OMIDUBICEL-ONLV FOR ALLOGENEIC TRANSPLANTATION (ALLO-HCT) IN PATIENTS WITH HEMATOLOGIC MALIGNANCIES: RESULTS OF A MULTICENTER OPEN-LABEL EXPANDED ACCESS PROGRAM (EAP)

Poster #313

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BACKGROUND

- Omidubicel-onlv (omidubicel) is a nicotinamide modified allogeneic hematopoietic progenitor cell therapy approved by the US Food and Drug Administration in April 2023 for use as a donor source for hematopoietic cell transplantation (HCT)
- Omidubicel is derived from umbilical cord blood (UCB). The unit undergoes immunomagnetic bead selection for CD133+ cells, which are cultured for 21 ± 2 days in the presence of nicotinamide and cytokines. The CD133− flow-through (negative) fraction containing lymphocytes is retained and re-cryopreserved
- In a phase 3 randomized study (NCT02730299) that compared HCT with omidubicel vs UCB, patients transplanted with omidubicel had faster neutrophil and platelet engraftment, lower rates of bacterial, fungal, and viral infection, and shorter hospitalization time[1] as well as faster immune reconstitution[2]

OBJECTIVES

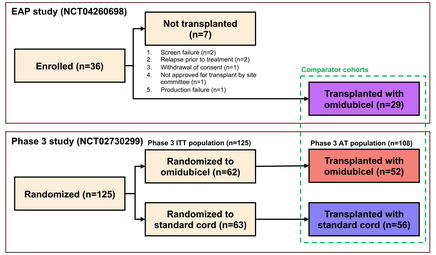
- A phase 3b, open-label expanded access program (EAP) was conducted to provide access to omidubicel after enrollment in the phase 3 study was complete, and to collect further safety and efficacy data in patients with hematologic malignancies (NCT04260698).

METHODS

Study design

- Inclusion criteria included patients >12 years of age with diagnosis of a hematologic malignancy in complete morphological remission (for leukemia), eligible for allogeneic HCT, and with an available, partially human leukocyte antigen (HLA)-matched cord blood unit (CBU)
- HLA-matched CBU with pre-cryopreserved (post-processing) total CD34+ cell count of ≥8 × 10^6, total nucleated cell (TNC) count of ≥1.8 × 10^9, and TNC dose ≥1.5 × 10^7 cells/kg
- Eligible patients received myeloablative conditioning with supportive care per institutional guidelines
- Patients were followed for engraftment, infections, graft-versus-host disease (GVHD), and 2-year post-transplantation outcomes
- Patients were enrolled at 6 US sites: Loyola University Medical Center, University of California, Los Angeles (UCLA) Medical Center, Duke University Medical Center, Stanford University Cancer Institute, and Oregon Health and Science University Knight Cancer Institute
- Results were compared with outcomes previously reported in the omidubicel phase 3 registrational study (**Figure 1**)

FIGURE 1. PATIENTS AND METHODS

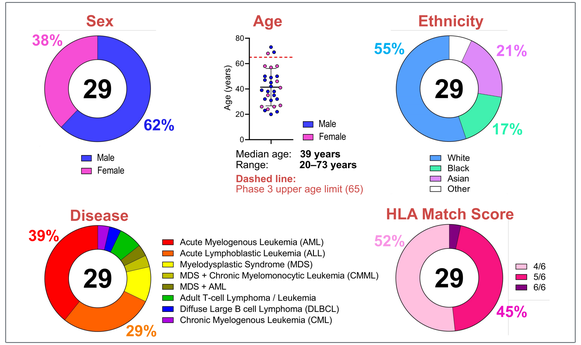


	Median	Range
Pre-expansion (CBB data) CD34+ count	0.15 × 10^8 cells	0.08–0.27 × 10^8 cells
Post-expansion CD34+ count	5.3 × 10^8 cells	1.5–12.0 × 10^8 cells
Days from CBU delivery to omidubicel shipment	26 days	23–45 days
Duration of patient follow-up	11.8 months	0.33–27.7 months

AT, as-treated; CBB, cord blood bank; CBU, cord blood unit; EAP, expanded access program; ITT, intent-to-treat.

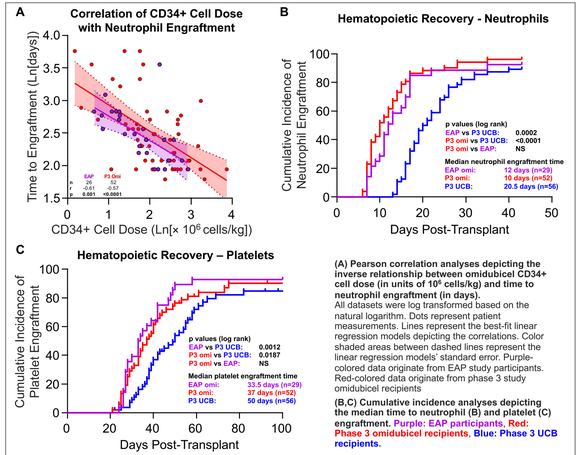
RESULTS

FIGURE 2. EAP STUDY COHORT AND GRAFT CHARACTERISTICS



HLA, human leukocyte antigen.

FIGURE 3. ENGRAFTMENT KINETICS

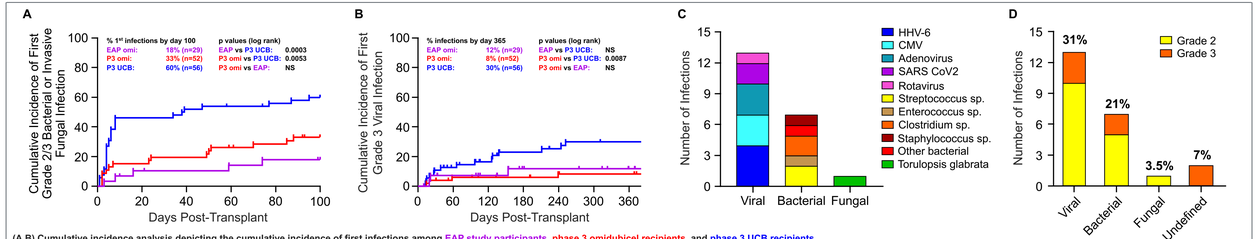


(A) Pearson correlation analyses depicting the inverse relationship between omidubicel CD34+ cell dose (in units of 10^6 cells/kg) and time to neutrophil engraftment (in days). All datasets were log transformed based on the natural logarithm. Dots represent patient measurements. Lines represent the best-fit linear regression models depicting the correlations. Color shaded areas between dashed lines represent the linear regression models' standard error. Purple-colored data originate from EAP study participants. Red-colored data originate from phase 3 study omidubicel recipients

(B,C) Cumulative incidence analyses depicting the median time to neutrophil (B) and platelet (C) engraftment. Purple: EAP participants, Red: Phase 3 omidubicel recipients, Blue: Phase 3 UCB recipients.

EAP, expanded access program; NS, not significant; omi, omidubicel; P3, phase 3; UCB, umbilical cord blood.

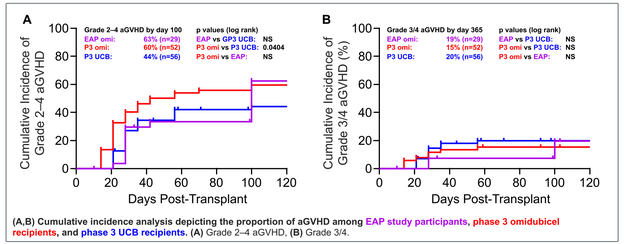
FIGURE 4. RATES AND GRADES OF INFECTIONS



(A,B) Cumulative incidence analysis depicting the cumulative incidence of first infections among EAP study participants, phase 3 omidubicel recipients, and phase 3 UCB recipients.
(A) First grade 2/3 bacterial or invasive fungal infections reported within 100 days post-transplant. **(B)** First grade 3 viral infections reported within 1 year post transplant.
(C) Organisms associated with post-transplant infections in the EAP study. Total number of grade 2–4 infections in all patients throughout the follow-up period are depicted (N=29).
(D) Distribution of infections by grades in the EAP study. Percentages on top of columns represent the fraction of patients in the cohort who presented with each type of grade 2/3 infection.
(Data relating to grade 2–4 infections were collected, only grade 2/3 infections emerged.)

CMV, cytomegalovirus; EAP, expanded access program; HHV-6, human herpesvirus 6; NS, not significant; omi, omidubicel; P3, phase 3; SARS CoV2, severe acute respiratory syndrome coronavirus 2; UCB, umbilical cord blood.

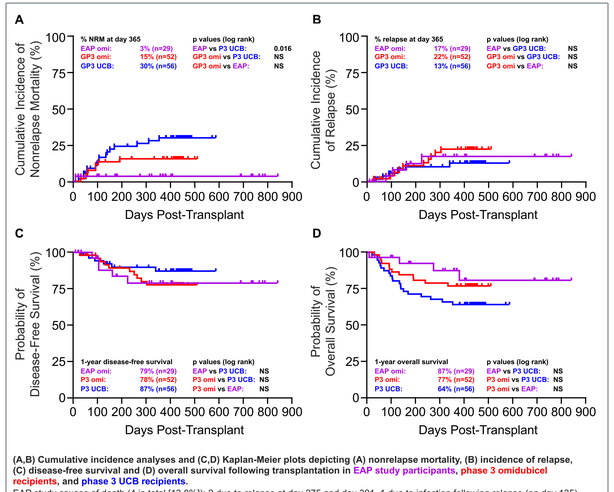
FIGURE 5. GRAFT-VERSUS-HOST DISEASE



(A,B) Cumulative incidence analysis depicting the proportion of aGVHD among EAP study participants, phase 3 omidubicel recipients, and phase 3 UCB recipients. **(A)** Grade 2–4 aGVHD, **(B)** Grade 3/4.

aGVHD, acute graft-versus-host disease; EAP, expanded access program; NS, not significant; omi, omidubicel; P3, phase 3; UCB, umbilical cord blood.

FIGURE 6. DISEASE-FREE AND OVERALL SURVIVAL



(A,B) Cumulative incidence analyses and (C,D) Kaplan-Meier plots depicting (A) nonrelapse mortality, (B) incidence of relapse, (C) disease-free survival and (D) overall survival following transplantation in EAP study participants, phase 3 omidubicel recipients, and phase 3 UCB recipients.
EAP study causes of death (4 in total [13.8%]): 2 due to relapse at day 275 and day 381, 1 due to infection following relapse (on day 135), and 1 due to pulmonary failure on day 10 post-transplantation.

EAP, expanded access program; NRM, nonrelapse mortality; NS, not significant; omi, omidubicel; P3, phase 3; UCB, umbilical cord blood.

CONCLUSIONS

- Omidubicel transplantation was **well tolerated in this real-world EAP setting** with institutionally guided conditioning regimens and supportive care
- **Hematopoietic recovery** in the EAP study was **consistent with the results of the phase 3 study**, and demonstrated median neutrophil and platelet engraftment times of 12 and 33.5 days, respectively
- **EAP study participants had fewer and lower grade infections. Infection rates** in the EAP study were **comparable to data from phase 3 omidubicel recipients** and demonstrated a **3.3-fold decrease** in the emergence of first grade 2/3 bacterial/invasive fungal infections reported within 100 days post-transplant, when compared with UCB recipients. A similar **2.5-fold decrease** in the incidence of first grade 3 viral infections reported within 1 year post-transplant was evident as well among EAP participants, in comparison with UCB recipients
- Survival analyses show that omidubicel recipients in the EAP study had **1-year disease-free survival and overall survival rates of 79% and 87%**, respectively
- These data further support the role of omidubicel as a graft source for patients in need of hematopoietic cell transplantation, including those from diverse racial backgrounds

REFERENCES

1. Horwitz ME, et al. *Blood.* 2021;138(16):1429–1440.
2. Szabolcs P, et al. *Trans Cell Ther.* 2023;29(8):517.e1–517.e12.

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