Penn Medicine

Critical Care Committee

ICU crisis staffing models- Template

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Modified from the Ontario Health Plan for an Influenza Pandemic Workgroup. *Critical Care During a Pandemic.*

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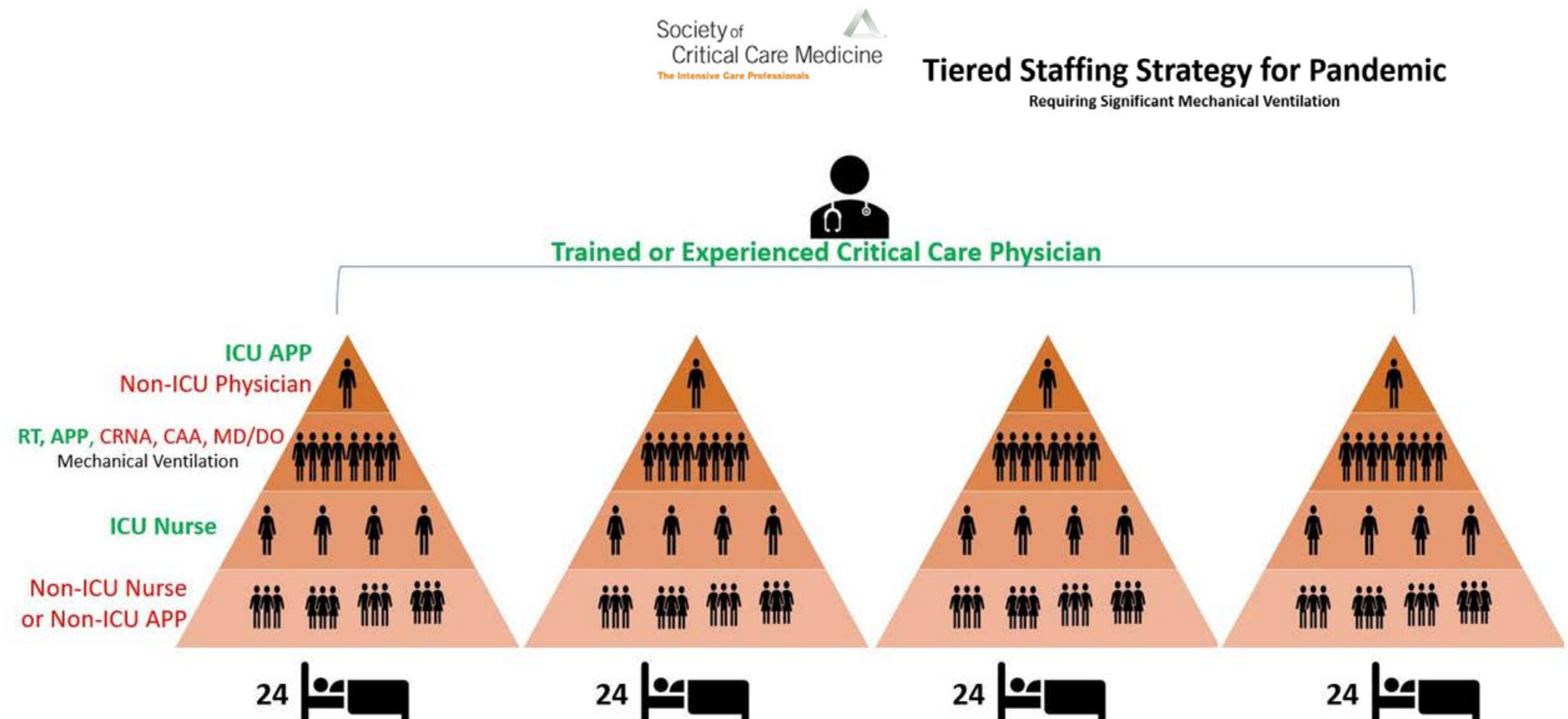
Objective

- Develop viable staffing models for conventional and converted ICU spaces
- Define different levels of ICU capacity to facilitate planning

Assumptions: Crisis ICU staffing

- Staffing models are suggestions / starting points
- Each ICU will assess capacity and personnel capabilities at least daily
- Personnel may be subject to “battlefield promotion”
- For non-ICU personnel, NPs, PAs, and non-CC capable physicians of all ranks are equivalent (in crisis conditions)



Definitions of capacity levels

- **Conventional:** Providing patient care without a significant change in daily practices ("business as usual")
- **Contingency:** Measures that may change daily standard practices but minimal to modest impact on patient care delivery
- **Crisis:** Strategies that are not commensurate with U.S. standards of care

Modified from CDC: https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html

ICU staffing suggestions by capacity level

(local conditions will govern operationalizing this)

Personnel	Conventional	Contingency	Crisis level 1*	Crisis level 2
Nurses	1:1 or 1:2 N:P (ICU nurse)	1:1 or 1:2 N:P Using float pool, overtime, per diems May need additional RN support from CNS/CPL	**Team based nursing:** 1 ICU nurse and 2 non-ICU nurses care for 4-6 pts (with documentation by non-ICU RNs) *Requires 4-6 ICU RNs and 8-12 non-ICU RNs for 24 bed unit.*	**Team based nursing:** 1 ICU nurse and 2 non-ICU nurses care for 8 -12 patients (with documentation non-ICU RNs) *Requires 2-3 ICU RNs and 4-6 non-ICU RNs for 24 bed unit.*
Providers*	Varies by unit	**Traditional ICU:** 1 CC provider with 3 non-CC provider, 24 patients **Converted ICU:** 2 CC providers for 24 patients	**Traditional ICU:** 1 CC provider (“captain”), 2 non-CC provider, 24 patients **Converted ICU:** 1 CC provider (“captain”), 2 non-CC providers, 24 patients	**Traditional ICU:** 1 CC provider (“captain”), 2 non-CC providers, 48 patients **Converted ICU:** 1 CC provider (“captain”), 2 non-CC providers, 48 patients
Attending physicians	Varies by unit	1 attending for 24 patients	1 attending for 2-3 ICUs (48-72 patients; consultation model)	1 attending to 4+ ICUs (consultation model)
Respiratory Therapists	2-3 per 24 patients	1-2 per 24 patients; use E-lert RT for assistance	1 RT per unit, RT float between units, E-lert RT , trained anesthesia resident assistance	1 RT per unit, E-lert RT, trained anesthesia resident assistance
CRNAs	(not in ICU)	Function as hybrid RT, ICU RN support (e.g., titrating vasopressors)	1 CRNA per 12 patients in hybrid role ***or*** as ICU RN	1 CRNA per 24 patients in hybrid role ***or*** as ICU RN
Penn E-Lert	Extra layer of support, extra set of eyes	May be providing necessary support to RN (e.g. medication double checks)	Providing essential support (e.g., documentation, order writing)	Providing essential support (e.g., documentation, order writing)
Additional supports		Pharmacy; procedure team; proning team; off-loading tasks to other team members where possible	Pharmacy; documentation help; proning team; procedure team; off-loading tasks to other team members where possible	Pharmacy; documentation; proning team; procedure team; off-loading tasks to other team members where possible

*Providers are those with order-writing privileges, including physicians (all ranks), nurse practitioners, physician assistants

Template for staffing model - nursing

- Conventional capacity
  - “business as usual”, 1:1 or 1:2 with CC RNs
- Contingency capacity
  - Still 1:1 or 1:2 CC RNs, but with float pool, overtime, etc.
- Crisis capacity (trigger: need to bring in non-CC nurses)
  - Team-based nursing model
    - Crisis level 1: “Pods” of 4-6 patients, 1 CC RN, 2 non-CC nurses
    - Crisis level 2: “Pods” of 8-12 patients, 1 CC RN, 2 non-CC nurses

Template for provider rounding team

- Contingency (12-16 patients per team)
  - 1 intensivist OR 1 CC fellow OR 1 CC-capable attending
  - 3 frontline providers (including 1 CC APP)
- Crisis level 1 (24 patients)
  - 1 CC fellow OR 1 CC-capable attending
  - 3 frontline providers (including 1 non-CC APP)
  - 0.5-1 intensivist, 1 CC APP for consultation
- Crisis level 2 (48 patients; patients doubled in rooms)
  - 1 CC fellow OR 1 CC-capable attending
  - 3 frontline providers (including 1 non-CC APP)
  - 0.25 intensivist, 1 CC APP for consultation

Assumption: Attending physicians who are not CC-capable can function as frontline providers
Assumption: if <1 intensivist, non-CC attending does documentation

What does the transition to crisis look like?

- New units are cannibalizing older units, compromising staffing ratios and/or skill mix
- Illness / quarantine / call outs compromise staffing ratios

Template for staffing model – unit leadership

- Nursing lead(s): *(placeholder)*
- Physician lead(s): *(placeholder)*
- APP lead(s): *(placeholder)*
- CNS/CLP: *(placeholder)*