Institution Name: Al Masarra Hospital

Document Title: Policy & Procedure of the Removal of High Concentrations of Electrolytes

Approval Process

	Name	Title	Institution	Date	Signature
Written by	Policy & Procedure Team members	Pharmacy & Medical Stores	Al Masarra Hospital	26/7/2022	
Reviewed by	Najla Al Zadjali	HoD Quality Management and Patient Safety	Al Masarra Hospital	25/7/22	
Validated by	Kunooz Al Balushi	Document Manager	Al Masarra Hospital	July 2022	
Approved by	Dr. Bader Al Habsi	Hospital Director	Al Masarra Hospital	25/7/22	for

Content Table:

Acronyms:

HoD	Head of the Department
WHO	World Health Organization
KCL	Potassium Chloride

Policy and Procedure of Removal of High Concentrations of Electrolytes

1. Introduction

World Health Organization (WHO) Collaborating Centre for Patient Safety Solutions has mentioned in an article that high concentrated electrolytes carry higher risk of harm than other medications; and error in the administration of these medications can have catastrophic clinical outcomes. For that, It is especially critical that the availability, access, prescribing, ordering, preparation, distribution, labeling, verification, administration, and monitoring of these agents be planned in such a way that possible adverse events can be avoided, and, hopefully, be eliminated.

The Pharmacy department, Al Masarra Hospital developed this document to provide an overview and set down general standards while handling medications containing High Concentrations Electrolytes, and to provide guidance to the Pharmacy professionals / Nursing staffs / Doctors in the institution, in relation to their professional practice.

Compliance with this policy will assist the sections to meet the proper quality health service standards and thus by to confirm the patient safety.

2. Scope

This document is applicable to all Health Care providers including Doctors / Pharmacy Professionals / and Staff Nurses involved in prescribing, storing, dispensing, and administration of high electrolytes knowing the potential risks associated with them.

3. Purpose

To establish a guideline in identifying restrictions and exceptions of high concentrated electrolytes, proper labeling, storing, and dispensing of the products.

To outline the steps necessary to increase awareness of these medications to prevent errors that may result from confusion thereby improving patient safety.

4. Definitions

4.1 Concentrated electrolytes: It may be described as solutions manufactured and distributedwith the intention of being diluted prior to administration.

4.2 Sodium Chloride injection: A sterile, Non-pyrogenic solution for fluid and electrolytereplenishment in single dose containers for intravenous administration.

4.3 Potassium Chloride (KCL) injection: A sterile, Non-pyrogenic, solution for fluid andelectrolyte replenishment in a single dose container for intravenous administration.

4.4 Calcium Gluconate: A white powdery solution used especially to supplement bodilycalcium stores.

4.5 Magnesium Sulfate: A sterile concentrated solution of magnesium sulfate used as bodysupplement.

5. Policy

5.1 Restrictions and exceptions

Please refer to appendix 1 for selected concentrated electrolyte parenteralproducts restricted by Accreditation Canada Required Organizational Practice.

Concentrated electrolytes are High-Alert Medications and should not be stockedin patient care areas except as part of the crash cart medications.

5.2 Prescribing

5.2.1 Prescribing should be done patient wise and physician should prescribe medication according to patient condition after complete and proper evaluation.

5.3 Labeling and storage

High concentrated electrolytes must be properly labeled with Yellow warning sticker along with Red warning sticker "High-Alert". (See Appendix 1).

Electrolytes storage containers and products shall be labeled per Appendix 2 (SeeAppendix 2).

Concentrated electrolytes should be stored in inpatient pharmacy.

Remaining unused quantity of high electrolyte product in the ward must bereturned to inpatient pharmacy for discarding.

5.4 Dispensing:

5.4.1 Dispensing must be provided on a patient-specific basis when required.

6. Procedure

6.1 Prescribing

6.1.1 Check lab results and assess patient condition.

6.1.2 If medication is needed then identify the proper concentration, dose and frequency.

6.1.3 Order medicine specific to the patient.

6.1.4 Establish monitoring tests during medicine administration.

6.1.5 Ensure regular follow up and patient assessment.

6.2 Dispensing

6.2.1 Check lab results, medicine concentration prescribed, dose and frequency.

6.2.2 Assess total amount need per day and amount of product that should be dispensedto the ward.

6.2.3 Dispense the amount patient wise on daily basis.

6.2.4 Receive returned unused medicine from ward if any.

6.2.5 Discard the remaining quantity.

6.3 Administrating

6.3.1 Receive medicine from inpatient pharmacy.

6.3.2 Check dose and frequency, patient name and patient condition.

6.3.3 Administer medicine as per prescription.

6.3.4 Return remaining quantity to the inpatient.

7. Responsibility

7.1 Physicians Shall:

Assess Patient as per requirement.

Be responsible to write daily orders for concentrated electrolytes for inpatient.

Follow up regularly.

7.2 Pharmacists Shall:

Be responsible to product labeling.

Store medications in the pharmacy.

Dispense the medication according to patient name.

Discard returned remaining unused quantity from ward.

7.3 Nurses Shall:

Be responsible for administering electrolytes as per prescription.

Clarify with the Physician / Doctor the dosage ordered prior to administering dosages of KCL that exceeds maximum recommended dosages.

Return remaining unused quantity to inpatient.

8. Document History and Version Control Table

Document History and Version Control			
Version	**Description of Amendment**	**Author**	**Review Date**
1	Initial Release	Policy and Procedure team (P&MS)	March 2021
2	Update and Review	Policy and Procedure team (P&MS)	July 2025
Written by	**Reviewed by**	**Approved by**	
Policy and Procedure team (P&MS)	Najla Al Zadjali	Dr. Bader Al Habsi	

9. Related Documents

9.1 High-Alert Medications Policy and Procedure – Pharmacy Department, Al Masarra Hospital

9.2 Medication Administration Policy and Procedure. (*Hospital Local Site*) - Al MasarraHospital, Nursing Department

9.3 Management of Adverse Drug Reactions - Pharmacy Department, Al Masarra Hospital

9.4 Medication Ordering Policy - Pharmacy Department, Al Masarra Hospital

10. References

Title of book/Journal/Website	Author	Year of publication	Page
Control of Concentrated Electrolytes Solution	*Aide Memoire*Patient SafetySolutions volume 1,solution 5	2007	1-2
High Alert Medications: Electrolytes	Alberta Health Services Executives	2015	1-4
The Joint Commission https://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFAQId=1534	Joint Commission	2018	

Appendices

Appendix 1: Selected restricted concentrated products available in Al MasarraHospital.

S#	Selected concentrated products restricted by Accreditation CanadaRequired Organizational Practice	Selected restricted concentrated products ailable in Al Masarra Hospital.
1	Calcium (all salts) in concentrationsgreater than or equal to 10 per cent	Calcium Gluconate 10% per 10ml
2	Available in high alert medication list	Dextrose 50% in 20ml
3	Magnesium sulfate in concentrationsgreater than 20 per cent (200 mg/mL)	Magnesium sulfate 50% per 5mL (4mEq/ml)
4	Potassium (all salts) in concentrations greater than or equal to two (2) mill moles per milliliter (mmol/mL) or two (2) mille equivalents per milliliter (mEq/mL)	Potassium chloride 15% per 10mL (2 mEq/mL)
5	Sodium acetate greater in concentrations than ormmol/mL equal to four (4)	Not available in Al Masarra hospital
6	Sodium phosphate in concentrations greater than or equal to four (mmol/mL)	Not available in Al Masarra hospital
7	Sodium chloride in concentrationsgreater than 0.9 per cent	Sodium Chloride 3% per 500 mL

Appendix 2: Electrolyte labeling requirements

Electrolyte Labelling Requirements

Cautionary Labels to be used in addition to High-alert Medication Label (High-alert Medication Label to be affixed to the storage containers only)		
Label Type	**Medication Class**	**Use**
CAUTION IV contains Potassium	• Potassium chloride intravenous bags: ▪ 10 mmol/50 mL ▪ 20 mmol/50 mL ▪ 10 mmol/100 mL ▪ 20 mmol/100 mL ▪ 40 mmol/100 mL • Potassium phosphate intravenous solutions prepared by pharmacy • Potassium acetate intravenous solutions prepared by pharmacy	To be affixed to the storage containers and to each product. For products with outer wraps, apply the label to the outer wrap (no need to remove outer wrap).
CAUTION Concentrated Potassium Fatal if Injected undiluted DILUTE BEFORE USE	• Potassium chloride intravenous solution: concentrations greater than or equal to two (2) mmol/mL • Potassium phosphate (monobasic and dibasic) concentrated intravenous solution (vials) • Potassium acetate intravenous solution : concentrations greater than or equal to two (2) mmol/mL	
CAUTION Hypertonic Sodium Chloride	Sodium chloride intravenous solution: concentrations greater than 0.9 per cent (hypertonic sodium chloride)	
CAUTION Concentrated Sodium Fatal if Injected Undiluted DILUTE BEFORE USE	• Sodium acetate intravenous solution: concentrations greater than or equal to four (4) mmol/mL • Sodium chloride 23.4 per cent (four [4] mmol/mL) vial for injection • Sodium phosphate intravenous solution: concentrations greater than or equal to four (4) mmol/mL sodium and three (3) mmol/mL phosphate	
CAUTION Concentrated Electrolyte	• Calcium (all salts) intravenous solution: concentrations greater than or equal to 10 per cent (100 mg/mL) • Magnesium sulfate intravenous solution: concentrations greater than 20 per cent (200 mg/mL)	To be affixed to the storage containers.

Appendix 3: Audit Tool

Audit Tool

S.N	Audit Process	Standard / Criteria	Yes	Partial	No	N/A	Comment
1	Observation Document Review	Are prominent warning labelsapplied to the drug containers of the concentrated electrolytes?					
2	Observation Interview Document Review	Is the concentrated electrolytes stored properlyand restricted access to authorized / qualified staff?					
3	Observation Interview Document Review	Are the concentrated electrolytes prescribing anddispensing procedures performed properly? (Lab investigations, medicineconcentration prescribed etc.)					
4	Observation Interview Document Review	Are the concentrated electrolytes discarded properly?					

Checked by *(Name and Signature)*: …….. **Date:** ……....

Appendix 4. Document Request Form

Document Request Form			
Section A: Completed by Document Requester			
1. Requester Details			
Name	Najla Al Zadjali	Date of Request	July 2022
Institute	Al Masarra Hospital	Mobile	95885771
Department	QMPSD	Email	-
The Purpose of Request			
☐ Develop New Document	☑ Modification of Document	☐ Cancelling of Document	
1. Document Information			
Document Title	Policy and Procedure of the Removal of High Concentrations of Electrolytes		
Document Code	AMRH/PHARM/P&P/003/Vers.03		
Section B: Completed by Document Controller			
☑ Approved	☐ Cancelled	☐ Forward To:……..	
Comment and Recommendation:			
Name	Kunooz Al Balushi	Date	July 2022
Signature		Stamp	

Appendix 5. Document Validation Checklist

Document Validation Checklist

Document Title: Policy and Procedure of the Removal of High Concentration Electrolytes		**Document Code:** AMRH/PHARM/P&P/003/Vers.03			
No	Criteria	**Meets the Criteria**			**Comments**
		Yes	**No**	**N/A**	
1.	**Approved format used**				
1.1	Clear title – Clear Applicability	✓			
1.2	Index number stated	✓			
1.3	Header/ Footer complete	✓			
1.4	Accurate page numbering	✓			
1.5	Involved departments contributed	✓			
1.6	Involved personnel signature /approval	✓			
1.7	Clear Stamp	✓			
2.	**Document Content**				
2.1	Clear purpose and scope	✓			
2.2	Clear definitions	✓			
2.3	Clear policy statements (if any)	✓			
3.	**Well defined procedures and steps**				
3.1	Procedures in orderly manner	✓			
3.2	Procedure define personnel to carry out step	✓			
3.3	Procedures define the use of relevant forms	✓			
3.4	Procedures to define flowchart			✓	
3.5	Responsibilities are clearly defined	✓			
3.6	Necessary forms and equipment are listed	✓			
3.7	Forms are numbered	✓			
3.8	References are clearly stated	✓			
4.	**General Criteria**				
4.1	Policy is adherent to MOH rules and regulations	✓			
4.2	Policy within hospital/department scope	✓			
4.3	Relevant policies are reviewed	✓			
4.4	Items numbering is well outlined	✓			
4.5	Used of approved font type and size	✓			
4.6	Language is clear, understood and well structured	✓			
Recommendations ✓.....For implementation ..... More revision ..... To be cancelled.....					
Reviewed by: Kunooz Al Balushi		**Reviewed by:** Ruvilee Ramel-Bueno