

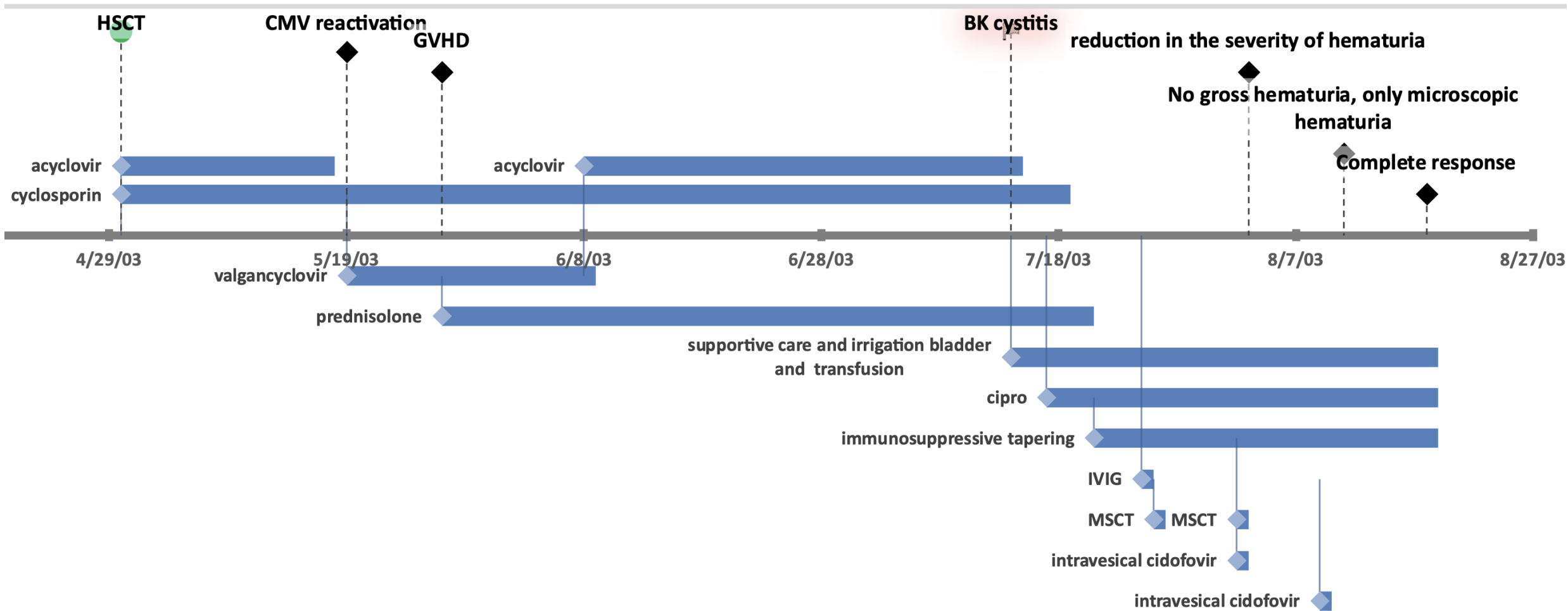
***Successful Multidisciplinary Management of  
Grade IV BK Virus-Associated Hemorrhagic  
Cystitis Following Haploidentical Stem Cell  
Transplantation***

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- 21 years old girl
- ALL about 3 years ago
- Relapse
- Induction with HYPERCVAD
  - cyclophosphamide,
  - vincristine sulfate,
  - doxorubicin hydrochloride (Adriamycin)
  - Dexamethasone
- No serious complication during induction

# Hematopoietic stem cell transplantation:

- Haploidentical
- Donor: mother
- **Conditioning: myeloablation**
- **GVHD prophylaxis: ptCYC plus MTX plus continuous cyclosporine**

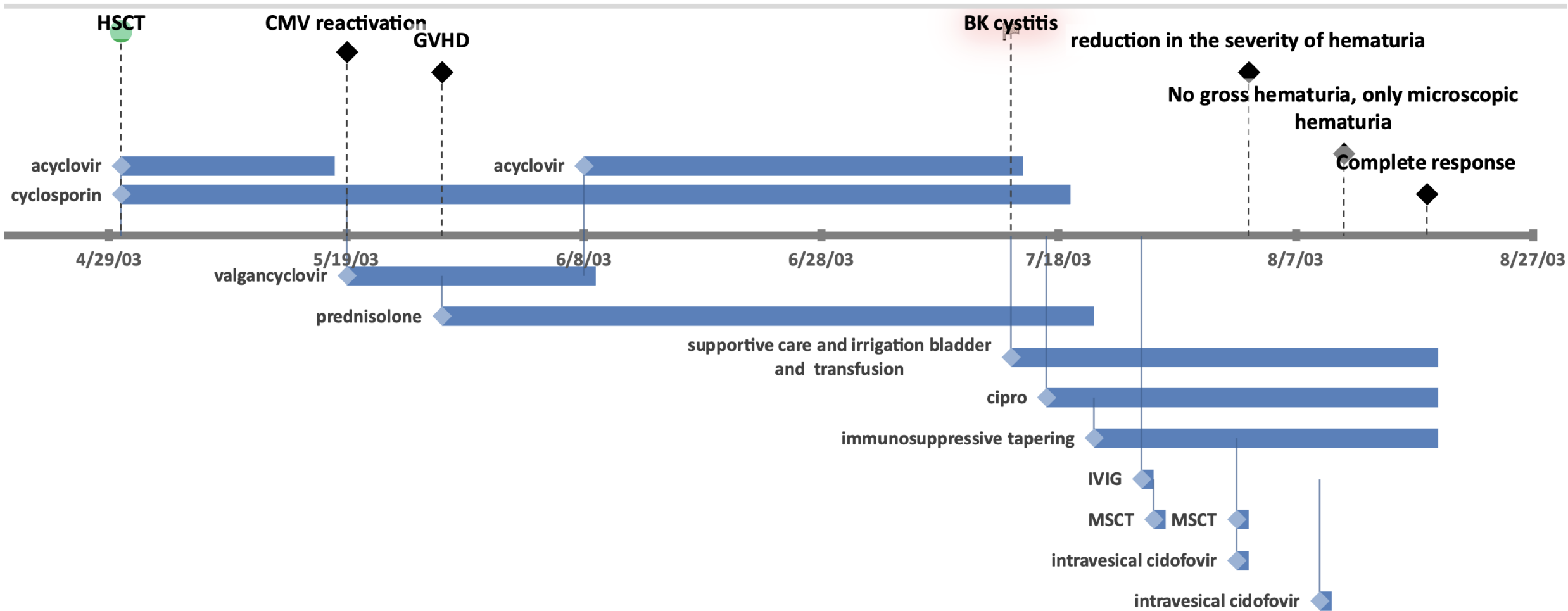


**DAY 49<sup>th</sup>:**

- **CMV reactivation**
- Valganciclovir

**DAY 57<sup>th</sup>:**

- Skin GVHD more than 50 percent body surface
  - No liver GVHD
  - No GI GVHD
- 
- prednisolone



- DAY 74<sup>th</sup>

Grade 4 macroscopic **hematuria**

with clots

renal dysfunction due to urinary obstruction

Need to transfusion

**BK virus quantitative PCR: (Urine) = 110,000,000, Serum: Undetectable**

**Adenovirus quantitative PCR (Urine and serum): Undetectable**

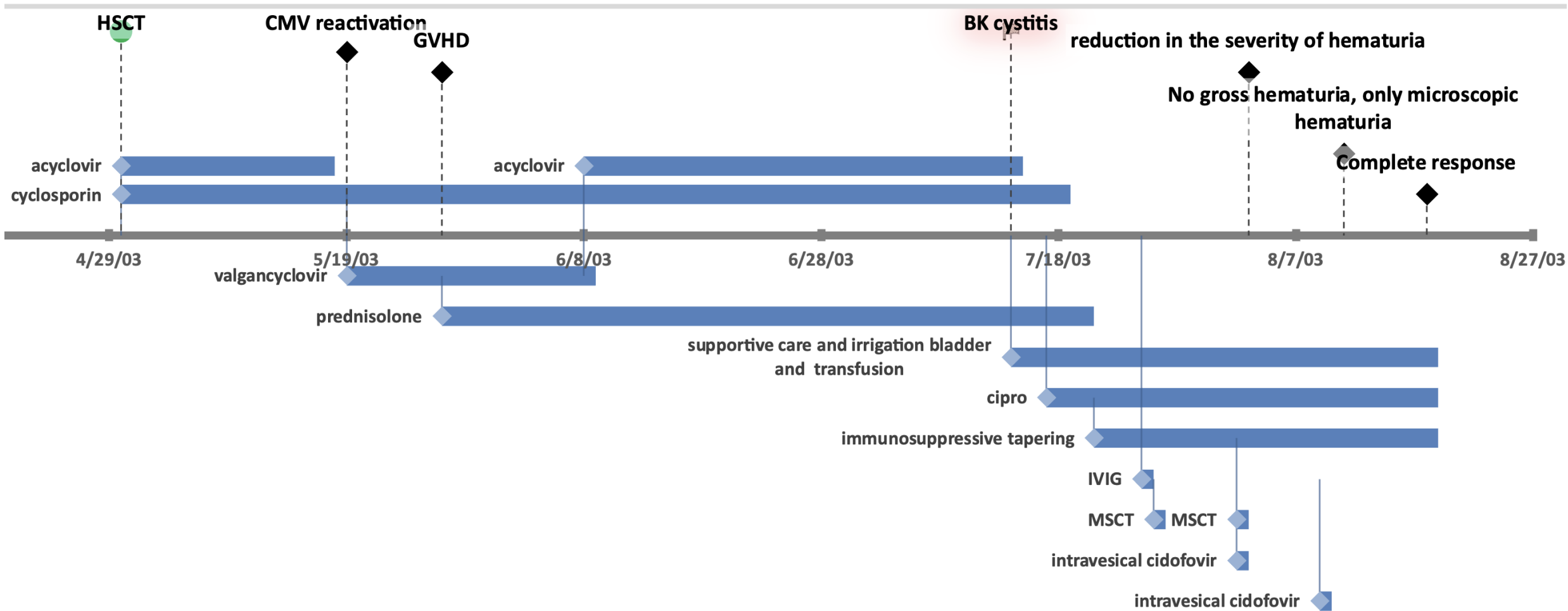
**CMV quantitative PCR (Urine and serum): Undetectable**



***Grade IV BK Virus-Associated Hemorrhagic Cystitis Following  
Haploidentical Stem Cell Transplantation***

The cornerstone (??) of treatment for BKPyV-HC is supportive care:

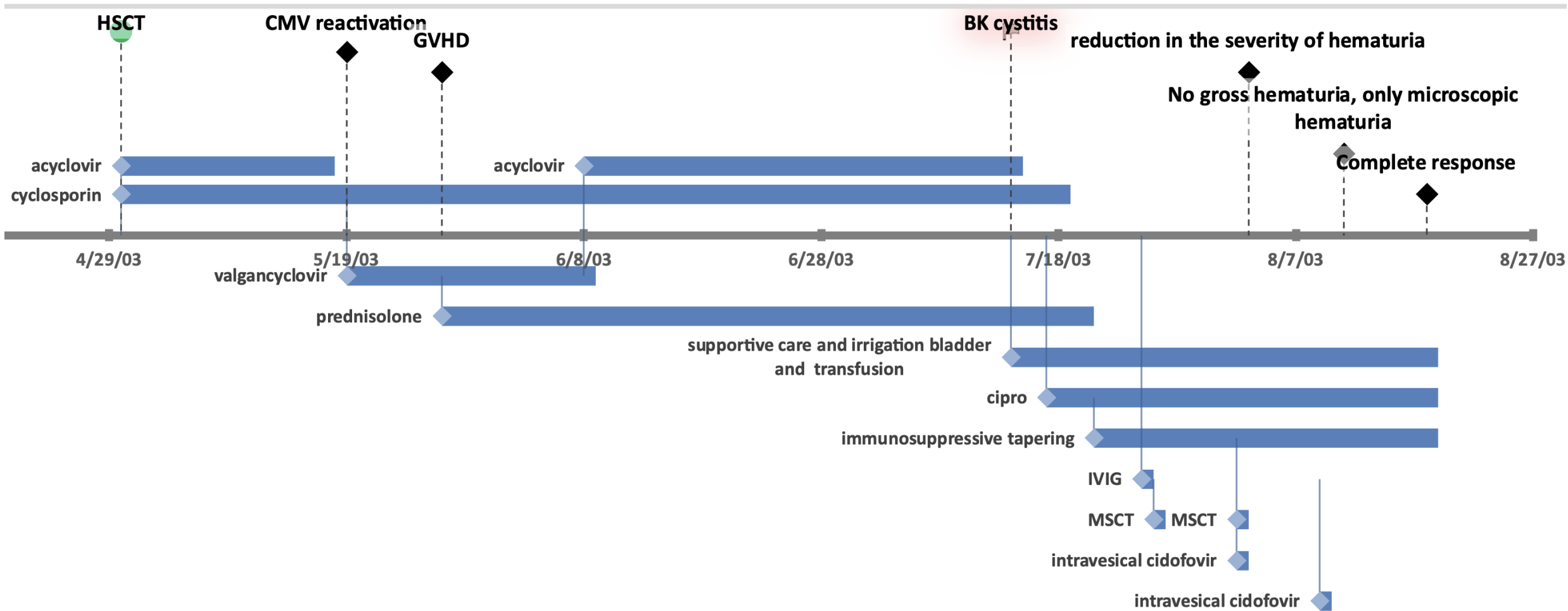
- aggressive hydration
- analgesics
- Transfusion
- Urologic consultants



**Day 77<sup>th</sup>**

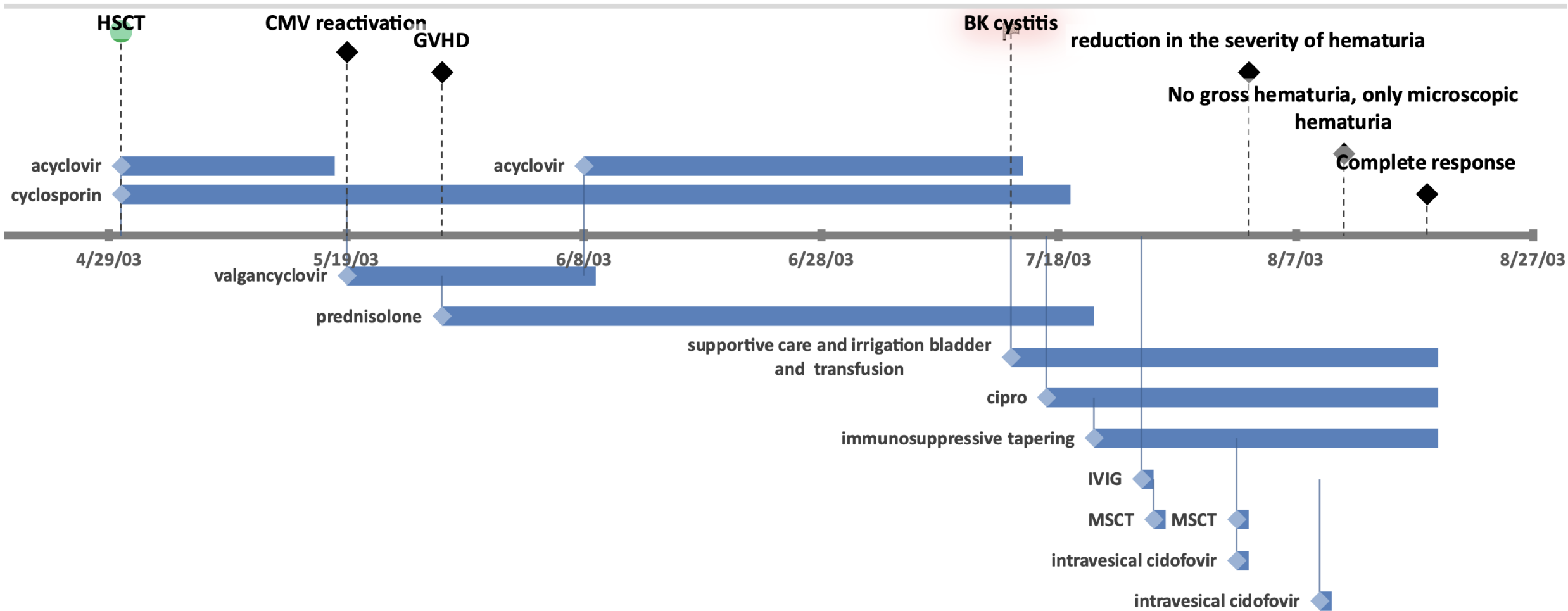
- **Quinolone antibiotics**

- Effectiveness?
- the increased risk of antibiotic resistance



## Day 81st

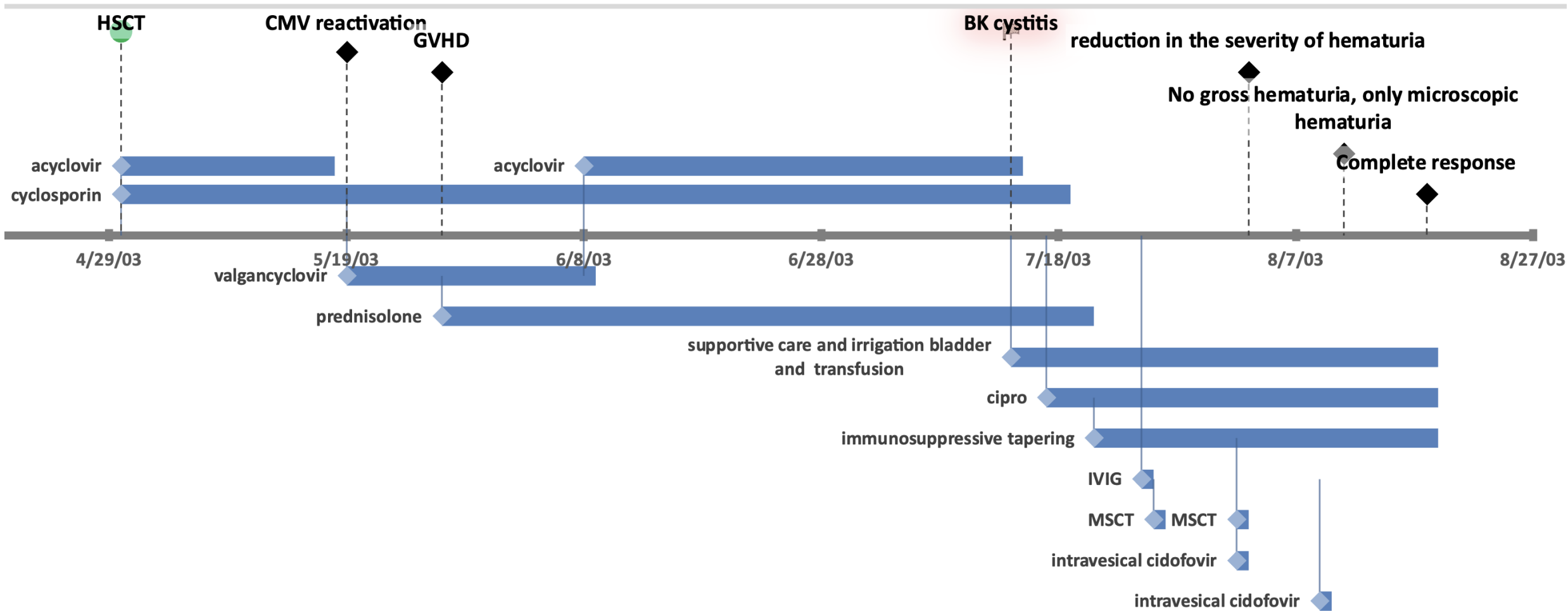
- Reduction of immunosuppression (cyclosporine, prednisolone)
- GVHG monitoring
- Microangiopathic anemia assessment
- Graft assessment (graft failure)
- Bone marrow support



- Day 85<sup>th</sup>:
- IgG measurement
- IVIG

- Evidences:
- kidney transplant patients





Day 86<sup>th</sup>:

Mesenchymal stem cell therapy:

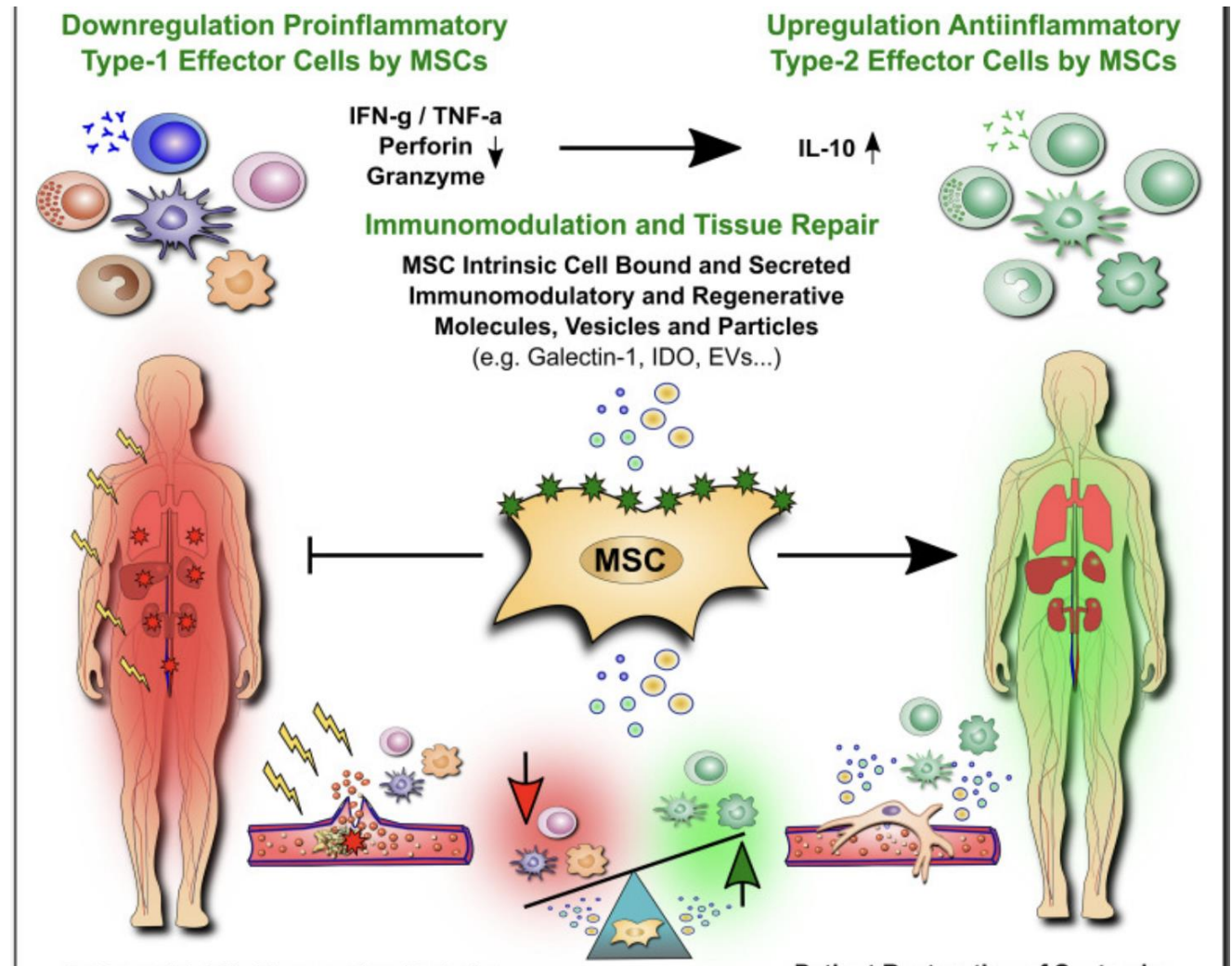
1. Immunomodulatory:

- ✓ anti-inflammatory
- ✓ Antiviral (selective T cell activation and NK cell activation)

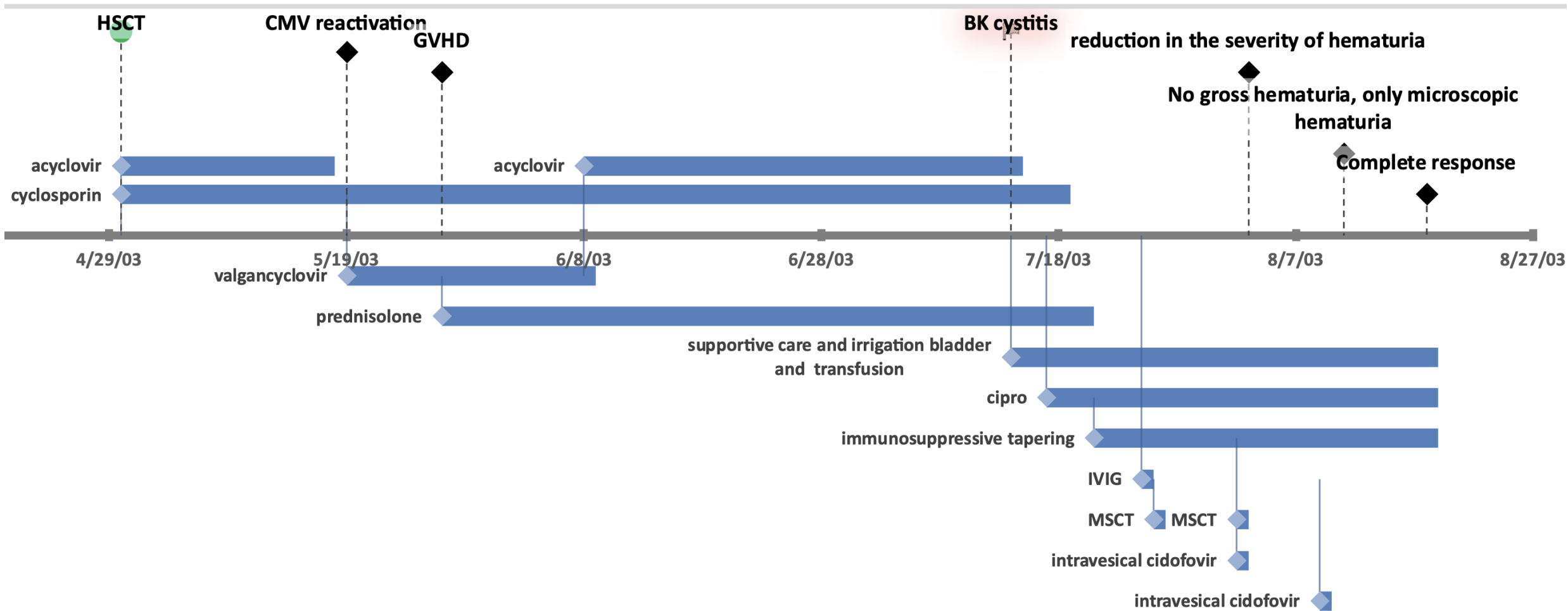
2. Anti GVHD (selective T cell activation)

3. regenerative properties

4. trigger coagulation



- 1 million mesenchymal stem cells (MSC) per kilogram of body weight.
- IV vs INTRAVESICAL
- 2-3 times/weekly
- Expected time?



Day 92nd

- cidofovir
- Intravesical
- 365 mg in 60 mL normal saline
- administered through a bladder catheter, with a one-hour retention period

Day 99th

- cidofovir

## Evidences:

- **Hannah Imlay and colleagues, 2014**: Use of cidofovir was not associated with a shorter duration of illness
- **Faraci M, 2009**: Cidofovir may be a potentially effective therapy for BKV-associated hemorrhagic cystitis (BKV-HC).
- **Kwon HJ, 2013**: Clinical improvement was observed in all cases.
- **Schneidewind L, 2018**: a systematic review

