Optimization of Remote Patient Monitoring in the Outpatient Setting after Lisocabtagene Maraleucel (Liso-cel): Alarm Patterns and Hospitalization in a Multicenter Cohort

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INTRODUCTION

- Liso-cel has a well-established safety profile that supports outpatient (OP) administration.
- Remote patient monitoring (RPM) may enhance early detection of complications and reduces inpatient burden.
- Real-world RPM alarm patterns, timing of complications, and hospitalization contributors are not well characterized.

OBJECTIVES

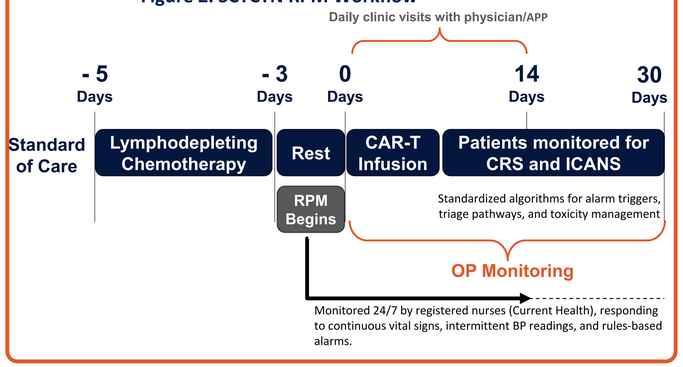
- Evaluate the timing of complications, contributors to hospitalization, and RPM alarm patterns to optimize OP management after liso-cel therapy.

METHODS

Figure 1. Sarah Cannon Transplant and Cellular Therapy Network (SCTCTN) Map

- Liso-cel utilized at 4 centers within the SCTCTN [Figure 1].
- Retrospective cohort (Apr 2023–Jul 2025) analysis of 100 OP liso-cel recipients supported by RPM [Figure 2].
- Required minimum follow-up of 30-days after infusion (day 0).
- Variables evaluated: baseline clinicodemographics, RPM alarms, RPM adherence, alarm episodes (grouped ≤1 hr gaps), alarm patterns, time to first hospitalization, complications (CRS, ICANS, cytopenia), and LOS

Figure 2. SCTCTN RPM Workflow



RESULTS

- Median age 70 yr; 51% HCT-CI ≥2; 85% LBCL [Table 1].
- RPM adherence was high (73%; median 20 monitored days) [Table 1].
- 61% (61 of 100) required hospitalization in the first 30 days with a median time to first admission of 5 days [Table 1 & Figure 3].
- Median time to first alarm was 2 days (IQR 1-6) post-infusion [Table 1]; alarm patterns are shown [Figure 4].
- 14% (14 of 100) had no alarm triggers; 29% (25 of 86) of patients with any alarm trigger were safely managed as OP [Figure 3].
- All CRS/ICANS hospitalizations occurred within 10 days (Figure 5).
- Hospitalization were associated with overlapping toxicities, including cytopenia (52%), CRS (38%), and ICANS (27%) [Table 1; Figure 5].

Figure 3. RPM Alarm Triggers and Hospitalizations

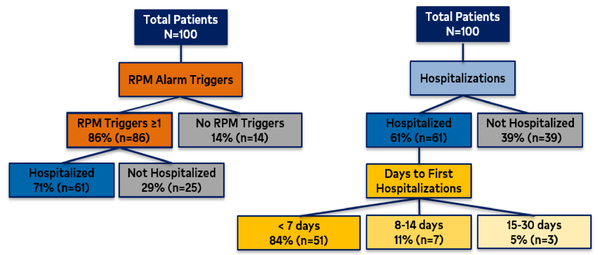
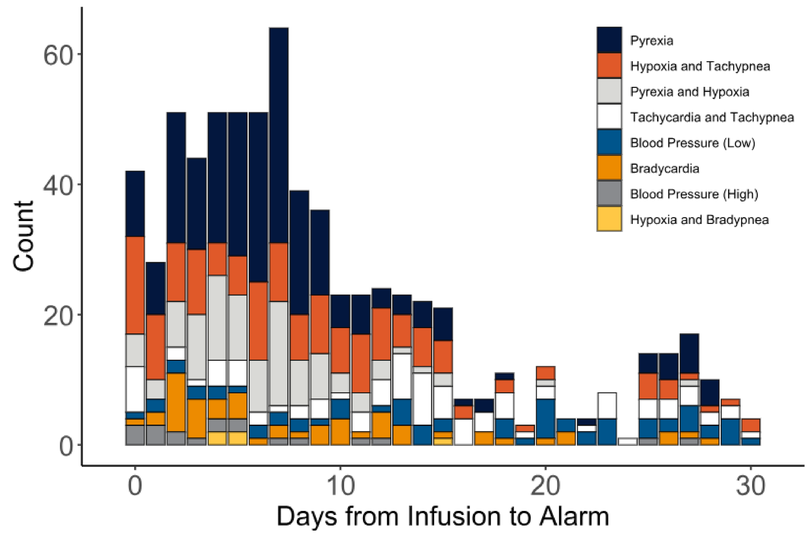


Figure 4. RPM Patterns: First Alarm Type within an Episode



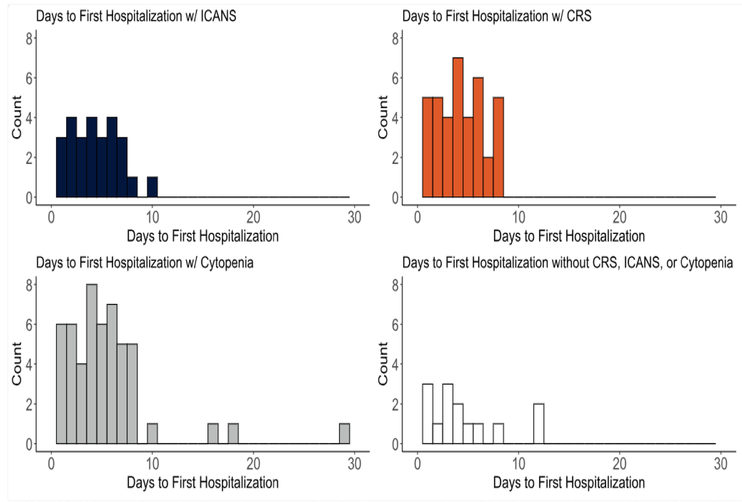
Count: Number of unique patients whose first alarm episode was of a specific type and occurred N days after infusion

Table 1. Baseline Characteristics, RPM Metrics, and Clinical Outcomes

Variable	Overall N=100
Baseline Clinicodemographics	
Age, Median (IQR)	70.0 (62.0, 76.0)
Sex, Male, N (%)	60 (60%)
Race	
White	77 (77%)
Black	5 (5%)
Other/Unknown	18 (18%)
Ethnicity	
Hispanic or Latino	22 (22%)
Not Hispanic or Latino	65 (65%)
Decline to Specify/Unknown	13 (13%)
Insurance	
Medicare	41 (41%)
Commercial Insurance	32 (32%)
Other/ Unspecified (VA, Tricare)	27 (27%)
State Area Deprivation Index (IQR)	4.0 (2.0, 6.0)
National Area Deprivation Index (IQR)	46.0 (22.0, 62.0)
Large B-Cell Lymphoma (LBCL), N (%) [a]	85 (85%)
Other (Mantle Cell/CLL/SLL/Follicular < 3B), N (%)	15 (15%)
RPM Metrics	
RPM Effective Enrollment Days, Median (IQR) [b]	29.0 (15.6, 31.2)
RPM Actual Monitoring Days, Median (IQR) [c]	19.6 (12.2, 28.1)
RPM Adherence Percentage Overall, Median (IQR) [d]	72.6 (64.5, 77.4)
RPM Alarm Episodes Total, Median (IQR) [e]	5.0 (1.0, 10.0)
RPM Alarm Episodes Per Patient Monitored Days, Median (IQR) [f]	0.3 (0.1, 0.8)
RPM Days to First Alarm Episode, Median (IQR)	2.0 (1.1, 5.6)
Clinical Outcomes	
Hospitalization (Emergency Room or Inpatient), N (%)	61 (61%)
Days to First Hospitalization, Median (IQR)	5.0 (3.0, 8.0)
Days to First Hospitalization, N (%)	
0-7	51 (51%)
8-14	7 (7%)
15-30	3 (3%)
Hospital Length of Stay, Median (IQR)	5.0 (2.5, 11.0)
Any Grade Cytokine Release Syndrome (CRS), N (%)	49 (49%)
Any Grade Immune Effector Cell Associated Neurotoxicity Syndrome (ICANS), N (%)	45 (45%)

IQR: Interquartile Range; [a] Includes DLBCL, high-grade BCL, primary mediastinal LBCL, and follicular lymphoma grade 3B [b] Number of unique days from liso-cel infusion (day 0) until last day of RPM; [c] Number of effective enrollment days minus number of inpatient hospital days where there was no RPM; [d] Number of vital signs transmitted vs. the number of vital signs expected; [e] One or more alarms grouped ≤ 1-hour gaps; [f] average alarm burden per day where 0.3 implies 1 alarm every 3–4 days.

Figure 5. First Hospitalization Associated with CRS, ICANS, & Cytopenia



CRS, ICANS, and cytopenia categories were not mutually exclusive; hospitalization may be associated with ≥ 1 toxicity; Count: Number of unique patients whose first hospitalization with the specified diagnosis occurred N days after transplant.

DISCLOSURES

This study was sponsored by Bristol Myers Squibb. Current Health served as the RPM and logistics vendor and provided nursing triage services. The views expressed in this publication represent those of the author(s). None of the authors declare any conflict of interest related to the current study beyond employment by HCA Healthcare, BMS, Genospace, or Current Health.
This study was funded, in whole, by BMS. Analysis was performed by teams within or affiliated with HCA Healthcare including the Sarah Cannon Cancer Network, the HCA Healthcare Research Institute and Genospace. Descriptive analyses of RPM metrics were performed by Current Health.

CONCLUSIONS

- RPM reliably identified early complications and enabled safe OP triage.
- 39% of monitored patients avoided hospitalization.
- CRS/ICANS hospitalizations clustered within ≤10 days, indicating concentrated monitoring intensity during the first 14 days.
- In the outpatient setting, RPM can help streamline post-CAR T-cell toxicity monitoring requirements.

FUTURE DIRECTION

- Further analyze RPM alarm patterns across post-infusion timing (0-14 vs. 15-30 days) and toxicity subgroups (CRS, ICANS).
- Apply research findings to optimize OP RPM and care pathways.

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