ABCs of Extubation
(increasing awareness of ABCDEF bundles)

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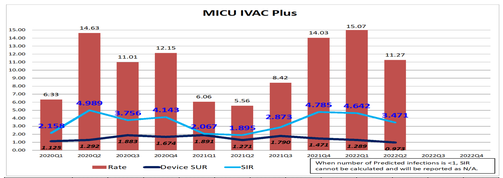
BACKGROUND

The use of a mechanical ventilator is frequently utilized as a life-saving treatment modality in the critical care however the therapy can have risks such as Infection-related Ventilator-Associated Complications (IVACs) such as Ventilator Assisted Pneumonia (VAP). These complications can lead to worsening of the patient's respiratory status leading to longer days on the ventilator. Due to the increased IVACs in MICU above the predicted model, An ABCDEF bundle will be re-exposed with increased emphasis to help minimize the patient's intubation time and expedite their extubation as proficiently and safely as possible.



	2020Q1	2020Q2	2020Q3	2020Q4	2021Q1	2021Q2	2021Q3	2021Q4	2022Q1	2022Q2	2022Q3	2022Q4
IVAC Plus	5	11	15	15	8	5	11	15	14	8		
Rate	6.33	14.63	11.01	12.15	6.06	5.56	8.42	14.03	15.07	11.27		
SIR	2.158	4.989	3.756	4.143	2.067	1.895	2.873	4.785	4.642	3.471		
Device SUR	1.125	1.292	1.883	1.674	1.891	1.271	1.790	1.471	1.289	0.973		

PURPOSE

To decrease ventilator days and IVACs by increasing awareness and knowledge of the Medical Intensive Care Unit (MICU) Team with regards to **A**ccess Pain, **B**oth Spontaneous Awakening trial and Spontaneous Breathing trials, SAT and SBT, **C**hoice of analgesic and sedation, **D**elirium assess and promote **E**arly mobility and exercise, and **F**amily engagement and Empowerment (**ABCDEF** bundle). The average MICU rate of IVACs over the last 4 quarters is 12.2/quarter compared to predictable average of 3.1/quarter and the number of vent days average MICU rate is 989.8/quarter compared to the predictable average of 726.8/quarter.

METHODS

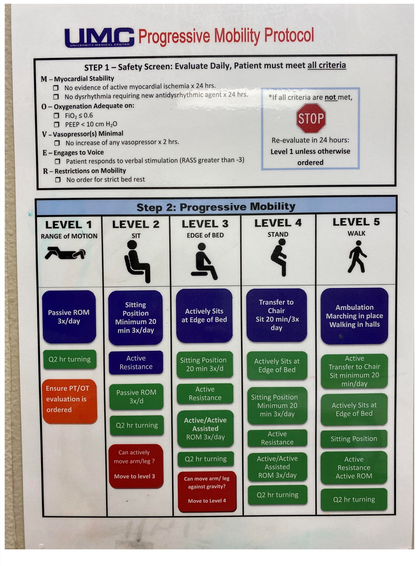
Utilize the ABCDEF bundle awareness placard and reeducate staff on ABCDEF bundle charting. Compare last 12 months (4 quarters) vent days, and IVACs with next 12 months IVACs plus vent days. Work with shareholders from Physical Therapy, Infection Control and Respiratory Therapy at the start of patient intubation per physician order.

MICU IVAC Plus

2021	Patient Days	Ventilator Days	APRV	Predicted Vent Days	Vent SUR	Total IVAC Plus	Predicted IVAC Plus	IVAC Plus Rate	IVAC Plus SIR	12-month IVAC Plus SIR
3rd Quarter										
July	583	422	0	245.339	1.720	4	1.237	9.48	3.234	
Aug	585	493	2	246.181	2.011	4	1.451	8.08	2.757	
Sept	566	371	18	238.185	1.633	3	1.141	7.71	2.629	
Qtr Total	1734	1286	20	729.705	1.790	11	3.829	8.42	2.873	2.794
4th Quarter										
Oct	576	385	20	242.393	1.671	7	1.188	17.28	5.892	
Nov	565	363	11	237.764	1.573	4	1.097	10.70	3.646	
Dec	586	290	0	246.602	1.176	4	0.850	13.79	N/A	
Qtr Total	1727	1038	31	726.759	1.471	15	3.135	14.03	4.785	2.894

2022	Patient Days	Ventilator Days	APRV	Predicted Vent Days	Vent SUR	Total IVAC Plus	Predicted IVAC Plus	IVAC Plus Rate	IVAC Plus SIR	12-month IVAC Plus SIR
1st Quarter										
Jan	592	311	0	249.127	1.248	2	1.010	6.43	1.980	
Feb	530	314	3	223.036	1.421	5	1.029	15.77	4.859	
March	591	300	1	248.706	1.210	7	0.977	23.26	N/A	
Qtr Total	1713	925	4	720.869	1.289	14	3.016	15.07	4.642	3.566
2nd Quarter										
April	567	262	0	238.606	1.098	3	0.851	11.45	N/A	
May	589	216	0	247.864	0.871	3	0.701	13.89	N/A	
June	578	232	0	243.235	0.954	2	0.753	8.62	N/A	
Qtr Total	1734	710	0	729.705	0.973	8	2.305	11.27	3.471	3.907

Infection Control Dept, UMCSN; 2022



ABCDEF Bundle awareness sheet

When performing the ABCDEF bundles on our ventilated patients, it is important to know the reasons for WHY we use it in our plan of care and WHAT it entails!

WHY:

The purpose of the ABCDEF bundle is to minimize ventilator-associated events (VAEs) such as Pneumonia, atelectasis, Adult Respiratory Distress Syndrome and pulmonary edema which contributes to a shortened duration of mechanical vent days and length of stay in the ICU.

WHAT:

A: assess prevent and manage pain

- assessing and treating pain could be important in preventing and /or managing delirium.
- behavioral pain scale(BPS) >5 reflects unacceptable pain
- critical care pain observation tool (CPOT) > or= 3 reflects unacceptable pain

B: both spontaneous awakening (SAT)trial and spontaneous breathing trials(SBT)

- SATs should be done with the stopping of narcotics and restarting either narcotics or sedatives at half previous dose and titrating as needed
- Daily SATs should be paired with SBTs as part of usual care. Studies show that the combining of the two trials decreases the length of stay on a ventilator by 3.1 days (Gerard, Kress,2008)

C: choice of analgesia and sedation

- Primary goal is the delivery of psychoactive medications and to avoid oversedation and promote early extubation
- 2013 ICU PAD guidelines suggest the use of non-benzodiazepine sedatives (propofol) options may be preferred over benzodiazepine based sedative regimens (Lorazepam)

D: Delirium: Assessment Prevent and management

- Utilize the confusion assessment method for the intensive care unit (CAM-ICU) and monitor RASS. CAM >4 clinical deliriums, CAM 1-3 is subsyndromal delirium
- To help reduce the incidence and duration of ICU delirium, the promotion of sleep hygiene and the prevention of sleep disruption and progressive mobilization are strongly recommended (ICU PAD guidelines)

E: early mobility

- a daily spontaneous awakening trial combined with physical and occupational therapy can improve the individual's functioning status at hospital discharge and shorten the duration of ICU delirium as well as decrease their mortality rate.
- Physical therapy (early mobilization) is shown to be feasible and safe even in the most complicated patients.

F: family engagement

- Family presence on the ICU rounds is beneficial and gives them feelings of inclusion respect and having a better understanding of their loved ones needs and care

The ABCDEF tab can be accessed in the flowsheet section of your EPIC charting

RESULTS

We anticipate the results will show that reiteration of ABCDEF bundle and increased utilization of the bundle charting will contribute to a quicker path to extubation which in-turn will decrease the number of IVACs on the unit. The overall goal will be to have lower vent days and IVACs than the predicted indicated numbers.

CONCLUSIONS

The utilization of the ABCDEF placard combined with the ABCDEF bundle tab over the next four quarters will have the desired effect of increased awareness in which patients will be extubated in less time than the previous four quarters. Quicker extubations, in-turn should lower the risk and number of IVACs seen the previous four quarters monitored from the 6/ 2021- 6/2022.

REFERENCES

Centers for Disease Control and Prevention (CDC). (2021). *Device-associated module: Ventilator-associated event (VAE).* Retrieved June 2022 from https://www.cdc.gov/nhsn/pdfs/pscmanual/10-vae_final.pdf

Green M, Marzano V, Leditschke IA, Mitchell I, Bissett B. Mobilization of intensive care patients: a multidisciplinary practical guide for clinicians. *J Multidiscip Healthc*. 2016;9:247-256 https://doi.org/10.2147/JMDH.S99811

Marra A, Ely EW, Pandharipande PP, Patel MB. The ABCDEF Bundle in Critical Care. Crit Care Clin. 2017 Apr;33(2):225-243. doi: 10.1016/j.ccc.2016.12.005. PMID: 28284292; PMCID: PMC5351776.

MICU IVAC Plus Charts (2022). by University Medical Center of Southern Nevada Infectious Disease Department

National Healthcare Safety Network (NHSN). (2021). *The NHSH standardized utilization ratio (SUR): A guide to the* SUR updated March 2021. Retrieved June 2022 from https://www.cdc.gov/nhsn/pdfs/PS-analysis-resources/nhsn- sur- guide-508.pdf

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