

# CMV IMMUNE MONITORING IN TRANSPLANTATION

## IDENTIFY PATIENTS AT RISK OF CMV INFECTION

60 to 80% of transplant patients worldwide have been exposed to cytomegalovirus [CMV]. In these patients CMV still causes significant morbidity and mortality following transplantation due to suppression of cell-mediated immunity. CD8+ T cells are critical in the control of CMV. Indeed, post-transplant immune reconstitution of CMV-specific CD8+ T cells are crucial to control CMV infection and prevent CMV disease.

Current treatment of CMV is prophylactic, or based on early detection of CMV virus load followed by preemptive antiviral treatment<sup>1</sup>. Anti-viral drugs [ganciclovir, valganciclovir, foscarnet, cidofovir] are effective, but also expensive and burdened by potential toxicity such as nephrotoxicity and peripheral blood cytopenia. Thus, avoiding toxicity from antiviral treatment and reducing economic burden of post-transplant care is advantageous.

## REFINE CMV MANAGEMENT

Delayed recovery of CMV-specific T cells is found to be associated with recurrent CMV infection and CMV disease<sup>2-5</sup>. Several clinical trials have demonstrated the utility of using the number of CMV-specific CD8+ T cells as a predictor of immune resistance to CMV post Hematopoietic Stem Cell Transplantation [HSCT]. Initiating anti-viral therapy based on detection of virus load alone may result in unnecessary treatment of patients who would never progress to CMV disease because they have sufficient CMV-specific T cell immunity to effectively control the virus.

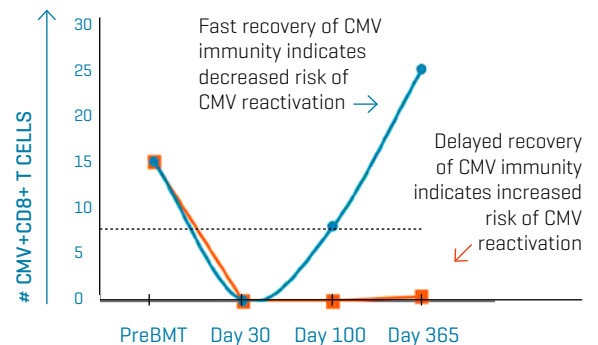
The Dextramer® CMV Kit can enumerate CMV-specific CD8+ T cells in whole blood by flow cytometry<sup>6</sup>. The Dextramer® CMV Kit is indicated for assessment of CMV-specific immune status and risk of CMV reactivation in adult HSCT recipients following immunosuppression and used in conjunction with other laboratory and clinical findings<sup>7-8</sup>.

## DEXTRAMER® CMV KIT

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



## PATIENTS AT RISK OF CMV REACTIVATION



Model for CMV-specific T cell immune monitoring in two patients post transplantation. Dashed line indicates threshold for recovery of CMV T cell immunity.

## GUIDE THERAPEUTIC DECISION MAKING

- Fewer side effects
- Reduce costs
- Minimize drug-drug interactions

# DEXTRAMER® CMV KIT

## FOLLOW CMV-SPECIFIC CD8+ T CELL RECONSTITUTION AND ASSESS RISK OF CMV REACTIVATION

In a prospective study, 120 allogeneic HSCT patients were followed up to one year post-transplant for CMV reactivation. The absolute number of CMV-specific CD8+ T cells was determined pre-transplant and at day 30, 100 and 365 post-transplant using the Dextramer CMV Kit.

In the CMV seropositive patients that reactivated CMV, the number of CMV-specific CD8+ T cells present at day 100 showed a significant association with the risk of developing CMV reactivation<sup>7-8</sup>. 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<sup>7-8</sup>:

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



- Clinical data support the use of the Dextramer® CMV Kit for assessment of CMV-specific immune status and risk of CMV reactivation in HSCT patients following immunosuppression.
- The Dextramer CMV Kit is CE-IVD [Europe] and 510(k) cleared [US] for IVD use in HSCT patients<sup>9</sup>.

## ORDER INFORMATION

Product	Content	Regulatory status	Cat. No.
Dextramer® CMV Kit	CMV-specific Dextramer reagents. Negative control Dextramer reagent Anti-CD3, Anti-CD4, Anti-CD8 antibodies	US: IVD	CX02
Dextramer® CMV Kit	CMV-specific Dextramer reagents. Negative control Dextramer reagent Anti-CD8, Anti-CD3, Anti-CD4 antibodies	EU: IVD	CX03
Dextramer® CMV Kit	CMV-specific Dextramer reagents Negative control Dextramer reagent	EU: IVD	CX01

## REFERENCES

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4. Gratama JW, 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(5): 1358-64.
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