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# PCU Nursing Considerations for CAR-T Therapy

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In 2018, the blood and marrow transplant (BMT) team at Jacobs Medical Center completed numerous innovative cellular therapy trials as well as UC San Diego's first commercial use of a Chimeric Antigen Receptor T-cell therapy (CAR-T). The patient received Yescarta, the second CAR-T cell therapy approved by the FDA. Despite a brief stay in the Intensive Care Unit (ICU), the patient tolerated the infusion and is currently doing well, continuing their follow-up appointments in the outpatient BMT clinic.

In order to provide CAR-T patients with excellent care, the BMT team has formed a multidisciplinary committee to streamline processes and identify specific challenges from this therapy. The committee's objectives include:

- Education of the Progressive Care Unit (PCU) and ICU nurse
- Planning for staffing considerations
- EPIC flow sheet documentation updates, including related grading scales
- Implementation of physician and pharmacy order sets

While it takes numerous members of the healthcare team to facilitate effective care for these patients, a key member of the care team is the PCU nurse. The patient receiving CAR-T requires a high level of skilled nursing care and surveillance, as they can decompensate rapidly and need to be transferred to the ICU. They can experience a rapid onset of toxicities following the infusion, the most common being cytokine release syndrome (CRS) and a neurological toxicity called cytokine release encephalopathy syndrome (CRES). CRS usually occurs within the first

1-14 days after the infusion. CRES can happen concurrently with CRS or onset can be delayed for weeks to months following, making it important for the patient and family to be aware of the signs and symptoms upon discharge (Locke et al., 2018).

The PCU nurse needs to be aware of early recognition of toxicity symptoms and notify the BMT attending physician for further interventions. Although nurses are knowledgeable of the grading scales for symptoms, the nurse does not officially grade the toxicity. Nursing documentation (see figure 1 below) is crucial to ensure that the physician grades the toxicity correctly so that interventions can be initiated rapidly. Additionally, nurses consider the patient's baseline neurological status into consideration. For example, a patient with a developmental delay or psychiatric history may display different neurological side effects than typically expected.

The Immune Effector Encephalopathy (ICE) assessment is a new and essential tool to help identify the unique neurological deficits that may not have been previously identified with a standard neurological exam. This assessment is completed every eight hours and as needed. A noteworthy part of the ICE assessment (see figure 2 below) is the handwritten portion, in which the nurse directs the patient to write a standard sentence; this exercise can diagnose dysgraphia, one of the first signs of neurotoxicity (McConville, 2018). Nurses need to be aware when to implement seizure and aspiration precautions and monitor patients for symptoms of increased intracranial pressure or cerebral



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Vitals	97.4 (36.3)	97.6 (36.4)	97.1 (36.2)	98.1 (36.7)
Temperature	97.4 (36.3)	97.6 (36.4)	97.1 (36.2)	98.1 (36.7)
Heart Rate	70	72	70	65
Respirations	18	18	18	18
Blood pressure (BP)	91/44	82/46	88/50	86/50
MAP (mmHg)	61	58	66	62
CRS Syndrome				
Temperature greater than or equal to 38C (100.4F)				
Systolic BP less than 90 mm Hg?				
Shortness of Breath				
SpO2	97	95	95	94
O2 Device	None (Room air)	None (Room air)	None (Room air)	None (Room air)
O2 Flow Rate (L/min)				
Urine				
BMT Service notified				
Immune Effector Encephalopathy (ICE) Assessment				
Orientation (total 4 points)				
Writing Test				
Able to name 3 objects?				
Following commands				
Able to count backwards from 100 by 10s?				
Total ICE Score				
Unable to Perform or in critical condition				
Neuro Symptom Assessment				
Somnolence				
Motor Weakness				
Dysphagia				
Seizure				
Incontinence				
Tremor				
Headache				

Figure 1. An Example of the EPIC flow sheet documentation expected of the PCU RN.

edema. Ultimately, if a patient requires an ICU transfer, a designated PCU nurse continues to round on the patient to assess their condition, as they are the expert in providing this type of care. Collaboration between the PCU and ICU nurses is essential to provide patients with excellent care and promote health after the completion of CAR-T therapy.

## REFERENCES:

Locke FL, Neelapu SS, Tummala S, et al. (2018) Chimeric antigen receptor T-cell therapy- assessment and management of toxicities. *Clinical Oncology Volume 15* p. 47- 62.

McConville, Holly. (2018) CAR T-Cell therapy effects: review of procedures and patient education. *Clinical Journal of Oncology Nursing. Volume 21, No. 3.* [nml.nih.gov/pmc/articles/PMC3740610/](https://nml.nih.gov/pmc/articles/PMC3740610/)

Patient Name: \_\_\_\_\_  
 DOB: \_\_\_\_\_  
 MRN: \_\_\_\_\_

ICE Assessment:  
RN should assess patient's ability to write the following standard sentence every 8 hours and document in flowsheet accordingly

**"I like to eat apples"**  
**"Me gusta comer manzanas"**

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Date \_\_\_\_\_ Time \_\_\_\_\_ RN signature \_\_\_\_\_ WDL(Y/N) \_\_\_\_\_

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Date \_\_\_\_\_ Time \_\_\_\_\_ RN signature \_\_\_\_\_ WDL(Y/N) \_\_\_\_\_

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Date \_\_\_\_\_ Time \_\_\_\_\_ RN signature \_\_\_\_\_ WDL(Y/N) \_\_\_\_\_

Figure 2. The handwriting portion of the ICE assessment.