

## **Online Data Supplement**

### **Diffusion of Evidence-based Intensive Care Unit Organizational Practices: A State-wide Analysis**

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# Organization and processes of ICUs in the state of Pennsylvania

Thank you for agreeing to participate!

We are conducting a survey of ICUs in all acute care hospitals in the state of Pennsylvania as part of an NIH-funded research study to better understand how hospitals and ICUs are organized and how organizational factors relate to patient outcomes.

We will ask you several questions about your ICU. If you are responsible for more than one ICU, please answer the questions for just one of the ICUs first, the ICU that matches the participant ID you enter below. You should have received unique participants IDs for each ICU that you manage, which you can use to repeat the survey in its entirety.

All questions pertain to the calendar year 2014. If major changes were made in the ICU during 2014, please respond about the ICU as it was at the end of calendar year 2014.

We anticipate that this survey will take 10-15 minutes to complete.

If you have any questions or concerns, please feel free to contact the Project Manager, Vanessa Madden, via telephone at 215-746-4923 or email at [vmadden@mail.med.upenn.edu](mailto:vmadden@mail.med.upenn.edu).

[Inline Image: "RedCap Intro2.png"]

Please enter the participant ID number from the invitation to participate in this survey.

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Please re-enter the participant ID number for confirmation.

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The two participant ID numbers you entered did not match; please re-enter them.

Please enter the full name of your hospital

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Please enter your job title

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**ICU ORGANIZATION - (Participant ID- [study\_id])**

**In the next several sections, we will ask you questions about the ICU organization and staffing. If you are responsible for more than one ICU, please answer the questions for just one of the ICUs first, the ICU that matches the participant ID that you entered above. You should have received unique participant IDs for each ICU that you manage, which you can use to repeat the survey in its entirety.**

**As with all questions, please respond about this ICU as it was AT THE END OF CALENDAR YEAR 2014.**

How would you best describe the type(s) of patients that are most commonly admitted to this ICU? Please select all that apply.

- Medical patients
- Surgical patients
- Cardiac medical patients (e.g., coronary care)
- Cardiac surgical patients
- Neurological (neurosurgery, neurology, or both)
- Burn patients
- Trauma patients
- Oncology patients
- Transplant patients (including immediately post-transplant)
- Other

Other ICU description

\_\_\_\_\_

How many operational beds are in this ICU? Please include any beds that are designated as part of this ICU, even if they are physically located in a different unit. However, do NOT include additional beds that are not designated as part of this ICU but could be used for overflow.

\_\_\_\_\_

Approximately how many patients are admitted annually to this ICU?

\_\_\_\_\_

Which of the following services are provided in this ICU? Please select all that apply.

- Mechanical ventilation
- Administration of vasopressors
- Continuous renal replacement therapy
- Targeted temperature management (i.e., therapeutic hypothermia) after cardiac arrest
- Extracorporeal membrane oxygenation (i.e., ECMO)

**ICU NURSE STAFFING**

Does this ICU have a dedicated nurse manager?

- Yes  
 No

Does this nurse manager also manage any other ICUs in the hospital?

- Yes  
 No

The BEDSIDE nursing staff have which of the following levels of licensure? Please select ALL that apply (for all bedside nursing roles in the ICU)

- LPN  
 RN  
 NP  
 Unknown  
 Other

Other nursing licensure level

\_\_\_\_\_

The BEDSIDE nursing staff have which of the following levels of qualifications? Please select ALL that apply (for all bedside nursing roles in the ICU)

- ADN (associates)  
 BSN  
 MSN  
 Unknown  
 Other

Other nursing qualification level

\_\_\_\_\_

Do bedside nurses have specialty certification in critical care (CCRN) ?

- Yes, all nurses  
 Yes, some nurses  
 No  
 Unsure

Please explain your answer further (which, if any, specific ICU nurse roles that are required to have specialty certification; describe any requirements that you know of, etc.)

\_\_\_\_\_

Approximately what percentage of your nursing staff have CCRN certification?

\_\_\_\_\_

What is the MAXIMUM number of patients that a single bedside nurse may be assigned?

- 1  
 2  
 3  
 4  
 more than 4  
 unsure

What is the typical ratio of nurses to patients during weekday, daytime hours for a patient that is mechanically ventilated?

- 1 patient : 1 nurse  
 2 patients : 1 nurse  
 3 patients : 1 nurse  
 4 patients : 1 nurse  
 More than 4 patients : 1 nurse  
 Unknown

**ICU PHYSICIAN STAFFING**

Does this ICU have a dedicated physician ICU director?

- Yes  
 No  
 Unsure

Are there physicians who are dedicated to the ICU? Some examples are critical care specialists, trainees (such as critical care fellows or medical residents), or hospitalists that are assigned to take care of patients admitted to the ICU exclusively, as opposed to physicians or specialists who also take care of patients outside of the ICU.

- Yes  
 No  
 Unsure

What type(s) of physicians are dedicated to the ICU? Please select all that apply.

- Intensivists (i.e., critical care specialists)  
 Hospitalists (i.e., non-specialists)  
 Residents  
 Fellows  
 Unsure  
 Other

Other type of physician dedicated to the ICU

An "intensivist" is a doctor with specialized training in critical care medicine. Pulmonologists, anesthesiologists, and surgeons can all be intensivists, for example. Which one of these statements about intensivists best applies to this ICU, to the best of your knowledge?

- An intensivist has primary responsibility for all patients upon admission.  
 An intensivist is either the primary attending (as above) OR consults on ALL patients by ICU policy/guideline. An example of this is that a patient who underwent a surgery has the surgeon as a primary attending but an intensivist as a consultant by policy.  
 An intensivist consults on certain patients by ICU policy/guideline (for example, all patients on mechanical ventilation), and on other patients only when requested by an attending physician.  
 An intensivist consults on patients only when requested by the primary attending physician. There is no policy/guideline that mandates intensivist consultation for any patient.  
 No intensivist is available.  
 Unsure  
 Other (please specify further below)

Other intensivist staffing Please explain further how intensivists staff the ICU.

If an intensivist is present, are ALL patients managed or co-managed by an intensivist?

- Yes - intensivists manage or co-manage all patients  
 No - intensivists manage or co-manage some but not all patients.  
 Not applicable

Which of the following providers are available for bedside care during nighttime hours? If there is different staffing on different nights (e.g., weeknights are different than weekends) then select the answer(s) for the majority of nights of the week. By "available in bedside care," we mean physically present in the ICU or hospital, immediately available for ICU emergencies. Please select all that apply.

- An intensivist attending physician  
 A non-intensivist attending physician (such as a hospitalist)  
 A resident, fellow, or other trainee  
 An advanced practitioner, such as an NP or PA  
 No physician or physician-equivalent provider is in the ICU but physicians from other parts of the hospital (such as Emergency Department physicians or hospitalists) are available.  
 No physician or physician equivalent is available in person.  
 Other (describe below)

Other provider(s) available for care during nighttime hours:

*Confidential*

Does this ICU use a system for remote patient monitoring (i.e., telemedicine or the "eICU")?

- Yes
- No

During what times of the day and week are patients monitored remotely? Please select all that apply.

- Weekdays during daytime hours - any or all weekdays
- Weekdays during nighttime hours - any or all weekday nights
- Weekends during daytime hours - any or all weekends
- Weekends during nighttime hours - any or all weekend nights
- Other (please specify further below)

Other times and/or days that patients are monitored remotely

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Which type(s) of providers monitor patients remotely? Please select all that apply.

- Intensivist physicians
- Non-intensivist physicians
- Nurses
- Unsure
- Other (please specify further below)

Other type of provider(s) who monitor patients remotely

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## ICU STAFFING OF OTHER DISCIPLINES

Besides nurses and physicians, which of the following types of care providers provide patient care on a regular basis? By "regular," we mean that these providers are available at least three days per week for patient care. Please select all that apply.

- Nurse practitioners
- Physician assistants
- Clinical pharmacists
- Nutritionists
- Palliative care
- Pastoral care
- Physical, occupational, and/or speech therapists
- Respiratory therapists
- Social workers and/or case managers
- Infection control
- Clinical nurse specialist
- Other

Other care providers

Does this ICU have daily team rounds, at least 5 days per week?

- 
- Yes
  - No
  - Unsure

Which of the following care providers consistently participate in these rounds? Please select all that apply.

- Physician(s)
- Advanced practitioner (NP and/or PA)
- Bedside nurse
- Nurse manager
- Charge nurse
- Respiratory therapist
- Clinical pharmacist
- Nutritionist
- Social worker and/or case manager
- Physical and/or occupational therapist
- Palliative care
- Pastoral care
- Patient and/or family member

Do medical students, residents, fellows, or other physician trainees routinely participate in patient care in this ICU?

- Yes
- No

## CLINICAL PROTOCOLS

**For the next set of questions about this ICU, we will ask you about the presence of various protocols and checklists. By "PROTOCOL," we mean a standardized order set or written clinical pathway for managing patients with a certain clinical condition. By "CHECKLIST," we mean a list of orders for patients identified with a clinical condition, such as a list of automated orders or potential orders for all mechanically ventilated patients.**

**As with all the questions, please response for this ICU as it was AT THE END OF CALENDAR YEAR 2014.**

Is there a clinical protocol for liberation from mechanical ventilation or ventilator weaning? An example of this would be respiratory therapist-driven trials of spontaneous breathing.

- Yes  
 No  
 Unsure

Is there a clinical protocol for low tidal volume ventilation (or "lung protective ventilation") for patients with acute lung injury or acute respiratory distress syndrome (ARDS)?

- Yes  
 No  
 Unsure

Is there a protocol for management of sedation for patients on mechanical ventilation?

- Yes  
 No  
 Unsure

Is there a protocol for measuring delirium on a regular basis?

- Yes  
 No  
 Unsure

What tool or instrument is used to measure delirium? Please select all that apply.

- Confusion Assessment Method for the ICU (CAM-ICU)  
 Nursing Delirium Screening Scale (Nu-DESC)  
 Delirium Detection Score (DDS)  
 Other

Other measure of ICU delirium \_\_\_\_\_

Is there a protocol for early mobilization and/or physical therapy for patients on mechanical ventilation?

- Yes  
 No  
 Unsure

Is there a protocol for prone positioning of patients with severe ARDS?

- Yes  
 No  
 Unsure

Is there a checklist (or "ventilator bundle") for mechanically ventilated patients?

- Yes  
 No  
 Unsure

Which of the following elements are included in the checklist/bundle for mechanically ventilated patients?

- Head-of-bed elevation  
 Oral hygiene  
 Stress ulcer prophylaxis  
 Prophylaxis for venous thromboembolism  
 Daily evaluations for spontaneous breathing trials  
 Daily evaluation for interruption or minimization of sedative medications  
 Other (please describe below)

Other - ventilator bundle elements \_\_\_\_\_

Is there a protocol for withdrawal of life support?

- Yes  
 No  
 Unsure



Is there a checklist or set of triggers for automatically ordering Palliative Care consultation?

- Yes
- No
- Unsure

Does your ICU have any formal policies about family meetings?

- Yes
- No
- Unsure

Please describe your ICU's formal policies on family meetings. For example, is there a requirement that family meetings occur within a specified number of days following admission, and if so, how many days? Is there a requirement for family meetings for patients that meet a specific set of criteria? Are there any guidelines or checklists to facilitate family meetings?

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## ICU CONSENT PROCESSES

**For the last set of questions, we will ask you about how consent is obtained from patients and/or surrogates for common ICU procedures.**

Are patients (or their representative) required to sign consent for admission to the ICU?

- Yes
- No
- Unsure

Which of the following is included in the admission consent form?

- Consent for admission to the ICU only
- Consent for admission to the ICU and to other medical interventions as well
- Unsure

**For each of the interventions listed below, select how consent is obtained when performed in a planned, non-emergent situation:**

	a) is included in consent for ICU admission	b) requires separate consent	c) does not require consent	d) unsure
1 Traditional central venous line placement (e.g., femoral line)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Peripherally-inserted central line (PICC) placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Arterial line placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Lumbar puncture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Chest tube placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Blood product administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 HIV testing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Radiology without contrast (i.e. non-contrast head CT)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Radiology with contrast (i.e. CT scans with use of contrast media)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Procedural sedation (e.g., conscious sedation or moderate sedation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Off-label or high-risk medication use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Paracentesis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13 Thoracentesis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14 Hemodialysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15 Hemodialysis catheter placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16 Bronchoscopy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Thank you for your time in completing this survey!**

Are you responsible for any other ICUs in your hospital?

- Yes  
 No

Please tell us the name(s) of the other ICUs which you manage within your hospital (e.g., medical ICU, surgical ICU, neuro ICU, etc.).

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Please let us know if you have any additional comments or questions. If you'd like to contact us directly, please email or call our Project Manager Vanessa Madden at [vmadden@mail.med.upenn.edu](mailto:vmadden@mail.med.upenn.edu) or 215-746-4923.

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We now ask you to 1) submit your answers and then 2) if applicable, complete the survey again for the other ICUs that you manage, using the participant IDs that were provided to you for each of those ICUs.

If you did not receive any other participant IDs, or if you have any further questions, please call Vanessa Madden on (215)746-4923 or email [vmadden@mail.med.upenn.edu](mailto:vmadden@mail.med.upenn.edu).

THANK YOU!