



PEDIATRIC BLOOD AND MARROW TRANSPLANT PROGRAM

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PBMT-GEN-028
ADMINISTRATION OF CYCLOSPORINE A (CYA) AND
TACROLIMUS (FK 506)

1 PURPOSE

- 1.1 To outline the process for the administration of Cyclosporine (Cyclosporine A; CYA) and Tacrolimus (FK506).
- 1.2 Responsibilities of the nursing staff for administering and monitoring reactions to cyclosporine and tacrolimus are described.

2 INTRODUCTION

- 2.1 Cyclosporine and tacrolimus are immunosuppressant medications (calcineurin inhibitors) which are used to prevent or treat graft-versus-host disease (GVHD). They act by inhibiting the first phase of T-cell activation and used to suppress GVHD.
- 2.2 Possible side effects include, but are not limited to:
 - 2.2.1 Neurologic: tremors, seizures, headache, paresthesia, confusion, anxiety and ataxia.
 - 2.2.2 Cardiovascular: hypertension.
 - 2.2.3 Renal: insufficiency, hypomagnesemia, hypokalemia, acidosis.
 - 2.2.4 Integumentary: hirsutism, hyperpigmentation.
- 2.3 Drug Interactions
 - 2.3.1 May result in increased cyclosporine or tacrolimus levels when given simultaneously:
 - 2.3.1.1 Certain antifungals: voriconazole, fluconazole, itraconazole, posaconazole
 - 2.3.1.2 Calcium channel blockers (with the exception of amlodipine)
 - 2.3.1.3 Certain antibiotics: azithromycin, clarithromycin, erythromycin; imipenem-cilastatin
 - 2.3.1.4 Miscellaneous: methylprednisone, metoclopramide
 - 2.3.2 May result in decreased cyclosporine or tacrolimus levels when given simultaneously:
 - 2.3.2.1 Certain anticonvulsants: phenobarbital, phenytoin
 - 2.3.2.2 Rifampin

3 SCOPE AND RESPONSIBILITIES

- 3.1 Interdisciplinary: The physician, or designee, will prescribe the medication with an order in the electronic medical record. The Registered Nurse (RN) may administer either medication after successful completion of the medication administration test and demonstration of clinical competency with their preceptor.

4 DEFINITIONS/ACRONYMS

- 4.1 CSA Cyclosporine
- 4.2 D5W 5% Dextrose in Waters
- 4.3 FK506 Tacrolimus
- 4.4 GVHD Graft Versus Host Disease
- 4.5 MAR Medication Administration Record
- 4.6 PVC Polyvinyl chloride
- 4.7 RN Registered Nurse

5 MATERIALS

- 5.1 Non PVC (polyvinyl chloride) tubing or secondary tubing
- 5.2 Cyclosporine or Tacrolimus infusion
- 5.3 D5W or compatible solution
- 5.4 Alcohol Prep Pad
- 5.5 Closed System Transfer Devices

6 EQUIPMENT

- 6.1 Volumetric pump

7 SAFETY

- 7.1 N/A

8 PROCEDURE

- 8.1 Infusion of Cyclosporine (CYA) and Tacrolimus (FK506)
 - 8.1.1 All doses of cyclosporine/tacrolimus, as applicable, are to be administered through a pre-identified catheter lumen of the central line. Notify the pharmacist if cyclosporine or tacrolimus is to be infused through a peripheral line.
 - 8.1.1.1 Upon admission, place a strip of pink tape on the patient's white lumen to identify this lumen as the designated line for all cyclosporine/tacrolimus infusions.
 - 8.1.1.2 Place the pink tape on the tubing closest to the patient and closest to the pump.

8.1.2 Dosing interval

8.1.2.1 Cyclosporine may be administered either as a continuous infusion over 24 hours or as an intermittent infusion.

8.1.2.1.1 Continuous infusion: 1 mg/mL (250 mg/250 mL bag) infused at prescribed rate.

8.1.2.1.2 Intermittent infusion: every 12 hours infused over 2 hours.

8.1.2.2 Tacrolimus is administered as an intermittent infusion; every 12 hours infused over 2 hours

8.1.3 Bolus Infusions

8.1.3.1 Cyclosporine:

8.1.3.1.1 Pharmacy staff will supply cyclosporine ready for infusion in a bag with closed system transfer device attached to bag.

8.1.3.1.2 Spike bag with secondary tubing with closed system transfer device attached to tubing.

8.1.3.1.3 Prime tubing and connect to the pink-taped medication line.

8.1.3.1.4 Infuse over 2 hours.

8.1.3.1.5 Verify 5 rights with correct lumen by two nurses.

8.1.3.1.6 Both nurses must document this activity in the medical record.

- The first nurse signs off on the MAR.
- The second nurse signs off by documenting in the MAR administration comment section.

8.1.3.2 Tacrolimus:

8.1.3.2.1 Pharmacy staff will supply tacrolimus ready for infusion in a syringe with closed system transfer device attached to syringe

8.1.3.2.2 Connect the syringe to pink taped tubing.

8.1.3.2.3 Infuse over 2 hours.

8.1.3.2.4 Verify 5 rights with correct lumen by 2 RNs.

8.1.3.2.5 Both nurses must document this activity in the medical record.

- The first nurse signs off on the MAR.
- The second nurse signs off by documenting in the MAR administration comment section.

- 8.1.4 Continuous Infusion:
- 8.1.4.1 Cyclosporine/Tacrolimus:
- 8.1.4.1.1 Pharmacy staff will supply cyclosporine ready for infusion in a bag (250 mg/250 mL) with closed system transfer device attached.
- 8.1.4.1.2 Spike the bag with non-PVC tubing with closed system transfer device attached.
- 8.1.4.1.3 Prime entire line marked with pink tape with the medication (cyclosporine or tacrolimus).
- 8.1.4.1.4 Connect to infusion pump and infuse as directed.
- 8.1.4.1.5 Verify 5 rights with correct lumen and rate by 2 RNs.
- 8.1.4.1.6 Both nurses must document this activity in the medical record.
- The first nurse signs off on the MAR.
 - The second nurse signs off by documenting in the MAR administration comment section.
- 8.2 Patient Assessment
- 8.2.1 No special monitoring is required.
- 8.2.2 Monitor for side effects, including but not limited to those outlined in the introduction of this procedure.
- 8.3 Monitoring Drug-Specific Levels:
- 8.3.1 Intermittent dosing:
- 8.3.1.1 Cyclosporine and Tacrolimus levels are drawn as trough samples with morning labs prior to administration of intermittent dose.
- 8.3.2 Continuous infusions:
- 8.3.2.1 Level should be drawn with morning labs.
- 8.3.2.2 Temporarily stop the cyclosporine infusion and all other infusions.
- 8.3.2.3 Clamp the line before drawing level.
- 8.3.3 Specifics for all levels:
- 8.3.3.1 It is mandatory to draw levels from a line through which cyclosporine/tacrolimus has NEVER been infused.
- 8.3.3.2 The cyclosporine/tacrolimus line is labeled with “pink” tape upon admission. Do not use this line when drawing levels.

- 8.3.3.3 All fluids must be held and all other lines must be CLAMPED (especially the pink-taped lumen) while levels are being drawn.

9 RELATED DOCUMENTS/FORMS

9.1 NA

10 REFERENCES

10.1 2003 THOMPSON MICROMEDEX

11 REVISION HISTORY

Revision No.	Author	Description of Change(s)
07	Sally McCollum	<ul style="list-style-type: none">- Acronyms defined throughout- Section 2.3: list of medications resulting in drug interactions updated.- Section 8:<ul style="list-style-type: none">- Section completely reformatted to collect like information together and strengthen flow of the document.- Reference to 500 mL bags removed, as these are no longer utilized.- Information regarding utilization of closed system transfer device added throughout section where applicable.

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