

Identify Patients at Risk of CMV Infection

60 to 80% of post-transplant patients are subject to high morbidity and mortality from cytomegalovirus [CMV] infection due to suppressing cell-mediated immunity.

Dextramer® CMV Kit enables reliable monitoring of CMV-specific CD8+ T cells in hematopoietic stem cell transplantation (HSCT) recipients for assessment of risk of CMV reactivation to guide appropriate prophylactic treatment while avoiding potential toxicity from antiviral drugs.

- ▮ Quantify CMV-specific CD8+ T cells in blood
- ▮ Follow CMV immunity in post-transplant patients
- ▮ Predict patients at risk of CMV reactivation.

Guidance for Patient Management

A semi-quantitative assay intended for the identification and enumeration of CMV-specific CD8+ T cells that allows to:

- ▮ Measure reconstitution of CMV-specific CD8+ T cells
- ▮ Manage patient stratification: Delayed recovery of T cells, high-risk patients¹⁻⁴ (**Figure 1**).
- ▮ Guide therapeutic decision-making based on:
 - Cost-effective approach
 - Ensure the optimal treatment
 - Fewer side effects.

Features of Dextramer® CMV Kit

- ▮ **The only available IVD assay** for the enumeration of CMV-specific CD8+ T cells in blood by flow cytometry⁵⁻⁷
- ▮ **Ready-to-use kit:** Fast, robust, and reproducible assay
- ▮ **Robust monitoring** of patients' CMV immunity
- ▮ **Sensitive assessment** of the risk of CMV reactivation⁵⁻⁹
- ▮ **Regulatory Status:** For in vitro diagnostics use in US and Europe^{8,9}

Patients at Risk of CMV Reactivation

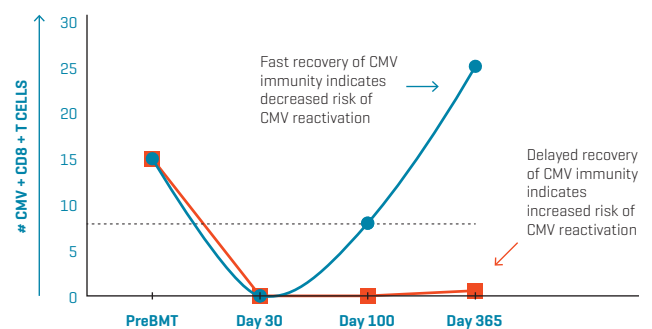


Figure 1. Model for CMV-specific T-cell immune monitoring in two post-transplant patients. The dashed line indicates the threshold for recovery of CMV T-cell immunity.

Dextramer® CMV Kit Application

- ▮ Use in conjunction with measurement of CMV viral load
- ▮ Testing is every other week starting on Day 30 post-transplant



Clinical Evidence for Dextramer® CMV Kit

Clinical Data Supports the Use of Dextramer® CMV Kit for assessment of CMV-specific immune status and risk of CMV reactivation in HSCT patients following immunosuppression

In a prospective study, 120 allogeneic HSCT patients were followed up for CMV reactivation in the first year post-transplant^{8,9}. The absolute number of CMV-specific CD8+ T cells was monitored in whole blood using Dextramer® CMV Kit and flow cytometry.

The number of CMV-specific CD8+ T cells at day 100 post-transplant showed a significant association with the risk of developing CMV reactivation (**Table 1**)^{8,9}.

No. of CMV-specific T cells	CMV Reactivation	
	Yes	No
< 7 cells/μL	90%	10%
≥ 7 cells/μL	26%	74%

Table 1. The relative risk was 3.4 times higher [95% CI: 1.57 – 7.46] for patients with < 7 cells/μL CMV+ CD8+ T cells compared to patients with ≥ 7 cells/μL CMV+ CD8+ T cells^{8,9}

Dextramer® CMV Kit - Product Description

The Dextramer® CMV Kit is for in vitro diagnostic (IVD) use in HSCT patients¹⁰.

Europe

- 8 Specificities, 7 alleles:
 - HLA-A*0101/VTEHDLLY
 - HLA-A*0201/NLVPMVATV
 - HLA-A*0301/KLGGALQAK
 - HLA-A*2402/QYDPVAALF
 - HLA-B*0702/RPHERNGFTVL
 - HLA-B*0702/TPRVTGGGAM
 - HLA-B*0801/ELRRKMMYM
 - HLA-B*3501/IPSINVHHY
- Negative Control

US

- 5 Specificities:
 - HLA-A*0101/VTEHDLLY
 - HLA-A*0201/NLVPMVATV
 - HLA-B*0702/TPRVTGGGAM
 - HLA-B*0801/ELRRKMMYM
 - HLA-B*3501/IPSINVHHY
- Negative Control
- CD3/CD4/CD8 Antibodies included

References

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3. Gratama, J.W. *et al.* Tetramer-based quantification of cytomegalovirus [CMV]-specific CD8+ T lymphocytes in T-cell depleted stem cell grafts and after transplantation may identify patients at risk of progressive CMV infection. *Blood* [2001] 98: 1358.
4. Borchers, S. *et al.* Sequential anti-cytomegalovirus response monitoring may allow prediction of cytomegalovirus reactivation after allogeneic stem cell transplantation. *PLoS One* [2012] 7: e50248.
5. Tario, J.D. *et al.* Dextramer reagents are effective tools for quantifying CMV antigen-specific T cells from peripheral blood samples. *Cytometry B Clin. Cytom.* [2015] 88: 6.
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7. Chen, G. L. *et al.* Low-Level Cytomegalovirus Antigenemia Promotes Protective Cytomegalovirus Antigen-Specific T Cells after Allogeneic Hematopoietic Cell Transplantation. *Biol Blood Marrow Transplant* [2020] 26[11]:2147–2154.
8. TF1000.07 Dextramer CMV Kit Package Insert US [IVD], Immudex.
9. TF1010.07 Dextramer CMV Kit Package Insert EU [CE-IVD], Immudex.
10. K153538 510(k) premarket notification

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