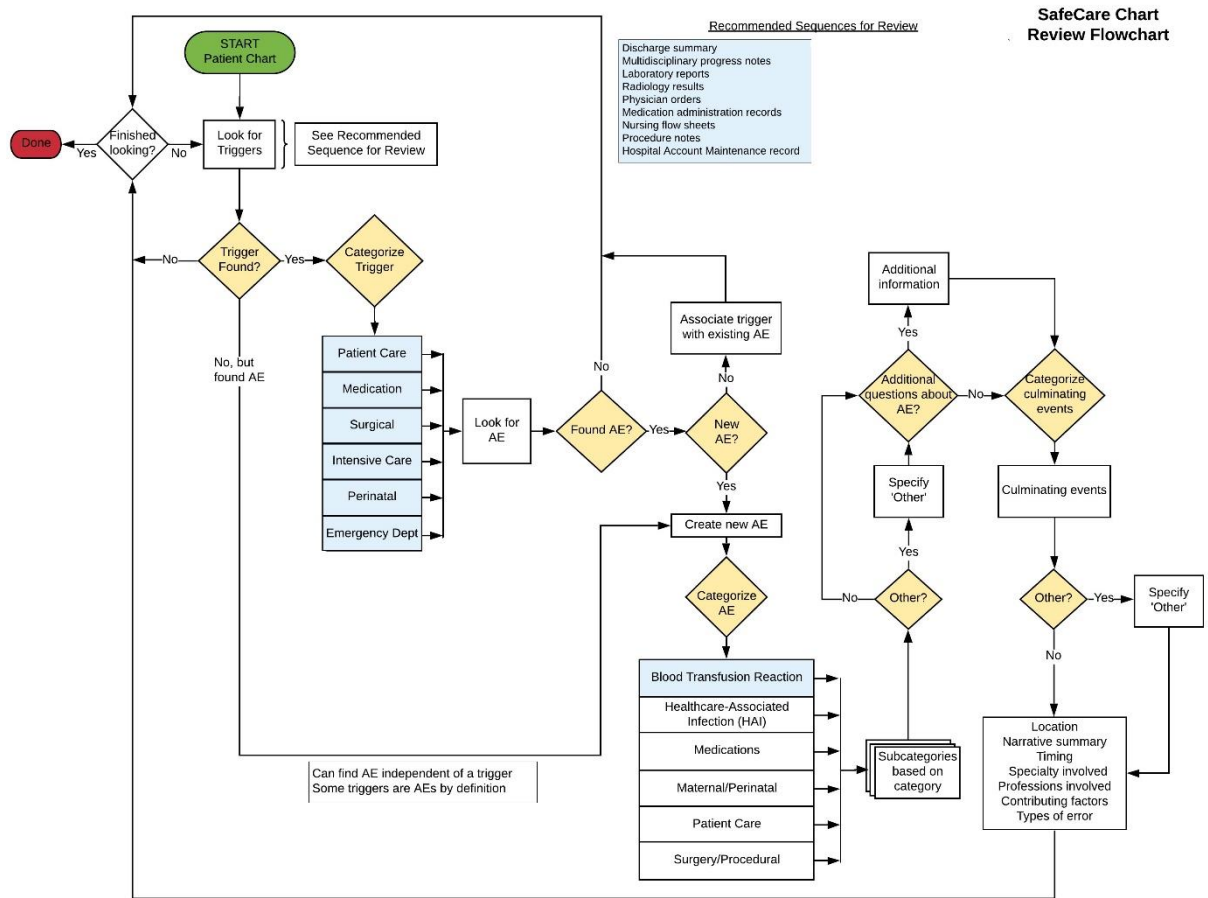

Adverse event location by category
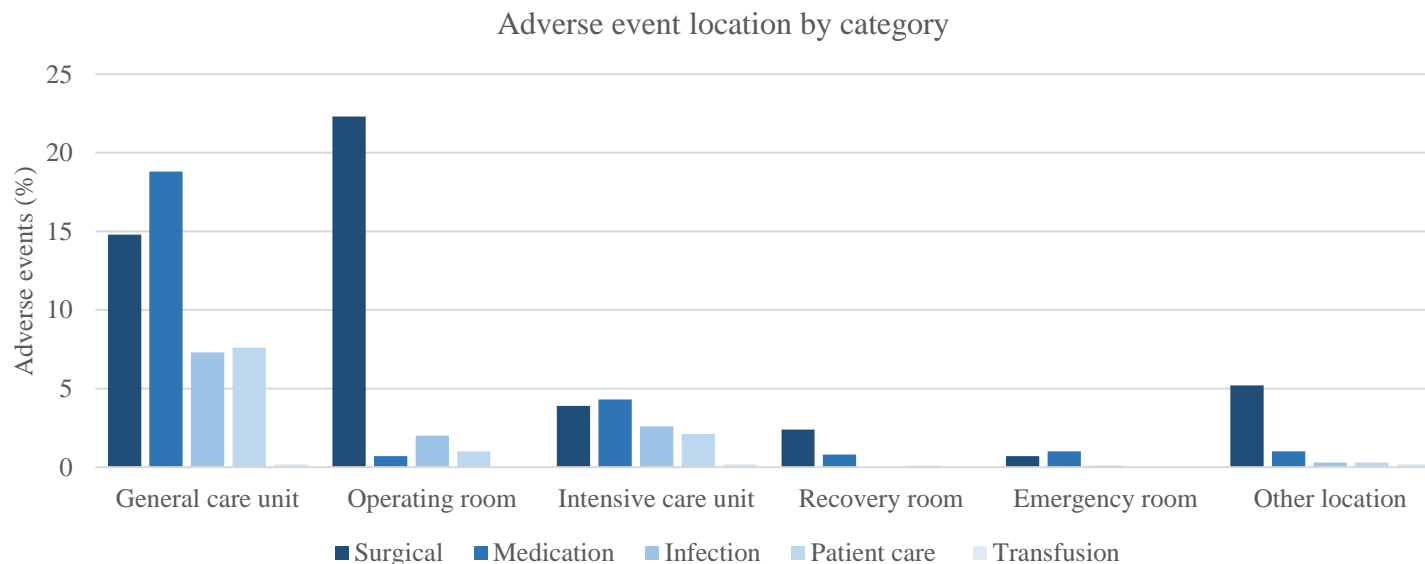
[a] Percentages total 100 because each adverse event was assigned to only one category per location in a mutually exclusive manner. Adverse drug events were defined as injuries resulting from drugs that were taken. A patient-care event was defined as an event related to nursing care, including falls and pressure ulcers. Adverse events associated with surgical procedures may not necessarily have occurred during the surgery itself but have been detected postoperatively while patients were in hospital beds in a general care unit (e.g., postoperative haemorrhage following hip arthroplasty, postoperative ileus after appendectomy, urinary retention due to anaesthesia, wound dehiscence after surgery,- etc.).

Figure S3. Weighted Distribution of Adverse Events Location of Occurrence According to Healthcare Professions Involved[a]

Adverse event location by profession involved
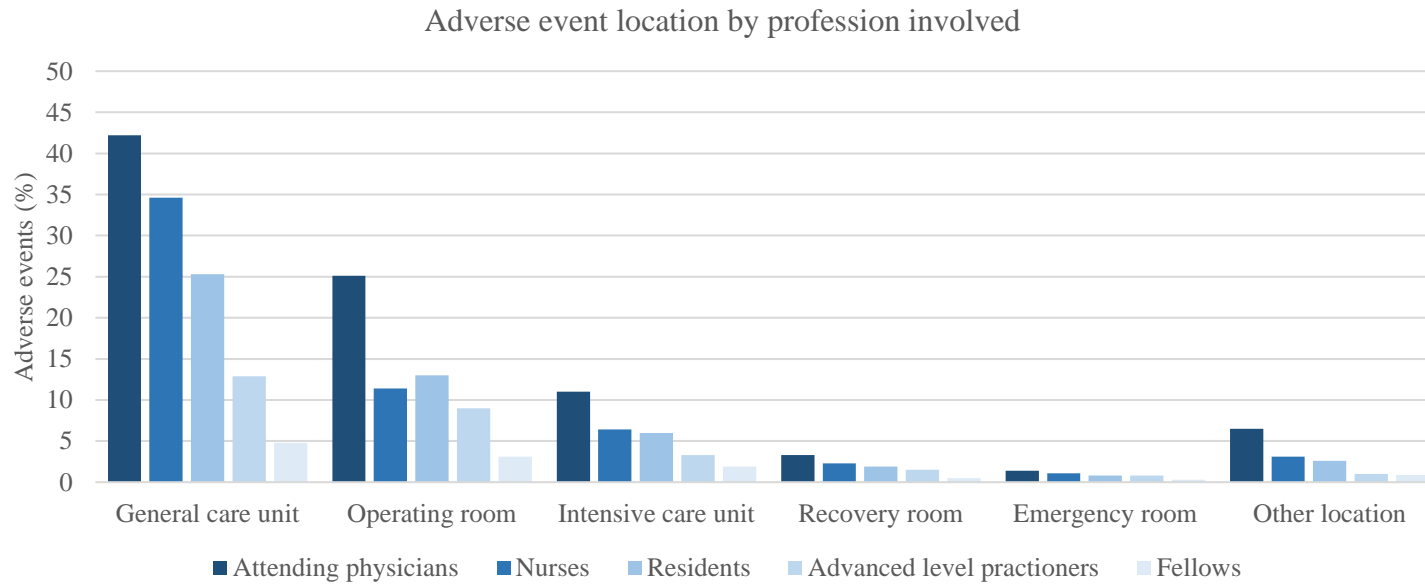
[a] Percentages do not total 100 because each adverse event may have involved different healthcare professions per location in a non-mutually exclusive manner.

Method S1. Review Flowchart

START Patient Chart → **Look for Triggers** / See Recommended Sequence for Review

Recommended Sequences for Review
- Discharge summary
- Multidisciplinary progress notes
- Laboratory reports
- Radiology results
- Physician orders
- Medication administration records
- Nursing flow sheets
- Procedure notes
- Hospital Account Maintenance record

SafeCare Chart Review Flowchart

Finished looking? — Yes → Done / No → Look for Triggers

Trigger Found? — Yes → Categorize Trigger / No →

Categorize Trigger:
- Patient Care
- Medication
- Surgical
- Intensive Care
- Perinatal
- Emergency Dept

→ Look for AE → Found AE? — Yes → New AE? / No →

No, but found AE

New AE? — No → Associate trigger with existing AE / Yes → Create new AE

Create new AE → Categorize AE:
- Blood Transfusion Reaction
- Healthcare-Associated Infection (HAI)
- Medications
- Maternal/Perinatal
- Patient Care
- Surgery/Procedural

→ Subcategories based on category

Other? — Yes → Specify 'Other' / No → Additional questions about AE?

Additional questions about AE? — Yes → Additional information / No → Categorize culminating events

Categorize culminating events → Culminating events → Other? — Yes → Specify 'Other' / No →

Location
Narrative summary
Timing
Specialty involved
Professions involved
Contributing factors
Types of error

Can find AE independent of a trigger
Some triggers are AEs by definition

15

Method S2. Additional Information about Record Review

Nurse reviewers assessed whether an adverse event had occurred and flagged these cases for physician review. Reviewers were instructed to base their assessments on information documented in the electronic health record and not speculate on factors that were not present in the medical record. If the reviewer was unsure whether the event was an adverse event, they were instructed to include it so that physician adjudicators could make the final determination. No time limit was set for reviewing each chart. After selecting the type of adverse event, reviewers entered details about the event.

Physician adjudicators then evaluated these cases to determine if an adverse event had indeed occurred and assessed its preventability. They reviewed the nurse review form, which included a narrative summary of the suspected adverse event, and adjudicated on its severity, confidence, and preventability. When necessary, physician adjudicators discussed cases flagged by nurse reviewers as potential adverse events (where the occurrence was uncertain) directly with the nurse reviewers.

Hiring Reviewer and Adjudicator

The positions for nurse reviewers was posted through our human resources department. Registered nurses applying for the position were interviewed with the goal to have multiple health care systems represented by the reviewers. Those with specific experience with chart review or quality and safety were given precedence. The nine nurses represented six different institutions, including two systems that were not involved in the study. Four nurses had experience at multiple institutions. There was a wide range in the number of years practicing (5 to 30+). Three nurses were concurrently working in direct patient care, three were working at hospitals in non-patient contact positions, and three were retired.

For physicians, a description of the project and position was distributed to the quality and safety departments in all participating hospitals. We had no restrictions on specialties and had a wide range of number of years practicing. The eight physicians represented three hospitals that participated in the study. One physician was retired, but all others were concurrently working in direct patient care.

The number of reviewers and adjudicators were determined more by time and financial constraints than other considerations.

Nurse Reviewer Training

All nurses completed ten hours of training before beginning review of study charts. Training started with a one-hour orientation to introduce the reviewers to the SafeCare study and its aims, followed by a two-hour training session to learn essential definitions, electronic health records chart review sequence, and the categorization scheme for coding adverse events. Subsequently, reviewers completed 13 training cases developed by study investigators. These cases were discussed with the reviewers to identify areas that needed clarification at a training session led by a study investigator. At this session, reviewers were also trained on the data collection tool. Next, reviewers accessed assigned charts in the electronic health records and entered information into the data collection tool (pilot phase 1). These data were reviewed by the study team, and any discrepancies from the protocol were discussed with the reviewers in a two-hour session. A second pilot phase included reviewing 10 training cases from each participating hospital, which were then discussed in a one-hour meeting. Inter-rater reliability was calculated

on these training cases, and one outlying reviewer was individually met with to discuss the differences in their data and was required to re-review the charts. The reviewers were then assigned study charts. Monthly meetings were held to answer any questions and discuss any potential data issues discovered in the ongoing data cleaning efforts.
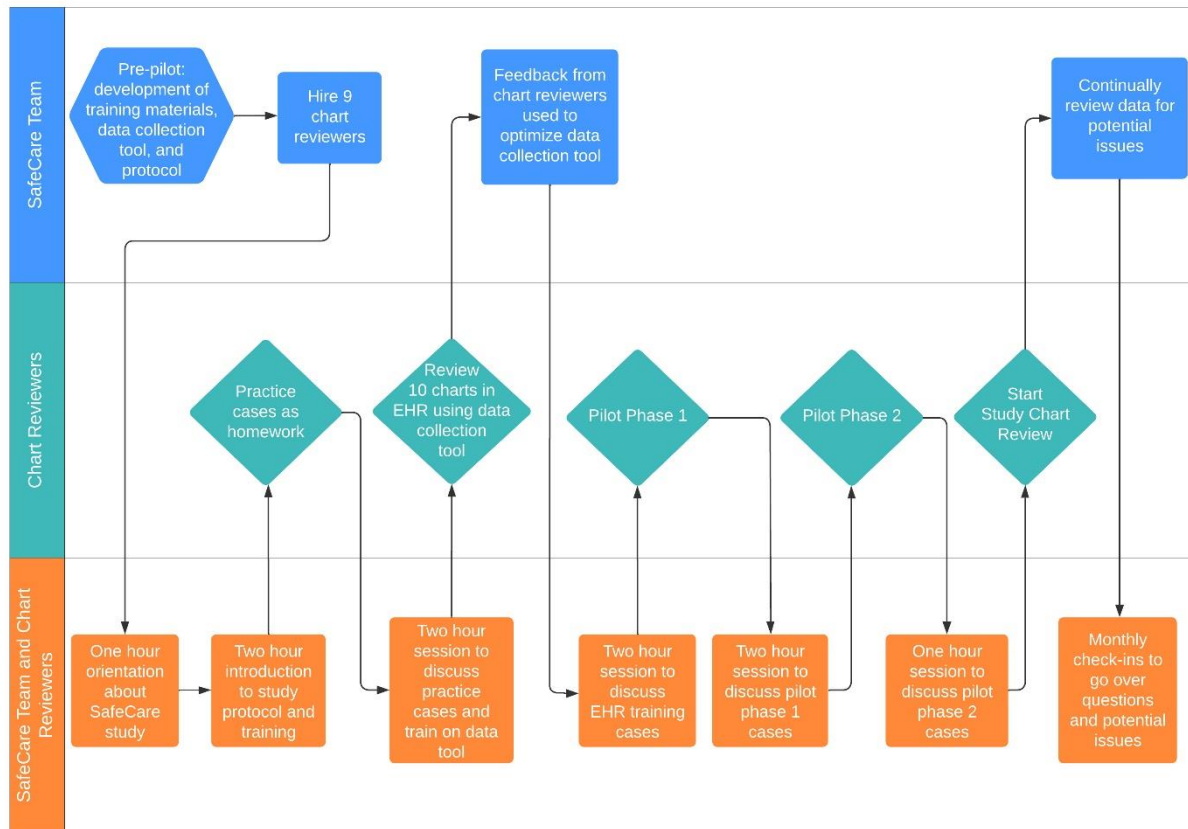
Physician Adjudicator Training

A similar protocol was used in training a total of ten physician adjudicators representing multiple participating hospitals. Each adjudicator was required to attend a two-hour training session to learn essential definitions, understand the nurse reviewers' role, the categorization scheme for coding adverse events, the multiple severity and preventability scales, and the adverse event confidence scale along with the data entry tool. The adjudicators then completed five training cases, and a one-hour discussion of the cases was held. Next, a pilot was performed that included the same 81 adverse events (identified from the reviewers' 110 pilot charts) assigned to each adjudicator. Adjudicators were required to meet with study investigators to review any inconsistencies discovered after comparing inter-rater reliability across adjudicators. One adjudicator was dismissed after multiple training efforts did not improve consistency and reliability of coding. Another left shortly after training due to scheduling conflicts and their cases were re-assigned. The remaining eight adjudicators were randomly assigned adverse events from the inpatient chart review with the number determined by their availability.
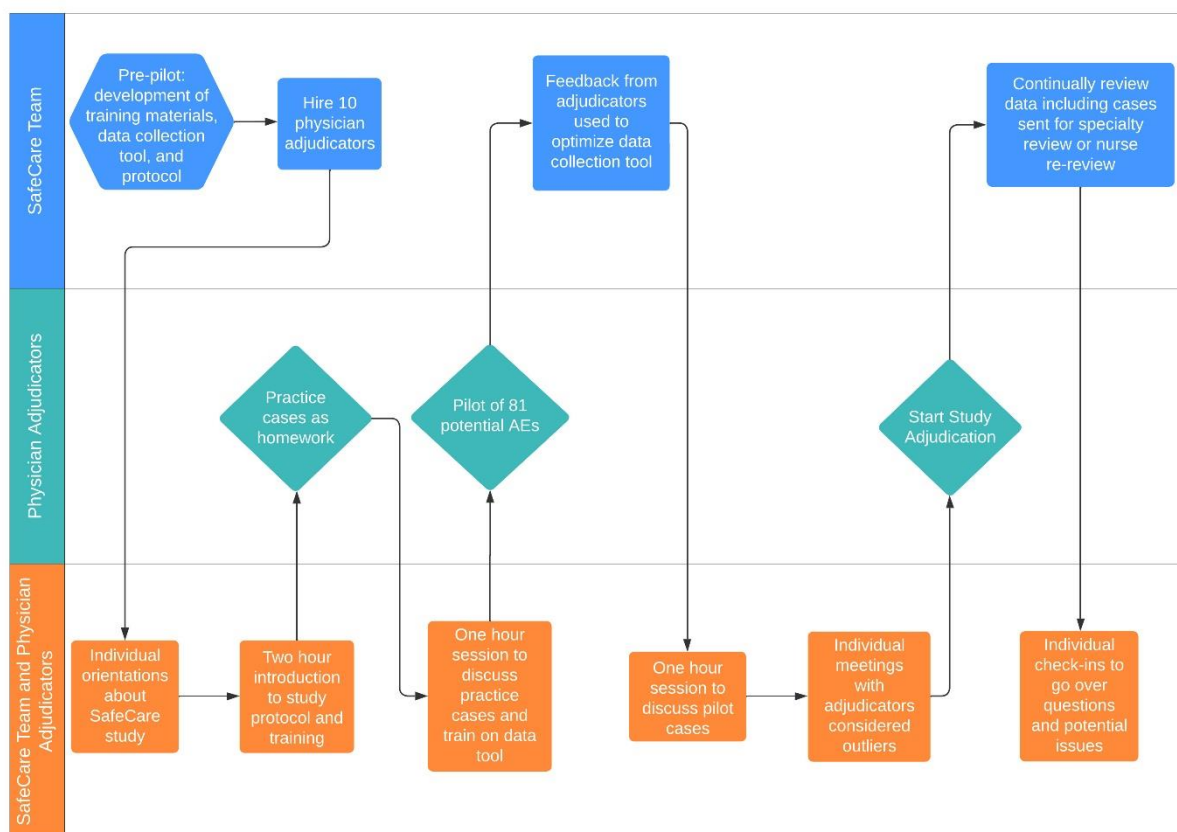
Inter-Raters Agreement

We conducted extensive training and two pilot studies. One physician was excluded from the study due to inconsistency with the other physicians. Our team comprised nine nurses and eight physicians. To assess inter-rater reliability, we performed second reads on 10% of the records, yielding the following kappa values:

- Phase 1 Nurse Pilot: This phase involved a small number of real admissions from two sites, first reviewed by study team members. Kappa = 0.71
- Phase 2 Nurse Pilot: This phase included 10 admissions from all sites. Kappa = 0.63
- Phase 2 Physician Pilot: This phase reviewed 81 adverse events identified by nurses in the pilot. Kappa = 0.77
- Nurses Inpatient Study: Kappa = 0.56
- Physicians Inpatient Study: Kappa = 0.70

While the inter-rater reliability among the nurses in our study was lower than desired, we observed differences based on the nurses' backgrounds in patient safety. We instructed the nurses to err on the side of caution by including any harm they discovered in the patient charts. Nurses without a patient safety background tended to report more potential adverse events. However, these reported incidents were more likely to be later determined as not being actual adverse events.

Of all possible adverse events adjudicated by physicians, 194 were included in the calculations of reliability. The evaluation of agreement between the adjudicators regarding their confidence that the harm was caused by health care management (as assessed with the use of the full, six-

point ordinal confidence scale) resulted in a kappa coefficient of 0.70 (95% CI, 0.59 to 0.81). The assessment of agreement between the adjudicators regarding their confidence that an adverse event had occurred (as indicated by a confidence score of ≥4) resulted in a Gwet's agreement coefficient of 0.54 (95% CI, 0.41 to 0.66) and a percent agreement of 73.7%. The assessment of agreement between the adjudicators in their confidence that the adverse event was preventable resulted in a Gwet's agreement coefficient of 0.64 (95% CI, 0.54 to 0.75) and a percent agreement of 75.3%.

Method S3. SAS Code for Data Preparation and Analysis

```sas
/* ############################################################################
Title: SAFECARE - The Safety of Inpatient Care in Surgical Settings: Cohort Study
File name: SafeCare_20240723.sas
Created on: February 17, 2024
Last modified on: July 25, 2024
############################################################################*/



/*Data and output paths*/

libname data "Serverpath\SafeCare\Data";
%let outpath = Serverpath\SafeCare\Stats\Weighted;




/*A) DATA PREPARATION*/


/*A1) Defining variables format*/

proc format;

value age_group_v2_f
1="18-44"
2="45-64"
3="65-84"
4="85+";

value race_f
1 = "White"
2 = "Black/African American"
3 = "Asian"
4 = "Other"
9 = "Unknown";

value race2_f
1 = "White"
2 = "Black/African American"
3 = "Asian"
4 = "OtherUnknown";

value sex_f
1="Female"
2="Male"
9="Unknown";

value ae_category_f
1="Surgical"
2="Medication"
3="HAI"
4="Patient Care"
5="Maternal/Neonatal"
6="Blood Transfusion";

value ae_locationcat_f
1="BED"
2="OPR"
3="ICU"
4="EMR"
5="RER"
6="OTH";

value ae_prof_resp_attending_f
0 = "No"
1 = "Attending" ;
value ae_prof_resp_nurse_f
0 = "No"
1 = "Nurse" ;
value ae_prof_resp_resident_f
0 = "No"
```

```
    1 = "Resident" ;
value ae_prof_resp_fellow_f
0 = "No"
1 = "Fellow" ;
value ae_prof_resp_advncd_f
0 = "No"
1 = "Advanced" ;

value ae_preventability_f
1="Preventable"
2="Probably preventable"
3="Possibly preventable"
4="Not preventable"
5="Unable to determine";

value prevent_f
0 = "No"
1 = "Prevent" ;

Value insurance_f
1 = "Private"
2 = "Medicare"
3 = "Medicaid"
4 = "Uninsured"
9 = "Unknown";

Value site_id_f
1 = "Atrius"
2 = "BIDMC"
3 = "BID-Milton"
4 = "BID-Plymouth"
5 = "BWFH"
6 = "BWH"
7 = "CDH"
8 = "CHA-Cambridge"
9 = "CHA-Somerville"
10 = "CHA-Everett"
11 = "MGH"
12 = "NSMC-Salemd"
13 = "NSMC-Union"
14 = "NWH"
15 = "Unable to determine"
99 = "Other";

Value surgery2_f
1 = "Thoracardiovasc"
2 = "Diges"
3 = "Ortho"
4 = "Urogyneco"
5 = "Neurother"
0 = "Unknown";

Value surgery2b_f
1 = "Thoracardiovasc"
2 = "Diges"
3 = "Ortho"
4 = "Urogyneco"
5 = "NeurotherUnknwn";

Value ae_found_f
0 = "No"
1 = "AE" ;
Value ae_preventability_yes1_f
0 = "No"
1 = "ProbPrevent" ;
Value ae_preventability_yes2_f
0 = "No"
1 = "PotPrevent" ;
Value ae_severity_signif_f
0 = "No"
1 = "AEsignif" ;
Value ae_severity_serious_f
0 = "No"
1 = "AEserious" ;
Value ae_severity_life_f
0 = "No"
1 = "AElife" ;
```

```
Value ae_severity_fatal_f
0 = "No"
1 = "AEfatal" ;
Value ae_severity_major_f
0 = "No"
1 = "AEmajor" ;
Value ae_majorprevent1_f
0 = "No"
1 = "AEmajorProbPrevent" ;
Value ae_majorprevent2_f
0 = "No"
1 = "AEmajorPotPrevent" ;

Value ae_severity_f
0 = "No"
1 = "AEsignif"
2 = "AEserious"
3 = "AElife"
4 = "AEfatal" ;

Value ae_severity_general_f
0 = "No"
1 = "AEsignif"
2 = "AEserious"
3 = "AElife"
4 = "AEfatal" ;

Value ae_severity_prevent1_f
0 = "No"
1 = "AEsignifProbPrevent"
2 = "AEseriousProbPrevent"
3 = "AElifeProbPrevent"
4 = "AEfatalProbPrevent" ;

Value ae_severity_prevent2_f
0 = "No"
1 = "AEsignifPotPrevent"
2 = "AEseriousPotPrevent"
3 = "AElifePotPrevent"
4 = "AEfatalPotPrevent" ;

Value ae_severity_0_f
0 = "No"
1 = "Yes" ;
Value ae_severity_1_f
0 = "No"
1 = "Signif" ;
Value ae_severity_2_f
0 = "No"
1 = "Serious" ;
Value ae_severity_3_f
0 = "No"
1 = "Life" ;
Value ae_severity_4_f
0 = "No"
1 = "Fatal" ;
Value ae_severity_prevent1_0_f
0 = "No"
1 = "Yes" ;
Value ae_severity_prevent1_1_f
0 = "No"
1 = "AEsignifProbPrevent" ;
Value ae_severity_prevent1_2_f
0 = "No"
1 = "AEseriousProbPrevent" ;
Value ae_severity_prevent1_3_f
0 = "No"
1 = "AElifeProbPrevent" ;
Value ae_severity_prevent1_4_f
0 = "No"
1 = "AEfatalProbPrevent" ;

Value ae_severity_prevent2_0_f
0 = "No"
1 = "Yes" ;
Value ae_severity_prevent2_1_f
0 = "No"
```

```
1 = "AEsignifPotPrevent" ;
Value ae_severity_prevent2_2_f
0 = "No"
1 = "AEseriousPotPrevent" ;
Value ae_severity_prevent2_3_f
0 = "No"
1 = "AElifePotPrevent" ;
Value ae_severity_prevent2_4_f
0 = "No"
1 = "AEfatalPotPrevent" ;

run;



/*A2) Identifying diagnosis related groups and providers related to surgery */

data drg (keep=site_id patient_id encounter_id ProviderID drgsystem drgcd admitdxicd10
DischargeDxICD10) ;
set data.Incl_inpt_enc;
ProviderID=attendproviderid;
run;
proc sort data=drg;
by ProviderID;
run;
data provider (keep=ProviderID sexdsc age_2018 specialtydsc1);
set data.Incl_inpt_prov;
run;
proc sort data=provider;
by ProviderID;
run;
data drgprovider;
merge drg(in=a) provider(in=b) ;
by ProviderID;
if a;
run;

data drgprovider2 (drop=sexdsc);
set drgprovider;
thorac=0;
if drgcd in (007
            163 164 165 166 167 168) then thorac=1;
cardiovasc=0;
if drgcd in (001 002 003 004
            215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 231 232 233 234 235
236 239 240 241 242 243 244 245 246 247
            248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267
268 269 270 271 272 273 274 319 320 ) then cardiovasc=1;
thoracardiovasc=0; if thorac=1 or cardiovasc=1 then thoracardiovasc=1;
diges=0;
if drgcd in (005 006 008 010
            326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345
346 347 348 349 350 351 352 353 354 355 356 357 358
            405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424
425
            619 620 621 799 800 801 ) then diges=1;
ortho=0;
if drgcd in (014 016 017
            453 454 455 456 457 458 459 460 471 472 473 461 462 463 464 465 466 467 468 469
470 474 475 476 477 478 479 480 481 482 483 485 486 487 488 489
            492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511
512 513 514 515 516 517 518 519 520 570 571 572 573 574 575 576 577 578
            901 902 903 904 905 906 907 908 909 955 956 957 958 959) then ortho=1;
uro=0;
if drgcd in (652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671
672 673 674 675
            707 708 709 710 711 712 713 714 715 716 717 718) then uro=1;
gyneco=0;
if drgcd in (582 583 584 585 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749
750
            768 769 770 783 784 785 786 787 788) then gyneco=1;
urogyneco=0; if uro=1 or gyneco=1 then urogyneco=1;
neuro=0;
if drgcd in (020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039
040 041 042) then neuro=1;
other=0;
if drgcd in (011 012 013
```

```
                113 114 115 116 117 129 130 131 132 133 134 135 136 137 138 139
                579 580 581 614 615 616 617 618 622 623 624 625 626 627 628 629 630
                802 803 804 820 821 822 823 824 825 826 827 828 829 830 853 854 855 856 857 858
876
                927 928 929 939 940 941 969 970 981 982 983 987 988 989) then other=1;
neurother=0; if neuro=1 or other=1 then neurother=1;
surgery=0;
if thoracardiovasc=1 OR diges=1 OR ortho=1 OR urogyneco=1 OR neurother=1 then surgery=1;
surgery2=0;
if thoracardiovasc=1 then surgery2=1;
if diges=1 then surgery2=2;
if ortho=1 then surgery2=3;
if urogyneco=1 then surgery2=4;
if neurother=1 then surgery2=5;
surgery2b=5;
if thoracardiovasc=1 then surgery2b=1;
if diges=1 then surgery2b=2;
if ortho=1 then surgery2b=3;
if urogyneco=1 then surgery2b=4;
sexprovider=sexdsc;
run;




/*A3) Identifying and categorizing preventability/severity of adverse events related to
surgery */

data safecarea ;
set data.inpt_reviewed_incl;
where age_at_admit>=18;
if ae_yn=1 then ae_found=1; if ae_yn=0 then ae_found=0;
run;

data safecarea ;
set safecarea ;
ae_colorectal_resp=0; if ae_specialty_resp1=2 or ae_specialty_resp2=2 or ae_specialty_resp3=2
then ae_colorectal_resp=1; if ae_found in (0) then ae_colorectal_resp='';
ae_oral_resp=0; if ae_specialty_resp1=3 or ae_specialty_resp2=3 or ae_specialty_resp3=3 then
ae_oral_resp=1; if ae_found in (0) then ae_oral_resp='';
ae_general_resp=0; if ae_specialty_resp1=7 or ae_specialty_resp2=7 or ae_specialty_resp3=7
then ae_general_resp=1; if ae_found in (0) then ae_general_resp='';
ae_neuro_resp=0; if ae_specialty_resp1=12 or ae_specialty_resp2=12 or ae_specialty_resp3=12
then ae_neuro_resp=1; if ae_found in (0) then ae_neuro_resp='';
ae_obstgyneco_resp=0; if ae_specialty_resp1=15 or ae_specialty_resp2=15 or
ae_specialty_resp3=15 then ae_obstgyneco_resp=1; if ae_found in (0) then
ae_obstgyneco_resp='';
ae_orthopedic_resp=0; if ae_specialty_resp1=17 or ae_specialty_resp2=17 or
ae_specialty_resp3=17 then ae_orthopedic_resp=1; if ae_found in (0) then
ae_orthopedic_resp='';
ae_orl_resp=0; if ae_specialty_resp1=18 or ae_specialty_resp2=18 or ae_specialty_resp3=18 then
ae_orl_resp=1; if ae_found in (0) then ae_orl_resp='';
ae_plastic_resp=0; if ae_specialty_resp1=23 or ae_specialty_resp2=23 or ae_specialty_resp3=23
then ae_plastic_resp=1; if ae_found in (0) then ae_plastic_resp='';
ae_cardiothoracic_resp=0; if ae_specialty_resp1=27 or ae_specialty_resp2=27 or
ae_specialty_resp3=27 then ae_cardiothoracic_resp=1; if ae_found in (0) then
ae_cardiothoracic_resp='';
ae_urology_resp=0; if ae_specialty_resp1=28 or ae_specialty_resp2=28 or ae_specialty_resp3=28
then ae_urology_resp=1; if ae_found in (0) then ae_urology_resp='';
ae_vascular_resp=0; if ae_specialty_resp1=29 or ae_specialty_resp2=29 or ae_specialty_resp3=29
then ae_vascular_resp=1; if ae_found in (0) then ae_vascular_resp='';
ae_surgery_resp=0; if ae_colorectal_resp=1 or ae_oral_resp=1 OR ae_general_resp=1 or
ae_neuro_resp=1 or ae_obstgyneco_resp=1 or ae_orthopedic_resp=1 or ae_orl_resp=1 or
ae_plastic_resp=1 or ae_cardiothoracic_resp=1 or ae_urology_resp=1 or ae_vascular_resp=1 then
ae_surgery_resp=1; if ae_found in (0) then ae_surgery_resp='';

ae_category_surgical=0; if ae_category in (1) then ae_category_surgical=1; if ae_found in (0)
then ae_category_surgical='';
ae_category_medication=0; if ae_category in (2) then ae_category_medication=1; if ae_found in
(0) then ae_category_medication='';
ae_category_hai=0; if ae_category in (3) then ae_category_hai=1; if ae_found in (0) then
ae_category_hai='';
ae_category_care=0; if ae_category in (4) then ae_category_care=1; if ae_found in (0) then
ae_category_care='';
ae_category_perinatal=0; if ae_category in (5) then ae_category_perinatal=1; if ae_found in
(0) then ae_category_perinatal='';
ae_category_blood=0; if ae_category in (6) then ae_category_blood=1; if ae_found in (0) then
ae_category_blood='';
```

```
if ae_found in (0) then ae_category='';

ae_subcategory_reop=0; if ae_subcategory in (11) then ae_subcategory_reop=1; if ae_found in
(0) then ae_subcategory_reop='';
ae_subcategory_surgreop=0; if ae_subcategory in (11) then ae_subcategory_surgreop=1; if
ae_found in (0) then ae_subcategory_surgreop='';

if ae_severity_general in (0 1) and ae_subcategory_surgreop in (1) then ae_severity_general=2;
ae_severity_signif=0; if ae_severity_general in (1) then ae_severity_signif=1; if ae_found in
(0) then ae_severity_signif='';
ae_severity_serious=0; if ae_severity_general in (2) then ae_severity_serious=1; if ae_found
in (0) then ae_severity_serious='';
ae_severity_life=0; if ae_severity_general in (3) then ae_severity_life=1; if ae_found in (0)
then ae_severity_life='';
ae_severity_fatal=0; if ae_severity_general in (4) then ae_severity_fatal=1; if ae_found in
(0) then ae_severity_fatal='';
ae_severity_major=0; if ae_severity_general in (2 3 4) or ae_subcategory_reop=1 then
ae_severity_major=1; if ae_found in (0) then ae_severity_major='';
dindo=0; if ae_severity_signif=1 then dindo=1; if ae_severity_serious=1 then dindo=2; if
ae_subcategory_reop=1 then dindo=3; if ae_severity_life=1 then dindo=4; if ae_severity_fatal=1
then dindo=5; if ae_found in (0) then dindo='';
if ae_found in (0) then ae_severity_general='';

ae_confidence_little=0; if ae_confidence in (1) then ae_confidence_little=1; if ae_found in
(0) then ae_confidence_little='';
ae_confidence_slight=0; if ae_confidence in (2) then ae_confidence_slight=1; if ae_found in
(0) then ae_confidence_slight='';
ae_confidence_less=0; if ae_confidence in (3) then ae_confidence_less=1; if ae_found in (0)
then ae_confidence_less='';
ae_confidence_more=0; if ae_confidence in (4) then ae_confidence_more=1; if ae_found in (0)
then ae_confidence_more='';
ae_confidence_strong=0; if ae_confidence in (5) then ae_confidence_strong=1; if ae_found in
(0) then ae_confidence_strong='';
ae_confidence_certain=0; if ae_confidence in (6) then ae_confidence_certain=1; if ae_found in
(0) then ae_confidence_certain='';
if ae_found in (0) then ae_confidence='';

ae_preventability_yes=0; if ae_preventability in (1) then ae_preventability_yes=1; if ae_found
in (0) then ae_preventability_yes='';
ae_preventability_probably=0; if ae_preventability in (2) then ae_preventability_probably=1;
if ae_found in (0) then ae_preventability_probably='';
ae_preventability_possibly=0; if ae_preventability in (3) then ae_preventability_possibly=1;
if ae_found in (0) then ae_preventability_possibly='';
ae_preventability_no=0; if ae_preventability in (4) then ae_preventability_no=1; if ae_found
in (0) then ae_preventability_no='';
ae_preventability_uncertain=0; if ae_preventability in (5) then ae_preventability_uncertain=1;
if ae_found in (0) then ae_preventability_uncertain='';
ae_preventability_yes1=0; if ae_preventability in (1 2) then ae_preventability_yes1=1; if
ae_found in (0) then ae_preventability_yes1='';
ae_preventability_yes2=0; if ae_preventability in (1 2 3) then ae_preventability_yes2=1; if
ae_found in (0) then ae_preventability_yes2='';
if ae_found in (0) then ae_preventability='';

ae_location_bed=0; if ae_location in (1) then ae_location_bed=1; if ae_found in (0) then
ae_location_bed='';
ae_location_opr=0; if ae_location in (2) then ae_location_opr=1; if ae_found in (0) then
ae_location_opr='';
ae_location_icu=0; if ae_location in (3) then ae_location_icu=1; if ae_found in (0) then
ae_location_icu='';
ae_location_emr=0; if ae_location in (4) then ae_location_emr=1; if ae_found in (0) then
ae_location_emr='';
ae_location_rer=0; if ae_location in (5) then ae_location_rer=1; if ae_found in (0) then
ae_location_rer='';
ae_location_oth=0; if ae_location >5 then ae_location_oth=1; if ae_found in (0) then
ae_location_oth='';
ae_location_hospital=0; if ae_location in (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19)
then ae_location_hospital=1; if ae_found in (0) then ae_location_hospital='';
ae_location_outside=0; if ae_location in (20 21 22 23 24 25 26 27 28 29 30) then
ae_location_outside=1; if ae_found in (0) then ae_location_outside='';;
if ae_found in (0) then ae_location='';
ae_locationcat=ae_location; if ae_location >5 then ae_locationcat=6; if ae_found in (0) then
ae_locationcat='';

if ae_prof_resp_attending in (9) then ae_prof_resp_attending=0; if ae_found in (0) then
ae_prof_resp_attending='';
if ae_prof_resp_nurse in (9) then ae_prof_resp_nurse=0; if ae_found in (0) then
ae_prof_resp_nurse='';
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```
if ae_prof_resp_resident in (9) then ae_prof_resp_resident=0; if ae_found in (0) then
ae_prof_resp_resident='';
if ae_prof_resp_fellow in (9) then ae_prof_resp_fellow=0; if ae_found in (0) then
ae_prof_resp_fellow='';
if ae_prof_resp_advncd in (9) then ae_prof_resp_advncd=0; if ae_found in (0) then
ae_prof_resp_advncd='';

ae_majorprevent1=0; if ae_severity_major=1 and ae_preventability_yes1=1 then
ae_majorprevent1=1; if ae_found in (0) then ae_majorprevent1='';
ae_majorprevent2=0; if ae_severity_major=1 and ae_preventability_yes2=1 then
ae_majorprevent2=1; if ae_found in (0) then ae_majorprevent2='';

ae_severity_signif_prevent1=0; if ae_severity_signif=1 and ae_preventability_yes1=1 then
ae_severity_signif_prevent1=1; if ae_found in (0) then ae_severity_signif_prevent1='';
ae_severity_serious_prevent1=0; if ae_severity_serious=1 and ae_preventability_yes1=1 then
ae_severity_serious_prevent1=1; if ae_found in (0) then ae_severity_serious_prevent1='';
ae_subcategory_reop_prevent1=0; if ae_subcategory_reop=1 and ae_preventability_yes1=1 then
ae_subcategory_reop_prevent1=1; if ae_found in (0) then ae_subcategory_reop_prevent1='';
ae_severity_life_prevent1=0; if ae_severity_life=1 and ae_preventability_yes1=1 then
ae_severity_life_prevent1=1; if ae_found in (0) then ae_severity_life_prevent1='';
ae_severity_fatal_prevent1=0; if ae_severity_fatal=1 and ae_preventability_yes1=1 then
ae_severity_fatal_prevent1=1; if ae_found in (0) then ae_severity_fatal_prevent1='';

ae_severity_signif_prevent2=0; if ae_severity_signif=1 and ae_preventability_yes2=1 then
ae_severity_signif_prevent2=1; if ae_found in (0) then ae_severity_signif_prevent2='';
ae_severity_serious_prevent2=0; if ae_severity_serious=1 and ae_preventability_yes2=1 then
ae_severity_serious_prevent2=1; if ae_found in (0) then ae_severity_serious_prevent2='';
ae_subcategory_reop_prevent2=0; if ae_subcategory_reop=1 and ae_preventability_yes2=1 then
ae_subcategory_reop_prevent2=1; if ae_found in (0) then ae_subcategory_reop_prevent2='';
ae_severity_life_prevent2=0; if ae_severity_life=1 and ae_preventability_yes2=1 then
ae_severity_life_prevent2=1; if ae_found in (0) then ae_severity_life_prevent2='';
ae_severity_fatal_prevent2=0; if ae_severity_fatal=1 and ae_preventability_yes2=1 then
ae_severity_fatal_prevent2=1; if ae_found in (0) then ae_severity_fatal_prevent2='';

run;



/*A4) Merging data sets into unique safecare database and attributing a primary surgical
specialty*/

proc sort data=safecarea (drop=insurance_c);
by encounter_id;
run;
data race (keep=encounter_id insurance_c);
set data.Inpt_reviewed_incl_one_ae;
run;
proc sort data=race;
by encounter_id;
run;
data safecarea2;
merge safecarea(in=a) race(in=b);
by encounter_id;
if a;
run;
proc sort data=drgprovider2;
by encounter_id;
run;
data safecare;
merge safecarea2(in=a) drgprovider2(in=b);
by encounter_id;
if a;
run;

data safecare;
set safecare;
surgerydrg=surgery;
if surgery=0 and (ae_cardiothoracic_resp=1 or ae_vascular_resp=1) then thoracardiovasc=1;
if surgery=0 and (ae_colorectal_resp=1 or ae_general_resp=1) then diges=1;
if surgery=0 and ae_orthopedic_resp=1 then ortho=1;
if surgery=0 and (ae_obstgyneco_resp=1 or ae_urology_resp=1) then urogyneco=1;
if surgery=0 and (ae_oral_resp=1 or ae_neuro_resp=1 or ae_orl_resp=1 or ae_plastic_resp=1)
then neurother=1;
run;

data safecare;
set safecare;
```

```
if neurother=1 then surgery2=5; if neurother=1 then surgery2b=5;
if urogyneco=1 then surgery2=4; if urogyneco=1 then surgery2b=4;
if ortho=1 then surgery2=3; if ortho=1 then surgery2b=3;
if diges=1 then surgery2=2; if diges=1 then surgery2b=2;
if thoracardiovasc=1 then surgery2=1; if thoracardiovasc=1 then surgery2b=1;
if thoracardiovasc=1 OR diges=1 OR ortho=1 OR urogyneco=1 OR neurother=1 then surgery=1;
race2=race_c; if race_c=9 then race2=4;
run;

proc sql;
  create table test as
  select *
  from safecare
  group by encounter_id
  having count(encounter_id) >= 2;
quit;
proc sort data=test nodupkey out=test2 (keep=encounter_id surgery2 );
by encounter_id surgery2;
run;
proc sql;
  create table test3 as
  select *
  from test2
  group by encounter_id
  having count(encounter_id) >= 2;
quit;
data test4 ;
set test3;
where surgery2>0;
run;
data test4;
set test4;
surgery3=surgery2;
run;

proc sort data=safecare out=zozo;
by encounter_id;
run;
proc sort data=test4 (keep=encounter_id surgery3);
by encounter_id ;
run;
data safecareb;
merge zozo(in=a) test4(in=b);
by encounter_id ;
if a;
run;
data safecare;
set safecareb;
if surgery3=5 then surgery2=5; if surgery3=5 then surgery2b=5; if surgery3=5 then neurother=1;
if surgery3=4 then surgery2=4; if surgery3=4 then surgery2b=4; if surgery3=4 then urogyneco=1;
if surgery3=3 then surgery2=3; if surgery3=3 then surgery2b=3; if surgery3=3 then ortho=1;
if surgery3=2 then surgery2=2; if surgery3=2 then surgery2b=2; if surgery3=2 then diges=1;
if surgery3=1 then surgery2=1; if surgery3=1 then surgery2b=1; if surgery3=1 then
thoracardiovasc=1;
if surgery2>0 then surgery=1;

if thoracardiovasc in (1) then diges=0 ; if thoracardiovasc in (1) then ortho=0 ; if
thoracardiovasc in (1) then urogyneco=0 ; if thoracardiovasc in (1) then neurother=0;
if diges in (1) then ortho=0; if diges in (1) then urogyneco=0; if diges in (1) then
neurother=0;
if ortho in (1) then urogyneco=0; if ortho in (1) then neurother=0;
if urogyneco in (1) then neurother=0;

run;

proc contents data=safecare ; run;



/* B) DATA ANALYSIS*/


/*****************************************************************************************
```

```sas
/*Population selection*/

data safecare2;
set safecare;
where ae_category not in (5); /*exclude Perinatal or Maternal AE*/
run;
data aesurgery1;
set safecare2;
where surgery=1 or ae_category in (1) or (ae_category in (2 3 4 6) and ae_surgery_resp=1);
run;
proc sort data=aesurgery1 nodupkey out=aesurgery2;
by encounter_id ;
run;



/*B1a) Table 1 - Population weighted description in a random sample of surgical admissions*/

/*Data analysis*/

%macro freq_output(var, var_f);
proc surveyfreq data=aesurgery2;
   tables  &var. / clwt cl  ;
   cluster  site_id;
   weight  sample_weight;
format &var. &var_f. site_id site_id_f.;
ods output oneway=&var._table;
run;

data &var._table;
set &var._table;
where not missing(&var.);
format table_output var_cat $32.;
var_cat = F_&var.;
wgt_sample_freq = round(percent*1009/100,1);
percent_round = round(wgt_sample_freq/1009*100,.1);

table_output = cat(strip(put(round(wgt_sample_freq,1),comma7.0)),"
(",strip(put(round(percent_round,.1),4.1)),"  [",strip(put(round(LowerCL,.1),4.1)),"-
",strip(put(round(UpperCL,.1),4.1)),"])");
run;

proc print data=&var._table;
run;

%mend;

ods excel file="&outpath.\table1.xlsx"  options(sheet_interval='none');

proc surveymeans data=aesurgery2 plots=all ;
   var  age_at_admit;
   cluster  site_id;
   weight  sample_weight;
ods output statistics=age_mean ;

format site_id site_id_f.;
run;

data age_mean (keep = age_at_admit table_output rename=(age_at_admit=var_cat));
set age_mean;
format age_at_admit $32. table_output $32.;
age_at_admit = "Mean age";
table_output = cat(strip(put(round(mean,.1),4.1)),"
(",strip(put(round(lowerclmean,.1),4.1)),"-",strip(put(round(upperclmean,.1),4.1)),")");
run;

%freq_output(age_group_v2, age_group_v2_f.);
%freq_output(sex, sex_f.);
%freq_output(race_c, race_f.);
%freq_output(race2, race2_f.);
%freq_output(insurance_c, insurance_f.);
%freq_output(surgery2, surgery2_f.);
```

```
%freq_output(surgery2b, surgery2b_f.);

proc surveymeans data=aesurgery2 plots=all ;
    var  los;
    cluster  site_id;
    weight  sample_weight;
ods output statistics=los_mean ;

format site_id site_id_f.;
run;

data los_mean (keep = los table_output rename=(los=var_cat));
set los_mean;
format los $32. table_output $32.;
los = "Mean LOS";
table_output = cat(strip(put(round(mean,.1),4.1)),"
(",strip(put(round(lowerclmean,.1),4.1)),"-",strip(put(round(upperclmean,.1),4.1)),")");
run;

data table_output (keep =var_cat table_output) ;
set age_mean
        age_group_v2_table
        sex_table
        race_c_table
        race2_table
        insurance_c_table
        surgery2_table
    surgery2b_table
        los_mean;
run;

/*Display results*/

ods excel options(sheet_interval = 'none' sheet_name="table");
title "Formatted Output";

proc print data=table_output noobs;
run;

ods excel close;



/*B1b) Table 1 – Population description in corresponding cohort of all surgical admissions in
11 Massachusetts hospitals*/

/*Data preparation*/

data drgprovider2b ;
set data.Inpt_cohort_drgs;
thorac=0;
if drgcd in (007
            163 164 165 166 167 168) then thorac=1;
cardiovasc=0;
if drgcd in (001 002 003 004
            215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 231 232 233 234 235
236 239 240 241 242 243 244 245 246 247
            248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267
268 269 270 271 272 273 274 319 320 ) then cardiovasc=1;
thoracardiovasc=0; if thorac=1 or cardiovasc=1 then thoracardiovasc=1;
diges=0;
if drgcd in (005 006 008 010
            326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345
346 347 348 349 350 351 352 353 354 355 356 357 358
            405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424
425
            619 620 621 799 800 801 ) then diges=1;
ortho=0;
if drgcd in (014 016 017
            453 454 455 456 457 458 459 460 471 472 473 461 462 463 464 465 466 467 468 469
470 474 475 476 477 478 479 480 481 482 483 485 486 487 488 489
            492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511
512 513 514 515 516 517 518 519 520 570 571 572 573 574 575 576 577 578
            901 902 903 904 905 906 907 908 909 955 956 957 958 959) then ortho=1;
uro=0;
if drgcd in (652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671
672 673 674 675
```

```
                 707 708 709 710 711 712 713 714 715 716 717 718) then uro=1;
gyneco=0;
if drgcd in (582 583 584 585 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749
750
                 768 769 770 783 784 785 786 787 788) then gyneco=1;
urogyneco=0; if uro=1 or gyneco=1 then urogyneco=1;
neuro=0;
if drgcd in (020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039
040 041 042) then neuro=1;
other=0;
if drgcd in (011 012 013
                 113 114 115 116 117 129 130 131 132 133 134 135 136 137 138 139
                 579 580 581 614 615 616 617 618 622 623 624 625 626 627 628 629 630
                 802 803 804 820 821 822 823 824 825 826 827 828 829 830 853 854 855 856 857 858
876
                 927 928 929 939 940 941 969 970 981 982 983 987 988 989) then other=1;
neurother=0; if neuro=1 or other=1 then neurother=1;
surgery=0;
if thoracardiovasc=1 OR diges=1 OR ortho=1 OR urogyneco=1 OR neurother=1 then surgery=1;
surgery2=0;
if thoracardiovasc=1 then surgery2=1;
if diges=1 then surgery2=2;
if ortho=1 then surgery2=3;
if urogyneco=1 then surgery2=4;
if neurother=1 then surgery2=5;
race2=race_c; if race_c=9 then race2=4;
run;


/*Data analysis*/

proc freq data=drgprovider2b;
table surgery thoracardiovasc diges ortho urogyneco neurother surgery2;
run;


data drgprovider2bb;
set drgprovider2b;
where surgery=1;
run;


%macro freq_output(var, var_f);
proc surveyfreq data=drgprovider2bb;
   tables  &var. / clwt cl  ;
   cluster  site_id;
format &var. &var_f. site_id site_id_f.;
ods output oneway=&var._table;
run;

data &var._table;
set &var._table;
where not missing(&var.);
format table_output var_cat $32.;
var_cat = F_&var.;
wgt_sample_freq = round(percent*64121/100,1);
percent_round = round(wgt_sample_freq/64121*100,.1);

table_output = cat(strip(put(round(wgt_sample_freq,1),comma7.0)),"
(",strip(put(round(percent_round,.1),4.1)),"  [",strip(put(round(LowerCL,.1),4.1)),"-
",strip(put(round(UpperCL,.1),4.1)),"])");
run;

proc print data=&var._table;
run;

%mend;


/*Display results*/

ods excel file="&outpath.\table1b.xlsx"  options(sheet_interval='none');

proc surveymeans data=drgprovider2bb plots=all ;
   var  age_at_admit;
   cluster  site_id;
   ods output statistics=age_mean ;
 format site_id site_id_f.;
run;

data age_mean (keep = age_at_admit table_output rename=(age_at_admit=var_cat));
```

```
set age_mean;
format age_at_admit $32. table_output $32.;
age_at_admit = "Mean age";
table_output = cat(strip(put(round(mean,.1),4.1)),"
(",strip(put(round(lowerclmean,.1),4.1)),"-",strip(put(round(upperclmean,.1),4.1)),")");
run;


%freq_output(age_group_v2, age_group_v2_f.);
%freq_output(sex, sex_f.);
%freq_output(race_c, race_f.);
%freq_output(race2, race2_f.);
%freq_output(insurance_c, insurance_f.);
%freq_output(surgery2, surgery2_f.);


proc surveymeans data=drgprovider2bb plots=all ;
   var  los;
   cluster  site_id;
   ods output statistics=los_mean ;
  format site_id site_id_f.;
run;


data los_mean (keep = los table_output rename=(los=var_cat));
set los_mean;
format los $32. table_output $32.;
los = "Mean LOS";
table_output = cat(strip(put(round(mean,.1),4.1)),"
(",strip(put(round(lowerclmean,.1),4.1)),"-",strip(put(round(upperclmean,.1),4.1)),")");
run;


data table_output (keep =var_cat table_output) ;
set age_mean
        age_group_v2_table
        sex_table
        race_c_table
        race2_table
        insurance_c_table
        surgery2_table
        los_mean;
run;


ods excel options(sheet_interval = 'none' sheet_name="table");
title "Formatted Output";

proc print data=table_output noobs;
run;


ods excel close;
```

```
/*Population selection*/

data safecare2;
set safecare;
where ae_category not in (5); /*exclude Perinatal or Maternal AE*/
run;
data aesurgery1;
set safecare2;
where surgery=1 or ae_category in (1) or (ae_category in (2 3 4 6) and ae_surgery_resp=1);
run;
proc sort data=aesurgery1 nodupkey out=aesurgery2;
by encounter_id ;
run;


/*Data preparation*/

data aesurgery1b;
set aesurgery1;
where ae_found=1;
run;
proc means sum data=aesurgery1b noprint;
```

```sas
var ae_found;
by encounter_id ; output out=ae_count;
run;
data ae_count2(keep=encounter_id ae_nbfound);
set ae_count;
where _STAT_='N';
ae_nbfound=ae_found;
run;
proc sort data=ae_count2 nodupkey;
by encounter_id;
run;
data ae_count2;
set ae_count2;
ae_found=1;
run;

data ae_surgery_resp;
set aesurgery1;
where ae_surgery_resp=1;
run;
proc sort data=ae_surgery_resp(keep=encounter_id ae_surgery_resp) nodupkey;
by encounter_id;
run;

/*Severity*/
data ae_severity_signif;
set aesurgery1;
where ae_severity_signif=1;
run;
proc sort data=ae_severity_signif(keep=encounter_id ae_severity_signif) nodupkey;
by encounter_id;
run;
data ae_severity_serious;
set aesurgery1;
where ae_severity_serious=1;
run;
proc sort data=ae_severity_serious(keep=encounter_id ae_severity_serious) nodupkey;
by encounter_id;
run;
data ae_severity_life;
set aesurgery1;
where ae_severity_life=1;
run;
proc sort data=ae_severity_life(keep=encounter_id ae_severity_life) nodupkey;
by encounter_id;
run;
data ae_severity_fatal;
set aesurgery1;
where ae_severity_fatal=1;
run;
proc sort data=ae_severity_fatal(keep=encounter_id ae_severity_fatal) nodupkey;
by encounter_id;
run;
data ae_severity_major;
set aesurgery1;
where ae_severity_major=1;
run;
proc sort data=ae_severity_major(keep=encounter_id ae_severity_major) nodupkey;
by encounter_id;
run;
data ae_severity;
merge ae_severity_signif(in=a) ae_severity_serious(in=b) ae_severity_life(in=c)
ae_severity_fatal(in=d) ae_severity_major(in=e) ;
if a or b or c or d or e;
by encounter_id;
run;
proc sort data=ae_severity nodupkey;
by encounter_id;
run;

/*Preventability*/
data ae_preventability_yes;
set aesurgery1;
where ae_preventability_yes=1;
run;
proc sort data=ae_preventability_yes(keep=encounter_id ae_preventability_yes) nodupkey;
by encounter_id;
```

```
run;
data ae_preventability_probably;
set aesurgery1;
where ae_preventability_probably=1;
run;
proc sort data=ae_preventability_probably(keep=encounter_id ae_preventability_probably)
nodupkey;
by encounter_id;
run;
data ae_preventability_possibly;
set aesurgery1;
where ae_preventability_possibly=1;
run;
proc sort data=ae_preventability_possibly(keep=encounter_id ae_preventability_possibly)
nodupkey;
by encounter_id;
run;
data ae_preventability_no;
set aesurgery1;
where ae_preventability_no=1;
run;
proc sort data=ae_preventability_no(keep=encounter_id ae_preventability_no) nodupkey;
by encounter_id;
run;
data ae_preventability_uncertain;
set aesurgery1;
where ae_preventability_uncertain=1;
run;
proc sort data=ae_preventability_uncertain(keep=encounter_id ae_preventability_uncertain)
nodupkey;
by encounter_id;
run;
data ae_preventability_yes1;
set aesurgery1;
where ae_preventability_yes1=1;
run;
proc sort data=ae_preventability_yes1(keep=encounter_id ae_preventability_yes1) nodupkey;
by encounter_id;
run;
data ae_preventability_yes2;
set aesurgery1;
where ae_preventability_yes2=1;
run;
proc sort data=ae_preventability_yes2(keep=encounter_id ae_preventability_yes2) nodupkey;
by encounter_id;
run;
data ae_severity_signif_prevent1;
set aesurgery1;
where ae_severity_signif_prevent1=1;
run;
proc sort data=ae_severity_signif_prevent1(keep=encounter_id ae_severity_signif_prevent1)
nodupkey;
by encounter_id;
run;
data ae_severity_signif_prevent2;
set aesurgery1;
where ae_severity_signif_prevent2=1;
run;
proc sort data=ae_severity_signif_prevent2(keep=encounter_id ae_severity_signif_prevent2)
nodupkey;
by encounter_id;
run;
data ae_severity_serious_prevent1;
set aesurgery1;
where ae_severity_serious_prevent1=1;
run;
proc sort data=ae_severity_serious_prevent1(keep=encounter_id ae_severity_serious_prevent1)
nodupkey;
by encounter_id;
run;
data ae_severity_serious_prevent2;
set aesurgery1;
where ae_severity_serious_prevent2=1;
run;
proc sort data=ae_severity_serious_prevent2(keep=encounter_id ae_severity_serious_prevent2)
nodupkey;
by encounter_id;
```

```sas
run;
data ae_severity_life_prevent1;
set aesurgery1;
where ae_severity_life_prevent1=1;
run;
proc sort data=ae_severity_life_prevent1(keep=encounter_id ae_severity_life_prevent1)
nodupkey;
by encounter_id;
run;
data ae_severity_life_prevent2;
set aesurgery1;
where ae_severity_life_prevent2=1;
run;
proc sort data=ae_severity_life_prevent2(keep=encounter_id ae_severity_life_prevent2)
nodupkey;
by encounter_id;
run;
data ae_severity_fatal_prevent1;
set aesurgery1;
where ae_severity_fatal_prevent1=1;
run;
proc sort data=ae_severity_fatal_prevent1(keep=encounter_id ae_severity_fatal_prevent1)
nodupkey;
by encounter_id;
run;
data ae_severity_fatal_prevent2;
set aesurgery1;
where ae_severity_fatal_prevent2=1;
run;
proc sort data=ae_severity_fatal_prevent2(keep=encounter_id ae_severity_fatal_prevent2)
nodupkey;
by encounter_id;
run;
data ae_majorprevent1;
set aesurgery1;
where ae_majorprevent1=1;
run;
proc sort data=ae_majorprevent1(keep=encounter_id ae_majorprevent1) nodupkey;
by encounter_id;
run;
data ae_majorprevent2;
set aesurgery1;
where ae_majorprevent2=1;
run;
proc sort data=ae_majorprevent2(keep=encounter_id ae_majorprevent2) nodupkey;
by encounter_id;
run;
data ae_preventability;
merge ae_preventability_yes(in=a) ae_preventability_probably(in=b)
ae_preventability_possibly(in=c) ae_preventability_no(in=d) ae_preventability_uncertain(in=e)
ae_preventability_yes1(in=f) ae_preventability_yes2(in=g) ae_severity_signif_prevent1 (in=h)
ae_severity_signif_prevent2 (in=i) ae_severity_serious_prevent1 (in=j)
ae_severity_serious_prevent2 (in=k) ae_severity_life_prevent1 (in=n) ae_severity_life_prevent2
(in=o) ae_severity_fatal_prevent1 (in=p) ae_severity_fatal_prevent2 (in=q)
ae_majorprevent1(in=r) ae_majorprevent2(in=s);
if a or b or c or d or e or f or g or h or i or j or k or n or o or p or q ;
by encounter_id;
run;
proc sort data=ae_preventability nodupkey;
by encounter_id;
run;


/*Final dataset merge and preparation*/
data ae_complete;
merge ae_count2(in=z) ae_surgery_resp(in=a) ae_severity(in=e) ae_preventability(in=g);
if z or a or e or g;
by encounter_id;
run;
proc sort data=ae_complete nodupkey;
by encounter_id;
run;

data aesurgery2b (keep=site_id patient_id encounter_id admit_date discharge_date ae_date
race_c insurance_c age_at_admit los age_group_v2 sex cohort_n sample_n sample_weight drgcd
DischargeDxICD10 ProviderID age_2018 specialtydsc1 surgerydrg surgery thoracardiovasc diges
ortho urogyneco neurother surgery2 sexprovider);
set aesurgery2;
```

```sas
run;
data aesurgery3;
merge aesurgery2b(in=a) ae_complete(in=b);
if a;
by encounter_id;
run;

data aesurgery3;
set aesurgery3;
if ae_found='' then ae_found=0;
if ae_nbfound='' then ae_nbfound=0;
if ae_surgery_resp='' then ae_surgery_resp=0;
if ae_severity_signif='' then ae_severity_signif=0;
if ae_severity_serious='' then ae_severity_serious=0;
if ae_severity_life='' then ae_severity_life=0;
if ae_severity_fatal='' then ae_severity_fatal=0;
if ae_severity_major='' then ae_severity_major=0;
if ae_preventability_yes='' then ae_preventability_yes=0;
if ae_preventability_probably='' then ae_preventability_probably=0;
if ae_preventability_possibly='' then ae_preventability_possibly=0;
if ae_preventability_no='' then ae_preventability_no=0;
if ae_preventability_uncertain='' then ae_preventability_uncertain=0;
if ae_preventability_yes1='' then ae_preventability_yes1=0;
if ae_preventability_yes2='' then ae_preventability_yes2=0;
if ae_severity_signif_prevent1='' then ae_severity_signif_prevent1=0;
if ae_severity_signif_prevent2='' then ae_severity_signif_prevent2=0;
if ae_severity_serious_prevent1='' then ae_severity_serious_prevent1=0;
if ae_severity_serious_prevent2='' then ae_severity_serious_prevent2=0;
if ae_severity_life_prevent1='' then ae_severity_life_prevent1=0;
if ae_severity_life_prevent2='' then ae_severity_life_prevent2=0;
if ae_severity_fatal_prevent1='' then ae_severity_fatal_prevent1=0;
if ae_severity_fatal_prevent2='' then ae_severity_fatal_prevent2=0;
if ae_majorprevent1='' then ae_majorprevent1=0;
if ae_majorprevent2='' then ae_majorprevent2=0;
run;

data aesurgery3;
set aesurgery3;
ae_severity=0;
if ae_severity_signif=1 then ae_severity=1;
if ae_severity_serious=1 then ae_severity=2;
if ae_severity_life=1 then ae_severity=3;
if ae_severity_fatal=1 then ae_severity=4;
ae_severity_0=0; if ae_severity=0 then ae_severity_0=1;
ae_severity_1=0; if ae_severity=1 then ae_severity_1=1;
ae_severity_2=0; if ae_severity=2 then ae_severity_2=1;
ae_severity_3=0; if ae_severity=3 then ae_severity_3=1;
ae_severity_4=0; if ae_severity=4 then ae_severity_4=1;
ae_severity_prevent1=0;
if ae_severity_signif_prevent1=1 then ae_severity_prevent1=1;
if ae_severity_serious_prevent1=1 then ae_severity_prevent1=2;
if ae_severity_life_prevent1=1 then ae_severity_prevent1=3;
if ae_severity_fatal_prevent1=1 then ae_severity_prevent1=4;
ae_severity_prevent2=0;
ae_severity_prevent1_0=0; if ae_severity_prevent1=0 then ae_severity_prevent1_0=1;
ae_severity_prevent1_1=0; if ae_severity_prevent1=1 then ae_severity_prevent1_1=1;
ae_severity_prevent1_2=0; if ae_severity_prevent1=2 then ae_severity_prevent1_2=1;
ae_severity_prevent1_3=0; if ae_severity_prevent1=3 then ae_severity_prevent1_3=1;
ae_severity_prevent1_4=0; if ae_severity_prevent1=4 then ae_severity_prevent1_4=1;
if ae_severity_signif_prevent2=1 then ae_severity_prevent2=1;
if ae_severity_serious_prevent2=1 then ae_severity_prevent2=2;
if ae_severity_life_prevent2=1 then ae_severity_prevent2=3;
if ae_severity_fatal_prevent2=1 then ae_severity_prevent2=4;
ae_severity_prevent2_0=0; if ae_severity_prevent2=0 then ae_severity_prevent2_0=1;
ae_severity_prevent2_1=0; if ae_severity_prevent2=1 then ae_severity_prevent2_1=1;
ae_severity_prevent2_2=0; if ae_severity_prevent2=2 then ae_severity_prevent2_2=1;
ae_severity_prevent2_3=0; if ae_severity_prevent2=3 then ae_severity_prevent2_3=1;
ae_severity_prevent2_4=0; if ae_severity_prevent2=4 then ae_severity_prevent2_4=1;
run;

/*Data analysis and Display results*/

title;
%macro wgt_sample(var,var_f);

        ods excel options(sheet_interval = 'none' sheet_name="&var.");
```

```sas
        proc surveyfreq data=aesurgery3;
           tables  &var. / clwt cl;
           cluster  site_id;
           weight   sample_weight;
        format &var. &var_f. site_id site_id_f.;
        ods output oneway=&var._table;
        run;

        data &var._table (keep = var_cat table_output rename=(table_output=&var.)) ;
        set &var._table;
        where &var. = 1;
        format var_cat table_output  $32.;
        var_cat = "Inpatient sample";
        wgt_sample_freq = round(percent*1009/100,1);
        percent_round = round(wgt_sample_freq/1009*100,.1);
        table_output = cat(strip(round(wgt_sample_freq,1)),"/1009", "
(",strip(put(round(percent_round,.1),4.1)),") [",strip(put(round(LowerCL,.1),4.1)),"-
",strip(put(round(UpperCL,.1),4.1)),"])");
        drop &var.;
        run;
%mend;


%macro by_sev(var, dem_var, dem_var_f, title_name);

        proc surveyfreq data=aesurgery3;
           tables  &dem_var.*(&var. ) / clwt cl row;
           cluster  site_id;
           weight   sample_weight;
        format &dem_var. &dem_var_f site_id site_id_f.;
        ods output crosstabs=&dem_var._ae_table;
        run;

        data &dem_var._ae_table (keep = &dem_var. ae_freq rowpercent RowLowerCL RowUpperCL);
        set &dem_var._ae_table;
        where &var. = 1 and &dem_var. ^= .;
        rename frequency = ae_freq;
        run;

        proc sort data=&dem_var._table; by &dem_var.; run;
        proc sort data=&dem_var._ae_table; by &dem_var.; run;
        data &dem_var._ae_table_f;
        merge &dem_var._ae_table
        &dem_var._table (drop=table_output);
        by &dem_var.;
        wgt_sample_freq = round(wgt_sample_freq,1);
        wgt_freq = round(wgt_sample_freq*rowpercent/100,1);
        rowpercent_round = round(wgt_freq/wgt_sample_freq*100,.1);

        format table_output1 cross_var $24. ;
        cross_var = "&var.";
        table_output1 = cat(strip(round(wgt_freq,1)),"/",strip(round(wgt_sample_freq,1)), "
(",strip(put(round(rowpercent_round,.1),4.1)),")");

        if ae_freq = 0 then do;
        table_output1 = "0";
        end;
        run;

        %if &var. = ae_found %then %do;
        data &dem_var._ae_all_f;
        set &dem_var._ae_table_f;
        run;
        %end;
        %else %do;
        proc append base = &dem_var._ae_all_f data = &dem_var._ae_table_f force; run;
        %end;

        %if &var. = ae_majorprevent2 %then %do;
        proc sort data=&dem_var._ae_all_f; by &dem_var. ; run;
        proc transpose data = &dem_var._ae_all_f (keep = &dem_var. var_cat cross_var
table_output1)
        out=&dem_var._output1 (drop=_name_ &dem_var.);
        id cross_var;
        var table_output1 ;
        by &dem_var. var_cat;
        run;
        %end;
```

```sas
%mend;

ods excel file="&outpath.\table2.xlsx" options(sheet_interval = 'none' embedded_titles='on') ;
title;
footnote;
%wgt_sample(ae_found, ae_found_f.);
%wgt_sample(ae_preventability_yes1, ae_preventability_yes1_f.);
%wgt_sample(ae_preventability_yes2, ae_preventability_yes2_f.);
%wgt_sample(ae_severity_signif, ae_severity_signif_f.);
%wgt_sample(ae_severity_serious, ae_severity_serious_f.);
%wgt_sample(ae_severity_life, ae_severity_life_f.);
%wgt_sample(ae_severity_fatal, ae_severity_fatal_f.);
%wgt_sample(ae_severity_major, ae_severity_major_f.);
%wgt_sample(ae_majorprevent1, ae_majorprevent1_f.);
%wgt_sample(ae_majorprevent2, ae_majorprevent2_f.);

ods excel options(sheet_name="age_group_v2");
%by_sev(ae_found,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_preventability_yes1,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_preventability_yes2,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_severity_signif,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_severity_serious,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_severity_life,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_severity_fatal,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_severity_major,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_majorprevent1,age_group_v2, age_group_v2_f., Age );
%by_sev(ae_majorprevent2,age_group_v2, age_group_v2_f., Age );

ods excel options(sheet_interval='none' sheet_name="sex");
%by_sev(ae_found,sex, sex_f., Sex);
%by_sev(ae_preventability_yes1,sex, sex_f., Sex);
%by_sev(ae_preventability_yes2,sex, sex_f., Sex);
%by_sev(ae_severity_signif,sex, sex_f., Sex);
%by_sev(ae_severity_serious,sex, sex_f., Sex);
%by_sev(ae_severity_life,sex, sex_f., Sex );
%by_sev(ae_severity_fatal,sex, sex_f., Sex );
%by_sev(ae_severity_major,sex, sex_f., Sex );
%by_sev(ae_majorprevent1,sex, sex_f., Sex );
%by_sev(ae_majorprevent2,sex, sex_f., Sex );

ods excel options(sheet_interval='none' sheet_name="race");
%by_sev(ae_found,race_c, race_f., Race );
%by_sev(ae_preventability_yes1,race_c, race_f., Race );
%by_sev(ae_preventability_yes2,race_c, race_f., Race );
%by_sev(ae_severity_signif,race_c, race_f., Race );
%by_sev(ae_severity_serious,race_c, race_f., Race );
%by_sev(ae_severity_life,race_c, race_f., Race );
%by_sev(ae_severity_fatal,race_c, race_f., Race );
%by_sev(ae_severity_major,race_c, race_f., Race );
%by_sev(ae_majorprevent1,race_c, race_f., Race );
%by_sev(ae_majorprevent2,race_c, race_f., Race );

ods excel options(sheet_interval='none' sheet_name="insurance");
%by_sev(ae_found,insurance_c, insurance_f., Insurance );
%by_sev(ae_preventability_yes1,insurance_c, insurance_f., Insurance );
%by_sev(ae_preventability_yes2,insurance_c, insurance_f., Insurance );
%by_sev(ae_severity_signif,insurance_c, insurance_f., Insurance );
%by_sev(ae_severity_serious,insurance_c, insurance_f., Insurance );
%by_sev(ae_severity_life,insurance_c, insurance_f., Insurance );
%by_sev(ae_severity_fatal,insurance_c, insurance_f., Insurance );
%by_sev(ae_severity_major,insurance_c, insurance_f., Insurance );
%by_sev(ae_majorprevent1,insurance_c, insurance_f., Insurance );
%by_sev(ae_majorprevent2,insurance_c, insurance_f., Insurance );

ods excel options(sheet_interval='none' sheet_name="surgery2");
%by_sev(ae_found,surgery2, surgery2_f., Surgery );
%by_sev(ae_preventability_yes1,surgery2, surgery2_f., Surgery );
%by_sev(ae_preventability_yes2,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_signif,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_serious,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_life,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_fatal,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_major,surgery2, surgery2_f., Surgery );
%by_sev(ae_majorprevent1,surgery2, surgery2_f., Surgery );
%by_sev(ae_majorprevent2,surgery2, surgery2_f., Surgery );
```

```sas
data table_output ;
retain var_cat;
merge
ae found table
ae_preventability_yes1_table
ae_preventability_yes2_table
ae_severity_signif_table
ae_severity_serious_table
ae_severity_life_table
ae severity fatal table
ae_severity_major_table
ae_majorprevent1_table
ae_majorprevent2_table;
by var_cat ;
run;

data table_output1 ;
retain var_cat;
set
age_group_v2_output1
sex_output1
race_c_output1
insurance_c_output1
surgery2_output1 ;
run;


ods excel options(sheet_interval = 'none' sheet_name="table");

proc print data=table_output noobs;
title "Formatted Overall Output";
run;

proc print data=table_output1 noobs;
title "Formatted Output1";
run;

ods excel close;
title;



/***********************************************************************************************
Figure 2 - Adverse Events Severity Weighted Rates per Admission According to the Surgical
Specialty Associated with the Admission
***********************************************************************************************/

/*Data analysis and Display results*/

title;
%macro wgt_sample(var,var_f);

        ods excel options(sheet_interval = 'none' sheet_name="&var.");

        proc surveyfreq data=aesurgery3;
           tables  &var. / clwt cl;
           cluster  site_id;
           weight   sample_weight;
        format &var. &var_f. site_id site_id_f.;
        ods output oneway=&var._table;
        run;

        data &var._table (keep = var_cat table_output rename=(table_output=&var.)) ;
        set &var._table;
        where &var. = 1;
        format var cat table output  $32.;
        var_cat = "Inpatient sample";
        wgt_sample_freq = round(percent*1009/100,1);
        percent_round = round(wgt_sample_freq/1009*100,.1);
        table_output = cat(strip(round(wgt_sample_freq,1)),"/1009", "
(",strip(put(round(percent_round,.1),4.1)),"  [",strip(put(round(LowerCL,.1),4.1)),"-
",strip(put(round(UpperCL,.1),4.1)),"])");
        drop &var.;
        run;
%mend;
```

```sas
%macro by_sev(var, dem_var, dem_var_f, title_name);

        proc surveyfreq data=aesurgery3;
            tables  &dem_var.*(&var. ) / clwt cl row;
            cluster  site_id;
            weight  sample_weight;
        format &dem_var. &dem_var_f site_id site_id_f.;
        ods output crosstabs=&dem_var._ae_table;
        run;

        data &dem_var._ae_table (keep = &dem_var. ae_freq rowpercent RowLowerCL RowUpperCL);
        set &dem_var._ae_table;
        where &var. = 1 and &dem_var. ^= .;
        rename frequency = ae_freq;
        run;

        proc sort data=&dem_var._table; by &dem_var.; run;
        proc sort data=&dem_var._ae_table; by &dem_var.; run;
        data &dem_var._ae_table_f;
        merge &dem_var._ae_table
        &dem_var._table (drop=table_output);
        by &dem_var.;
        wgt_sample_freq = round(wgt_sample_freq,1);
        wgt_freq = round(wgt_sample_freq*rowpercent/100,1);
        rowpercent_round = round(wgt_freq/wgt_sample_freq*100,.1);

        format table_output1 cross_var $24. ;
        cross_var = "&var.";
        table_output1 = cat(strip(round(wgt_freq,1)),"/",strip(round(wgt_sample_freq,1)), "
(",strip(put(round(rowpercent_round,.1),4.1)),")");

        if ae_freq = 0 then do;
        table_output1 = "0";
        end;
        run;

        %if &var. = ae_found %then %do;
        data &dem_var._ae_all_f;
        set &dem_var._ae_table_f;
        run;
        %end;
        %else %do;
        proc append base = &dem_var._ae_all_f data = &dem_var._ae_table_f force; run;
        %end;

        %if &var. = ae_severity_prevent2_4 %then %do;
        proc sort data=&dem_var._ae_all_f; by &dem_var. ; run;
        proc transpose data = &dem_var._ae_all_f (keep = &dem_var. var_cat cross_var
table_output1)
        out=&dem_var._output1 (drop=_name_ &dem_var.);
        id cross_var;
        var table_output1 ;
        by &dem_var. var_cat;
        run;
        %end;
%mend;

ods excel file="&outpath.\figure2.xlsx" options(sheet_interval = 'none' embedded_titles='on')
;
title;
footnote;
%wgt_sample(ae_found, ae_found_f.);
%wgt_sample(ae_severity_0, ae_severity_0_f.);
%wgt_sample(ae_severity_1, ae_severity_1_f.);
%wgt_sample(ae_severity_2, ae_severity_2_f.);
%wgt_sample(ae_severity_3, ae_severity_3_f.);
%wgt_sample(ae_severity_4, ae_severity_4_f.);
%wgt_sample(ae_severity_prevent1_0, ae_severity_prevent1_0_f.);
%wgt_sample(ae_severity_prevent1_1, ae_severity_prevent1_1_f.);
%wgt_sample(ae_severity_prevent1_2, ae_severity_prevent1_2_f.);
%wgt_sample(ae_severity_prevent1_3, ae_severity_prevent1_3_f.);
%wgt_sample(ae_severity_prevent1_4, ae_severity_prevent1_4_f.);
%wgt_sample(ae_severity_prevent2_0, ae_severity_prevent2_0_f.);
%wgt_sample(ae_severity_prevent2_1, ae_severity_prevent2_1_f.);
%wgt_sample(ae_severity_prevent2_2, ae_severity_prevent2_2_f.);
%wgt_sample(ae_severity_prevent2_3, ae_severity_prevent2_3_f.);
%wgt_sample(ae_severity_prevent2_4, ae_severity_prevent2_4_f.);
```

```
ods excel options(sheet_interval='none' sheet_name="surgery2");
%by_sev(ae_found,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_0,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_1,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_2,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_3,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_4,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent1_0,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent1_1,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent1_2,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent1_3,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent1_4,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent2_0,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent2_1,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent2_2,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent2_3,surgery2, surgery2_f., Surgery );
%by_sev(ae_severity_prevent2_4,surgery2, surgery2_f., Surgery );


data table_output ;
retain var_cat;
merge
ae_found_table
ae_severity_0_table
ae_severity_1_table
ae_severity_2_table
ae_severity_3_table
ae_severity_4_table
ae_severity_prevent1_0_table
ae_severity_prevent1_1_table
ae_severity_prevent1_2_table
ae_severity_prevent1_3_table
ae_severity_prevent1_4_table
ae_severity_prevent2_0_table
ae_severity_prevent2_1_table
ae_severity_prevent2_2_table
ae_severity_prevent2_3_table
ae_severity_prevent2_4_table;
by var_cat ;
run;

data table_output1 ;
retain var_cat;
set
surgery2_output1 ;
run;


ods excel options(sheet_interval = 'none' sheet_name="table");

proc print data=table_output noobs;
title "Formatted Overall Output";
run;

proc print data=table_output1 noobs;
title "Formatted Output1";
run;

ods excel close;
title;



/******************************************************************************************
B3) Table 3. Weighted Severity and Preventability of Adverse Events, Overall and According to
the Type of Event, the Location of Occurrence and the Professions involved
******************************************************************************************/

/*Population selection*/

data safecare2;
set safecare;
where ae_category in (1) or (ae_category in (2 3 4 6) and (ae_surgery_resp=1 or surgery=1)) or
(ae_found in(0) and surgery in (1)) ; /*exclude when surgical specialities not directly
involved with the AE */
run;
```

```
/*Data analysis*/

/*B3a) Weighted sample size determination*/

proc surveyfreq data=safecare2 ;
table ae_found / row clwt cl;
cluster  site_id;
weight   sample_weight;
format site id site id f.;
ods output oneway = total;
run;



/*B3b) No. and % of overall events & events/100 admission*/

proc surveyfreq data=safecare2;
table ae_found*ae_category / row clwt cl;
cluster  site_id;
weight   sample_weight;
format ae_category ae_category_f. site_id site_id_f.;
ods output crosstabs = category;
run;
data category2;
set category ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data category3 (keep = f_ae_category events_no pct_tot_events events_per_100);
retain f_ae_category ;
set category2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
     put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
     events_no = put(round(total_wgt_sample_freq,1),5.1);
     pct_tot_events = put(round(rowpercent,.1),5.1);
     events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
     put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data category3;
set category3 (rename=(f_ae_category=variable));
run;

proc surveyfreq data=safecare2;
table ae found*ae_locationcat / row clwt cl;
cluster  site_id;
weight   sample_weight;
format ae_locationcat ae_locationcat_f. site_id site_id_f.;
ods output crosstabs = location ;
run;
data location2;
set location ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
```

```
run;
data location3 (keep = f_ae_locationcat events_no pct_tot_events events_per_100);
retain f_ae_locationcat ;
set location2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
        put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
        put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data location3;
set location3 (rename=(f_ae_locationcat=variable));
where variable not in ('Total');
run;

proc surveyfreq data=safecare2;
table ae_found*ae_prof_resp_attending / row clwt cl;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_attending ae_prof_resp_attending_f. site_id site_id_f.;
ods output crosstabs = professionattending ;
run;
data professionattending2;
set professionattending ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data professionattending3 (keep = f_ae_prof_resp_attending events_no pct_tot_events
events_per_100);
retain f_ae_prof_resp_attending ;
set professionattending2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
        put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
        put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data professionattending3;
set professionattending3 (rename=(f_ae_prof_resp_attending=variable));
where variable not in ('Total');
run;

proc surveyfreq data=safecare2;
table ae_found*ae_prof_resp_nurse / row clwt cl;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_nurse ae_prof_resp_nurse_f. site_id site_id_f.;
ods output crosstabs = professionnurse ;
run;
data professionnurse2;
set professionnurse ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
```

```
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data professionnurse3 (keep = f_ae_prof_resp_nurse events_no pct_tot_events events_per_100);
retain f_ae_prof_resp_nurse ;
set professionnurse2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
      put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
      events_no = put(round(total_wgt_sample_freq,1),5.1);
      pct_tot_events = put(round(rowpercent,.1),5.1);
      events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
      put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data professionnurse3;
set professionnurse3 (rename=(f_ae_prof_resp_nurse=variable));
where variable not in ('Total');
run;

proc surveyfreq data=safecare2;
table ae_found*ae_prof_resp_resident / row clwt cl;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_resident ae_prof_resp_resident_f. site_id site_id_f.;
ods output crosstabs = professionresident ;
run;
data professionresident2;
set professionresident ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data professionresident3 (keep = f_ae_prof_resp_resident events_no pct_tot_events
events_per_100);
retain f_ae_prof_resp_resident ;
set professionresident2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
      put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
      events_no = put(round(total_wgt_sample_freq,1),5.1);
      pct_tot_events = put(round(rowpercent,.1),5.1);
      events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
      put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data professionresident3;
set professionresident3 (rename=(f_ae_prof_resp_resident=variable));
where variable not in ('Total');
run;

proc surveyfreq data=safecare2;
table ae_found*ae_prof_resp_fellow / row clwt cl;
cluster  site_id;
```

```sas
weight  sample_weight;
format ae_prof_resp_fellow ae_prof_resp_fellow_f. site_id site_id_f.;
ods output crosstabs = professionfellow ;
run;
data professionfellow2;
set professionfellow ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data professionfellow3 (keep = f_ae_prof_resp_fellow events_no pct_tot_events events_per_100);
retain f_ae_prof_resp_fellow ;
set professionfellow2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
        put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
        put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data professionfellow3;
set professionfellow3 (rename=(f_ae_prof_resp_fellow=variable));
where variable not in ('Total');
run;

proc surveyfreq data=safecare2;
table ae_found*ae_prof_resp_advncd / row clwt cl;
cluster  site_id;
weight  sample_weight;
format ae_prof_resp_advncd ae_prof_resp_advncd_f. site_id site_id_f.;
ods output crosstabs = professionadvncd ;
run;
data professionadvncd2;
set professionadvncd ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data professionadvncd3 (keep = f_ae_prof_resp_advncd events_no pct_tot_events events_per_100);
retain f_ae_prof_resp_advncd ;
set professionadvncd2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(event_per_100,.1),4.1), " (", put(round(lower_per_100,.1),4.1),
"-",
        put(round(upper_per_100,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(total_wgt_sample_freq/1009*100,.1),4.1), " (",
put(round(lower_per_100,.1),4.1), "-",
        put(round(upper_per_100,.1),4.1), ")");;
end;
run;
data professionadvncd3;
```

```sas
set professionadvncd3 (rename=(f_ae_prof_resp_advncd=variable));
where variable not in ('Total');
run;


data Table3columns1to4 (keep=variable events_no pct_tot_events events_per_100);
set category3 location3 professionattending3 professionnurse3 professionresident3
professionfellow3 professionadvncd3;
run;


data Table3columns1to4 ;
set Table3columns1to4 ;
where variable not in ('No');
format variable $8.;
attrib variable length=$8;
run;




/*B3c) Significant, serious, life, fatal, major, potentialy preventable, preventable AE,
potentialy preventable major, preventable major AE*/

proc surveyfreq data=safecare2;
table ae_found*ae_severity_general / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_found F_ae_severity_general events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
      put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
      events_no = put(round(total_wgt_sample_freq,1),5.1);
      pct_tot_events = put(round(rowpercent,.1),5.1);
      events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
      put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_found;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_found;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_found*ae_severity_major / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
```

```
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_found F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_found;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_found;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_found*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_found F_ae_preventability_yes1 events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_found;
```

```
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_found;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_found*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_found F_ae_preventability_yes2 events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
       events_no = put(round(total_wgt_sample_freq,1),5.1);
       pct_tot_events = put(round(rowpercent,.1),5.1);
       events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_found;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_found;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_found*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_found F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_majorprevent1 ;
```

```
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_found;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_found;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_found*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
where ae_found = 1;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_found F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_found F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_found;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_found;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;

data Table3line1 (drop=no rename=(F_ae_found=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
run;
```

```sas
/*B3d) Significant , serious, life, fatal, major, potentialy preventable, preventable AE,
potentialy preventable major, preventable major AE
by category*/

proc surveyfreq data=safecare2;
table ae_category*ae_severity_general / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_category F_ae_severity_general events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_category;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_category;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_category*ae_severity_major / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_category F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
```

```
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_category;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_category;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_category*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_category F_ae_preventability_yes1 events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_category;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_category;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_category*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_category
ae_category_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
```

```
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_category F_ae_preventability_yes2 events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_category;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_category;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_category*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_category F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_category;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_category;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;
```

```sas
proc surveyfreq data=safecare2;
table ae_category*ae_majorprevent2 / row cl clwt;
cluster  site id;
weight   sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_category ae_category_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_category F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_category F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_category;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_category;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;

data Table3line2 (drop=no rename=(F_ae_category=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
run;


/*B3e) Significant , serious, life, fatal, major, potentialy preventable, preventable AE,
potentialy preventable major, preventable major AE
by location*/

proc surveyfreq data=safecare2;
table ae_locationcat*ae_severity_general / row cl clwt;
cluster  site id;
weight   sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
```

```
data severitygeneral3 (keep = F_ae_locationcat F_ae_severity_general events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
       events_no = put(round(total_wgt_sample_freq,1),5.1);
       pct_tot_events = put(round(rowpercent,.1),5.1);
       events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_locationcat;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_locationcat;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_severity_major / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_locationcat F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
       events_no = put(round(total_wgt_sample_freq,1),5.1);
       pct_tot_events = put(round(rowpercent,.1),5.1);
       events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_locationcat;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_locationcat;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
```

```sas
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_locationcat F_ae_preventability_yes1 events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_locationcat;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_locationcat;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_locationcat F_ae_preventability_yes2 events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
```

```
end;
run;
proc sort data=preventyes23;
by F_ae_locationcat;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_locationcat;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_locationcat F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_locationcat;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_locationcat;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
```

```sas
data majorprevent23 (keep = F_ae_locationcat F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_locationcat;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_locationcat;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;



data Table3line3 (drop=no rename=(F_ae_locationcat=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
run;



/*B3f) Significant , serious, life, fatal, major, potentialy preventable, preventable AE,
potentialy preventable major, preventable major AE
by profession*/

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_severity_general / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_prof_resp_attending
ae_prof_resp_attending_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_prof_resp_attending F_ae_severity_general events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_prof_resp_attending;
```

```
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_prof_resp_attending;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_severity_major / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_prof_resp_attending
ae_prof_resp_attending_f.   ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_prof_resp_attending F_ae_severity_major events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_prof_resp_attending;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_prof_resp_attending;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f.
ae_prof_resp_attending ae_prof_resp_attending_f.   ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_prof_resp_attending F_ae_preventability_yes1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_preventability_yes1 ;
set preventyes12;
```

```sas
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_prof_resp_attending;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_prof_resp_attending;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f.
ae_prof_resp_attending ae_prof_resp_attending_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_prof_resp_attending F_ae_preventability_yes2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_prof_resp_attending;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_prof_resp_attending;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_prof_resp_attending
ae_prof_resp_attending_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
```

```sas
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_prof_resp_attending F_ae_majorprevent1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_prof_resp_attending;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_prof_resp_attending;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_attending*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_prof_resp_attending
ae_prof_resp_attending_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_prof_resp_attending F_ae_majorprevent2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_attending F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_prof_resp_attending;
run;
```

```sas
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_prof_resp_attending;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;


data Table3line4a (drop=no rename=(F_ae_prof_resp_attending=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
where F_ae_prof_resp_attending='Attending';
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_severity_general / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_prof_resp_nurse F_ae_severity_general events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_nurse F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_prof_resp_nurse;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_prof_resp_nurse;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_severity_major / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
```

```
run;
data severitymajor3 (keep = F_ae_prof_resp_nurse F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F ae prof resp_nurse F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_prof_resp_nurse;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_prof_resp_nurse;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_prof_resp_nurse F_ae_preventability_yes1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_nurse F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_prof_resp_nurse;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_prof_resp_nurse;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
```

```sas
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_prof_resp_nurse F_ae_preventability_yes2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_nurse F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_prof_resp_nurse;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_prof_resp_nurse;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_prof_resp_nurse F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_nurse F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
```

```
end;
run;
proc sort data=majorprevent13;
by F_ae_prof_resp_nurse;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_prof_resp_nurse;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_nurse*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_prof_resp_nurse
ae_prof_resp_nurse_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_prof_resp_nurse F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_nurse F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_prof_resp_nurse;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_prof_resp_nurse;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;

data Table3line4b (drop=no rename=(F_ae_prof_resp_nurse=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
where F_ae_prof_resp_nurse='Nurse';
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_severity_general / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_prof_resp_resident
ae_prof_resp_resident_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
```

```
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_prof_resp_resident F_ae_severity_general events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_prof_resp_resident;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_prof_resp_resident;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_severity_major / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_prof_resp_resident
ae_prof_resp_resident_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_prof_resp_resident F_ae_severity_major events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_prof_resp_resident;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_prof_resp_resident;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;
```

```
proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f.
ae_prof_resp_resident ae_prof_resp_resident_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_prof_resp_resident F_ae_preventability_yes1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
       events_no = put(round(total_wgt_sample_freq,1),5.1);
       pct_tot_events = put(round(rowpercent,.1),5.1);
       events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_prof_resp_resident;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_prof_resp_resident;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f.
ae_prof_resp_resident ae_prof_resp_resident_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_prof_resp_resident F_ae_preventability_yes2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
```

```
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_prof_resp_resident;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_prof_resp_resident;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_prof_resp_resident
ae_prof_resp_resident_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_prof_resp_resident F_ae_majorprevent1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_prof_resp_resident;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_prof_resp_resident;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_resident*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight   sample weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_prof_resp_resident
ae_prof_resp_resident_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
```

```
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_prof_resp_resident F_ae_majorprevent2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_resident F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_prof_resp_resident;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_prof_resp_resident;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;


data Table3line4c (drop=no rename=(F_ae_prof_resp_resident=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
where F_ae_prof_resp_resident='Resident';
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_severity_general / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_prof_resp_fellow F_ae_severity_general events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_fellow F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_prof_resp_fellow;
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```
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_prof_resp_fellow;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_severity_major / row cl clwt;
cluster  site id;
weight  sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitymajor3 (keep = F_ae_prof_resp_fellow F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_fellow F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_prof_resp_fellow;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_prof_resp_fellow;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_prof_resp_fellow F_ae_preventability_yes1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_fellow F_ae_preventability_yes1 ;
set preventyes12;
```

```
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_prof_resp_fellow;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_prof_resp_fellow;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_prof_resp_fellow F_ae_preventability_yes2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_fellow F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_prof_resp_fellow;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_prof_resp_fellow;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
```

```
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_prof_resp_fellow F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_fellow F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_prof_resp_fellow;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_prof_resp_fellow;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_fellow*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_prof_resp_fellow
ae_prof_resp_fellow_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_prof_resp_fellow F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_fellow F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_prof_resp_fellow;
run;
```

```
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_prof_resp_fellow;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;


data Table3line4d (drop=no rename=(F_ae_prof_resp_fellow=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
where F_ae_prof_resp_fellow='Fellow';
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_severity_general / row cl clwt;
cluster  site id;
weight  sample_weight;
format ae_severity_general ae_severity_general_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f.  ;
ods output crosstabs = severitygeneral;
run;
data severitygeneral2 ;
set severitygeneral ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data severitygeneral3 (keep = F_ae_prof_resp_advncd F_ae_severity_general events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_advncd F_ae_severity_general ;
set severitygeneral2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
       events_no = put(round(total_wgt_sample_freq,1),5.1);
       pct_tot_events = put(round(rowpercent,.1),5.1);
       events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
       put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitygeneral3;
by F_ae_prof_resp_advncd;
run;
proc transpose data=severitygeneral3 out=severitygeneral3b;
by F_ae_prof_resp_advncd;
id F_ae_severity_general;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_severity_major / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_severity_major ae_severity_major_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f.  ;
ods output crosstabs = severitymajor;
run;
data severitymajor2 ;
set severitymajor ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
```

```
upper_per_100 = round(wgt_upper/1009*100,.1);
data severitymajor3 (keep = F_ae_prof_resp_advncd F_ae_severity_major events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_advncd F_ae_severity_major ;
set severitymajor2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=severitymajor3;
by F_ae_prof_resp_advncd;
run;
proc transpose data=severitymajor3 out=severitymajor3b;
by F_ae_prof_resp_advncd;
id F_ae_severity_major;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_preventability_yes1 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_preventability_yes1 ae_preventability_yes1_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f.  ;
ods output crosstabs = preventyes1;
run;
data preventyes12 ;
set preventyes1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes13 (keep = F_ae_prof_resp_advncd F_ae_preventability_yes1 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_advncd F_ae_preventability_yes1 ;
set preventyes12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes13;
by F_ae_prof_resp_advncd;
run;
proc transpose data=preventyes13 out=preventyes13b;
by F_ae_prof_resp_advncd;
id F_ae_preventability_yes1;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_preventability_yes2 / row cl clwt;
cluster  site_id;
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```
weight  sample_weight;
format ae_preventability_yes2 ae_preventability_yes2_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f. ;
ods output crosstabs = preventyes2;
run;
data preventyes22 ;
set preventyes2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data preventyes23 (keep = F_ae_prof_resp_advncd F_ae_preventability_yes2 events_no
pct_tot_events events_per_100);
retain F_ae_prof_resp_advncd F_ae_preventability_yes2 ;
set preventyes22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=preventyes23;
by F_ae_prof_resp_advncd;
run;
proc transpose data=preventyes23 out=preventyes23b;
by F_ae_prof_resp_advncd;
id F_ae_preventability_yes2;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_majorprevent1 / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_majorprevent1 ae_majorprevent1_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f.  ;
ods output crosstabs = majorprevent1;
run;
data majorprevent12 ;
set majorprevent1 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent13 (keep = F_ae_prof_resp_advncd F_ae_majorprevent1 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_advncd F_ae_majorprevent1 ;
set majorprevent12;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
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            put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent13;
by F_ae_prof_resp_advncd;
run;
proc transpose data=majorprevent13 out=majorprevent13b;
by F_ae_prof_resp_advncd;
id F_ae_majorprevent1;
var events_no events_per_100 pct_tot_events;
run;


proc surveyfreq data=safecare2;
table ae_prof_resp_advncd*ae_majorprevent2 / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_majorprevent2 ae_majorprevent2_f. site_id site_id_f. ae_prof_resp_advncd
ae_prof_resp_advncd_f.  ;
ods output crosstabs = majorprevent2;
run;
data majorprevent22 ;
set majorprevent2 ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data majorprevent23 (keep = F_ae_prof_resp_advncd F_ae_majorprevent2 events_no pct_tot_events
events_per_100);
retain F_ae_prof_resp_advncd F_ae_majorprevent2 ;
set majorprevent22;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=majorprevent23;
by F_ae_prof_resp_advncd;
run;
proc transpose data=majorprevent23 out=majorprevent23b;
by F_ae_prof_resp_advncd;
id F_ae_majorprevent2;
var events_no events_per_100 pct_tot_events;
run;

data Table3line4e (drop=no rename=(F_ae_prof_resp_advncd=variable));
merge severitygeneral3b severitymajor3b preventyes23b preventyes13b majorprevent23b
majorprevent13b;
where F_ae_prof_resp_advncd='Advanced';
run;

data Table3line4 ;
set Table3line4a Table3line4b Table3line4c Table3line4d Table3line4e ;
run;



/*B3g) Merge and set final Table 3*/

data Table3lines;
set Table3line1 Table3line2 Table3line3 Table3line4 ;
where variable not in ('Total');
run;
data Table3lines;
```

```sas
set Table3lines ;
if variable in (1) then variable='Total';
attrib variable2 length=$8;
run;
data Table3lines;
set Table3lines;
variable2=variable;
run;

proc sql;
    create table Table3columns as
    select * from Table3columns1to4
    order by (variable ne 'Total'),
              monotonic();
quit;
data Table3columns;
set Table3columns;
counter +1 ;
attrib variable2 length=$8;
run;
data Table3columns;
set Table3columns;
variable2=variable;
run;

proc sort data=Table3columns;
by variable2;
run;
proc sort data=Table3lines;
by variable2;
run;
data table3;
merge Table3columns(in=a) Table3lines(in=b);
by variable2;
if a or  b;
run;
proc sort data=table3 ;
by counter;
run;
data table3 (drop=variable2 total counter) ;
set table3;
run;

/*Display results*/

ods excel file="&outpath.\table3.xlsx";

proc print data=table3 noobs;
run;

ods excel close;



/********************************************************************************************
B4) Figures S2 & S3. Weighted Distribution of Adverse Events Location of Occurrence According
to the Type of Event and Healthcare Professions Involved
********************************************************************************************/

/*Population selection*/

data safecare2;
set safecare;
where ae_category in (1) or (ae_category in (2 3 4 6) and (ae_surgery_resp=1 or surgery=1)) or
(ae_found in(0) and surgery in (1)) ; /*exclude when surgical specialities not directly
involved with the AE */
run;

/*Data analysis*/



/*B4a)  Weighted sample size determination*/

proc surveyfreq data=safecare2 ;
table ae_found / row clwt cl;
cluster  site_id;
```

```
weight  sample_weight;
format site_id site_id_f.;
ods output oneway = total;
run;



/*B4b) Category and professions involved in AE by location*/

proc surveyfreq data=safecare2;
table ae_locationcat*ae_category / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_category ae_category_f. site_id site_id_f. ae_locationcat ae_locationcat_f.  ;
ods output crosstabs = locationcategory;
run;
data locationcategory2 ;
set locationcategory ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationcategory3 (keep = F_ae_locationcat F_ae_category events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_category ;
set locationcategory2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
      put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
      events_no = put(round(total_wgt_sample_freq,1),5.1);
      pct_tot_events = put(round(rowpercent,.1),5.1);
      events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
      put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationcategory3;
by F_ae_locationcat;
run;
proc transpose data=locationcategory3 out=locationcategory3b;
by F_ae_locationcat;
id F_ae_category;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_prof_resp_attending / row cl clwt;
cluster  site_id;
weight  sample_weight;
format ae_prof_resp_attending ae_prof_resp_attending_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = locationattending;
run;
data locationattending2 ;
set locationattending ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationattending3 (keep = F_ae_locationcat F_ae_prof_resp_attending events_no
pct_tot_events events_per_100);
retain F_ae_locationcat F_ae_prof_resp_attending ;
```

```
set locationattending2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationattending3;
by F_ae_locationcat;
run;
proc transpose data=locationattending3 out=locationattending3b;
by F_ae_locationcat;
id F_ae_prof_resp_attending;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_prof_resp_nurse / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_nurse ae_prof_resp_nurse_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.   ;
ods output crosstabs = locationnurse;
run;
data locationnurse2 ;
set locationnurse ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationnurse3 (keep = F_ae_locationcat F_ae_prof_resp_nurse events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_prof_resp_nurse ;
set locationnurse2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationnurse3;
by F_ae_locationcat;
run;
proc transpose data=locationnurse3 out=locationnurse3b;
by F_ae_locationcat;
id F_ae_prof_resp_nurse;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_prof_resp_resident / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_resident ae_prof_resp_resident_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.   ;
ods output crosstabs = locationresident;
run;
```

```
data locationresident2 ;
set locationresident ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationresident3 (keep = F_ae_locationcat F_ae_prof_resp_resident events_no
pct_tot_events events_per_100);
retain F_ae_locationcat F_ae_prof_resp_resident ;
set locationresident2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationresident3;
by F_ae_locationcat;
run;
proc transpose data=locationresident3 out=locationresident3b;
by F_ae_locationcat;
id F_ae_prof_resp_resident;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_prof_resp_fellow / row cl clwt;
cluster  site_id;
weight   sample_weight;
format ae_prof_resp_fellow ae_prof_resp_fellow_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = locationfellow;
run;
data locationfellow2 ;
set locationfellow ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationfellow3 (keep = F_ae_locationcat F_ae_prof_resp_fellow events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_prof_resp_fellow ;
set locationfellow2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationfellow3;
by F_ae_locationcat;
```

```
run;
proc transpose data=locationfellow3 out=locationfellow3b;
by F_ae_locationcat;
id F ae prof resp fellow;
var events_no events_per_100 pct_tot_events;
run;

proc surveyfreq data=safecare2;
table ae_locationcat*ae_prof_resp_advncd / row cl clwt;
cluster  site id;
weight   sample_weight;
format ae_prof_resp_advncd ae_prof_resp_advncd_f. site_id site_id_f. ae_locationcat
ae_locationcat_f.  ;
ods output crosstabs = locationadvncd;
run;
data locationadvncd2 ;
set locationadvncd ;
pct_out_total = round(wgtfreq/41717*100,.1);
l_out_total = round(lowerclwgtfreq/41717*100,.1);
u_out_total = round(upperclwgtfreq/41717*100,.1);
wgt_sample_freq = round(593.0617*pct_out_total/100,1);
wgt_lower = round(593.0617*l_out_total/100,1);
wgt_upper = round(593.0617*u_out_total/100,1);
event_per_100 = round(wgt_sample_freq/1009*100,.1);
lower_per_100 = round(wgt_lower/1009*100,.1);
upper_per_100 = round(wgt_upper/1009*100,.1);
run;
data locationadvncd3 (keep = F_ae_locationcat F_ae_prof_resp_advncd events_no pct_tot_events
events_per_100);
retain F_ae_locationcat F_ae_prof_resp_advncd ;
set locationadvncd2;
format events_no 3. pct_tot_events 5.1 events_per_100 $18.;
events_no = round(wgt_sample_freq,1);
pct_tot_events = put(round(pct_out_total,.1),5.1);
events_per_100 = cat(put(round(RowPercent,.1),4.1), " (", put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL ,.1),4.1), ")");
if f_ae_cat_new = "Total" then do;
        events_no = put(round(total_wgt_sample_freq,1),5.1);
        pct_tot_events = put(round(rowpercent,.1),5.1);
        events_per_100 = cat(put(round(RowPercent,.1),4.1), " (",
put(round(RowLowerCL,.1),4.1), "-",
        put(round(RowUpperCL,.1),4.1), ")");;
end;
run;
proc sort data=locationadvncd3;
by F_ae_locationcat;
run;
proc transpose data=locationadvncd3 out=locationadvncd3b;
by F_ae_locationcat;
id F_ae_prof_resp_advncd;
var events_no events_per_100 pct_tot_events;
run;



/*B4c) Merge and set final Figures*/

data Figures (drop=no);
merge locationcategory3b locationattending3b locationnurse3b locationresident3b
locationfellow3b locationadvncd3b;
run;

/*Display results*/

ods excel file="&outpath.\figure3.xlsx";
proc print data=Figures noobs;
run;
ods excel close;
```