SUBMITTAL TO THE RIVERSIDE UNIVERSITY HEALTH SYSTEM MEDICAL CENTER GOVERNING BOARD COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

ITEM: 18.4
(ID # 30534)
MEETING DATE:
Tuesday, June 02, 2026

FROM : RUHS-MEDICAL CENTER

SUBJECT: RIVERSIDE UNIVERSITY HEALTH SYSTEM-MEDICAL CENTER: 2025 Policies to the Board - Oct 2025 thru Dec 2025, All Districts. [$0].

RECOMMENDED MOTION: That the Board of Supervisors:

1. Review and approve the attached Medical Center and Clinics Policies.

ACTION:Consent

Jennifer Cruikshank
Jennifer Cruikshank, Chief Executive Officer – Health System 5/15/2026

MINUTES OF THE GOVERNING BOARD

On motion of Supervisor Medina, seconded by Supervisor Gutierrez and duly carried by unanimous vote, IT WAS ORDERED that the above matter is approved as recommended.

Ayes:	Medina, Spiegel, Washington, Perez, and Gutierrez
Nays:	None
Absent:	None
Date:	June 2, 2026
xc:	RUHS-MC

Kimberly A. Rector
Clerk of the Board
By: _____ Deputy

SUBMITTAL TO THE RIVERSIDE UNIVERSITY HEALTH SYSTEM MEDICAL CENTER GOVERNING BOARD OF DIRECTORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

FINANCIAL DATA	Current Fiscal Year:	Next Fiscal Year:	Total Cost:	Ongoing Cost
COST	$ 0	$ 0	$ 0	$ 0
NET COUNTY COST	$ 0	$ 0	$ 0	$ 0
SOURCE OF FUNDS: N/A			Budget Adjustment: No	
			For Fiscal Year: 25/26	

C.E.O. RECOMMENDATION: Approve

BACKGROUND:

The Riverside University Health System Medical Center (RUHS MC) is a licensed and accredited acute care hospital serving the needs of County residents since 1893. RUHS MC currently has two campuses – one in Moreno Valley and one on County Farm Road in the City of Riverside.

As an acute care hospital RUHS MC is required by the State of California to have a "governing body" separate from its administrative leaders and medical staff leadership. The "governing body" is "the person, persons, board of trustees, directors or other body in whom the final authority and responsibility is vested for conduct of the hospital." 22 CCR §70035. (See also 42 CFR 482.12 and Joint Commission Standard LD.01.03.01) The Board of Supervisors serves as the "governing body" for the hospital.

Various regulatory requirements mandate that the Governing Board participate in the leadership and decision-making of the Medical Center by reviewing and approving its policies relating to certain topics.

RUHS-MC is committed to furnishing a safe, accessible, effective and efficient environment consistent with its mission, services and applicable governmental mandates. This includes fostering the protection, safety and well-being of patients, employees, staff and visitors during natural or man-made disasters and ensuring to the greatest extent possible, adherence to our social responsibility and commitment to the community.

Impact on Residents and Businesses

The RUHS Medical Center offers a 439-bed facility providing Adult, Pediatric and Neonatal Services, including a Level 1 Trauma Center, the county's only Pediatric Intensive Care Unit, a Stroke Center, with over 40 specialty care clinics, as well as a Medical and Surgical Center featuring state-of-the-art Outpatient Surgical, Diagnostic and Imaging Equipment, Rehabilitation Services, and an Outpatient Pharmacy. The RUHS Emergency Treatment Services/Inpatient Treatment Facility at the Arlington Campus located in Riverside is a 77-bed inpatient Psychiatric Treatment Facility. The integrated healthcare continuum is fortified with 14 RUHS-CHCs conveniently located throughout the county which work in close partnership with RUHS-BH and

RUHS-PH to offer access to comprehensive high-quality and integrated primary, Behavioral Health, Specialty Care, Dental Care and Health Promotion services.

Training future healthcare leaders is fundamental to our commitment to serving our community as well as our mission as a safety net institution. An efficient, well-functioning medical center providing care of high quality creates many positive benefits for Riverside County citizens and its businesses.

This item requires Board approval in accordance with the requirements of the State of California which state that an acute care hospital shall have a "governing body" separate from its administrative leaders and medical staff leadership. The Board of Supervisors has declared itself to be the "governing body" for the RUHS Medical Center (Motion, February 23, 1988, 3-35). Furthermore, on April 12, 1998 the Board determined that it would hold regularly scheduled meetings, acting as the Medical Center governing board, to "review hospital policy, quality of care, medical staff credentialing, institutional planning and continuing education matters" pursuant to Resolution No. 88-166.

As such, RUHS-MC is required to report quarterly for each fiscal year in accordance with RUHS Hospital Bylaws revised October 21, 2025, Item 18.2, ID 29056. During the second quarter of Fiscal Year 2025/2026 there were a total of twenty existing policies that were revised, as well as the addition of one new policy. The details of both the revised policies and new policy are summarized within Attachment A.

ATTACHMENTS:
Attachment A: RUHS Policy Summary 10.01.25 to 12.31.25
Attachment B: RUHS Policy List 10.01.25 to 12.31.25

Jacqueline Ruiz
Jacqueline Ruiz, Principal Analyst 5/27/2026

Aaron Gettis
Aaron Gettis, Chief Deputy County Counsel 5/18/2026

RUHS-Medical Center Housewide Policies Quarter 2, FY25/26

#	Name	Version Effective Date	Additions, Revision or Correction
1	HW 150 Medical Records Completion	12/23/2025	**Revision Summary**: Minor revisions to definitions and timelines associated with compliance in respect to completion of medical records. _____ **Revision Details:** Practitioner Notification and Accountability of Inpatient Incomplete and/or Delinquent Records. Updated 4.9 process to Time = 7 days, Time = 13 days, Time = 14 days + next business day, Time = 24 hours + next business day. Included H&P and Psychiatric Evaluation with Operative Reports. Updated MSA process to inactivate practitioners access in EHR system
2	HW 410 Use of Personal Cell Phones	12/23/2025	**Revision Summary**: Minor revisions to definition and policy regarding Personal Cell Phones. _____ **Revisions Details**: Clarify 'other' devices as defined in 2.1 and clarify personal uses in patient care areas.
3	HW 602 Patient Informed Consent	12/23/2025	**Revision Summary**: Minor revisions for clarification _____ **Revisions Details**: Clarification language 2.6 for advanced practice providers

4	HW 603.4 Pain Assessment and Management	10.21.25	**Revision Summary**: Added new sections addressing pain medication administration, removed unnecessary definitions and completed formatting changes. _____ **Revisions Details**: Add new sections 4.6 to address administration of concomitantly scheduled and prn medications; added Appendices 6.4 Summary Table. Removed information definitions that are standard to nursing practice/knowledge – definitions in section. Moved pain scales to appendix. Add online skills/education resource for Dynamic Health.
5	HW 604.3 Monitoring of Postoperative ERAS	10.21.25	**Revision Summary**: Added new monitoring standards _____ **Revisions Details:** Added new monitoring standards
6	HW 606.1 Blood Transfusions Paul Gann Act	12.23.25	**Revision Summary**: Added new scope and updated language & references. _____ **Revisions Details**: Updated title. Added scope. Updated language of Paul Gann Act. Updated references. Added "under the direction of a physician, surgeon, or doctor of podiatric medicine" after LIP.
7	HW 613 Methotrexate Administration and Management for Treatment of Ectopic Pregnancy	12.23.25	**Revision Summary**: Added language to Section 7.1 _____ **Revisions Details**: Adding statement to 7.1 to allow for other combinations of syringes to be utilized to get to the necessary dose.

8	HW 620 Code Blue, Code White, and Code MET	10.21.25	**Revision Summary**: Non-substantiave changes to emergency response plan. _____ **Revisions Details**: Combine Sections for Code White/Blue. Update emergency response plan to MSC/SDS surgery. Minor wording changes throughout. Remove common language definitions. Removed down time form attachment. Remove section 5.4b, competency statement.
9	HW 621 Code Airway	10.21.25	**Revision Summary**: Added new language providing further instruction specific to Airways. _____ **Revisions Details**: Add guideline section, revise flow diagram with clinical decision points, add airway checklist, add cognitive aid for surgical airway, addition of evidenced based practice references.
10	HW 629 Behavioral Emergency Response Team BERT Team Scope of Service	10.21.25	**Addition Summary**: Added new policy which provides guidelines for BERT program, to ensure excellent and consistent care for all patients, family members and visitors exhibiting signs and or symptoms of an impending behavioral crisis or a perceived crisis.
11	HW 680 Verbal/Telephone Orders	10.21.25	**Revision Summary**: Non-substantive changes to policy _____ **Revisions Details**: Update 5.4 B to align with EHR workflow, remove reference to HW630, add secure chat as a prohibited verbal order method or Remove Reference to HW 607.1

12	HW 811 Automated Dispensing System Pyxis	12.23.25	**Revision Summary**: Non-substantive changes to policy _____ **Revisions Details**: Annual review, minor changes. Added reference and definition.
13	HW 829 Ordering of Adult Parenteral Nutrition	12.23.25	**Revision Summary**: Non-substantive changes to policy _____ **Revisions Details**: Periodic review, minor change.14(f) SMOFLipid to be used instead of Intralipid.
14	HW 830 Adult Guidelines for the Admin of Parental Meds	12.23.25	**Revision Summary**: Non-substantive changes to policy _____ **Revisions Details**: Periodic review, minor change. added 3.3 to address locations and medications not specified.
15	HW 848 Auto Subs Adult Inpatients	12.23.25	**Revision Summary**: Added new language providing further instruction specific to medication substitution. _____ **Revisions Details**: Periodic review. Minor change. Update statement of interchangeability for non-FDA interchangeable designated biosimilars; add Appendix of Biological Products Approved for Therapeutic Interchange.
16	HW 851 Handling of Hazardous Medications	12.23.25	**Revision Summary**: Non-substantive changes to PPE _____ **Revisions Details**: Revision with updated information from new NIOSH 2024 HD list and PPE required. Updated references

17	HW 854 Davita Dialysis Medication Storage	12.23.25	**Revision Summary**: Non-substantive changes regarding medication storage. **Revisions Details**: Add reference 5.6. Add statement 1.3a to align with hazardous med policies
18	HW 860 Renal Dosing Protocol by Pharmacy	10.21.25	**Revision Summary**: Several revisions made regarding Dialysis Dosage protocol. **Revisions Details**: Expanded scope, updated language around estimated renal function, added eGFR equations, added specific population considerations. Updated references. 3.6 removal of neonate language, neonatal exclusion now in scope, antimicrobial language removed from scope, re-structuring section 3 formatting.
19	HW 861 Inpatient Pharm Order Review Entry Process.	12.23.25	**Revision Summary**: Non-substantive changes to medication order review and administration. **Revisions Details**: Periodic review. Minor change. Add 3.10 and 4.6- BoP 4071.1 for remote order review and entry
20	HW 873 Cleaning and DIsinfecting Sterile Compounding Areas	12.23.25	**Revision Summary**: Updated policy to align with new requirement from California Board of Pharmacy. **Revisions Details**: Update with new requirement from California Board of Pharmacy. Added 5.4 – Pre-filter changed. Revised Appendix B and C- EVS Cleaning log. Added Incubator cleaning and frequency

21	HW 876 Management of Personal Insulin Pumps and Continuous Glucose Monitors During Hospitalizations	10.21.25	**Revision Summary**: Updated policy to align with new Insulin Form. _____ **Revisions Details**: Updates to References, 4.7, 4.8, and 4.22 to align with new Insulin Pump Order Set and Medication Reconciliation Form.

RUHS-Medical Center Policies Approved 10/01/25 through 12/31/25

#	Name	Version Effective Date
1	HW 150 Medical Records Completion	12/23/2025
2	HW 410 Use of Personal Cell Phones	12/23/2025
3	HW 602 Patient Informed Consent	12/23/2025
4	HW 603.4 Pain Assessment and Management	10.21.25
5	HW 604.3 Monitoring of Postoperative ERAS	10.21.25
6	HW 606.1 Blood Transfusions Paul Gann Act	12.23.25
7	HW 613 Methotrexate Administration and Management for Treatment of Ectopic Pregnancy	12.23.25
8	HW 620 Code Blue, Code White, and Code MET	10.21.25
9	HW 621 Code Airway	10.21.25
10	HW 629 Behavioral Emergency Response Team BERT Team Scope of Service	10.21.25
11	HW 680 Verbal/Telephone Orders	10.21.25
12	HW 811 Automated Dispensing System Pyxis	12.23.25
13	HW 829 Ordering of Adult Parenteral Nutrition	12.23.25
14	HW 830 Adult Guidelines for the Admin of Parental Meds	12.23.25
15	HW 848 Auto Subs Adult Inpatients	12.23.25
16	HW 851 Handling of Hazardous Medications	12.23.25
17	HW 854 Davita Dialysis Medication Storage	12.23.25
18	HW 860 Renal Dosing Protocol by Pharmacy	10.21.25
19	HW 861 Inpatient Pharm Order Review Entry Process.	12.23.25
20	HW 873 Cleaning and DIsinfecting Sterile Compounding Areas	12.23.25

21	HW 876 Management of Personal Insulin Pumps and Continuous Glucose Monitors During Hospitalizations	10.21.25

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 150	Page 1 of 6
Title: Medical Records Completion	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☒ **RUHS – Medical Center** ☐ **RUHS – Public Health** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO / Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. PURPOSE

1.1 To define how record deficiencies are to be assigned and practitioners informed of said deficiencies.

1.2 To specify the conditions under which reasonable and appropriate sanctions may be taken by the Medical Staff for failure to complete medical records as required, the nature of the sanctions available for use, the restrictions to be observed in using these sanctions, and the method of implementation.

1.3 To establish policy and procedure for corrective action when a member of the Medical Staff, including Allied Health Professionals, has become delinquent in completion of medical records.

2. DEFINITIONS:

2.1 Incomplete: A medical record (documented, authenticated), that has not been completed by the practitioner within the specific timeframe but no later than 14 days of patient's discharge.

2.2 Delinquent: A medical record (documented, authenticated), that has not been completed by the practitioner 14 days post the patient's discharge.

2.3 Suspension: A limited suspension in the form of withdrawal of admitting and other related privileges until all medical records are completed. Members whose privileges have been suspended for delinquent records may treat patients only in life-threatening situations

3. REGULATORY REQUIREMENTS:

3.1 Title 22, California Administrative Code, Section 70751 (g), requires that the medical records shall be completed promptly and authenticated or signed by a licensed healthcare practitioner acting within the scope of their professional licensure within two weeks following the patient's discharge.

3.2 42 CFR Part 482.24(b)(c) Condition of Participation states that medical records must be accurately written, and promptly completed after discharge in accordance with State laws and hospital policy but no later than 30 days after discharge.

3.3 The Bylaws, Rules and Regulations of the Medical Staff: The Medical Record requires the patient's medical record to be completed within 14 days of discharge by the Attending Physician or Allied Health Professional. An operative or invasive procedure report must be completed immediately following the procedure. If a practitioner fails to complete medical records on a timely basis, the Chief of Medical Staff, Chief Medical Officer, or designee, may suspend the practitioner's

admitting, operating, and consultation privileges, and/or enforce other pertinent contractual stipulations.

3.4 The Joint Commission, Standard RC. 01.01.01 requires the hospital maintains complete, accurate and authenticated medical records for each individual patient. Documentation in the medical record must be entered in a timely manner, not to exceed 30 days after the patient's discharge.

4. PROCEDURE

4.1 Medical records are expected to be completed in accordance with hospital policy to facilitate care coordination.

4.2 All types of medical records, except ambulatory clinic and ambulatory procedure notes, will be included in this policy.

4.3 Members of the Medical Staff (including Allied Health Professionals) shall be responsible for completion of the medical record.

4.4 House staff physicians, including interns and resident physicians, operating within their scope of practice, may complete and sign a History and Physical (H&P), operative report, brief operative note, progress note, labor & delivery note, ED note, and discharge summary. These medical records must be authenticated and co-signed by the supervising Medical Staff member within 14 days from the date of discharge.

4.5 Medical record completion:

a. H&P shall be completed through the electronic health record (EHR) system template or on paper during downtime, no more than 30 days before or 24 hours after admission, but prior to surgery or a procedure requiring anesthesia services.

b. A brief operative note or operative report shall be completed immediately after surgery. A complete operative report shall be completed through the EHR template or or on paper during downtime within 24 hours after surgery.

c. Psychiatric evaluation, if appropriate, shall be completed through the EPIC template or on paper during downtime immediately or within 24 hours after inpatient psychiatric admission.

d. Progress notes, labor & delivery notes, ED notes, and discharge summaries shall be completed through the EHR template or on paper during downtime and signed within 14 days from the date of discharge. All deaths require a death summary completed in the EHR system or on paper during downtime.

4.6 The Health Information Management (HIM) Department will identify pending delinquent medical records and notify the responsible practitioner and department executive assistant. Members of the Medical Staff (including Allied Health Professionals) shall receive notification from the HIM Department of medical records deficiencies prior to the time the records will be considered delinquent.

4.7 If at any time the practitioner contests the incomplete or delinquent medical record, it is the responsibility of the practitioner to contact the HIM Department promptly. HIM representatives will investigate the practitioners claim(s), taking into consideration any mitigating circumstances, and make a final determination. The

timeline for pending suspension of the provider will be stopped until such determination is made.

4.8 If the practitioner is unable to complete his/her medical records within the time allowed, it is his/her responsibility to notify the Chief of Medical Staff or Chief Medical Officer or designee, and the designated HIM Department personnel of any extenuating circumstances and request a reasonable additional period of time before suspension is imposed.

4.9 When a provider is identified as out of compliance with respect to completion of medical records the enforcement process will proceed as follows:

a. Non-operative medical records (including progress notes, ED provider notes, procedure notes, and discharge summaries):

i. **Time = 0**: The provider is identified by HIM as having an incomplete medical record if not completed after the point of care. No specific notification of the provider is provided beyond flagging the electronic medical record (within EPIC in-basket).

ii. **Time = Seven (7)** days after the provider is identified as having an incomplete medical record, HIM will evaluate the medical record and, if appropriate, will notify the provider and Executive Assistant via email,of the incomplete medical record(s).

iii. **Time = Thirteen (13) days** after the provider is identified as non-compliant with medical records completion, HIM will evaluate the medical record and will email the provider, as well as the Exeutive Assistant and Department Chair to inform them of the incompleted medical record and imminent suspension of privileges.

iv. **Time =** Fourteen (14) days + next business day, excluding Friday: HIM will evaluate the medical record to confirm completion by the end of the 14th day and, if not complete, HIM will notify Medical Staff Administration (MSA) that privileges should be suspended. The MSA will contact the provider's Executive Assistant and Department Chair (and/or Vice Chair) of the suspension of privileges.

b. H&P, Psychiatric Evaluation, and Operative reports (which generally are required for any surgery involving making an incision and/or general anesthesia):

i. **Time = 0**: The provider is identified by the EHR system as having an incomplete H&P, Psychiatric Evaluation, or Operative report, if not completed immediately. No specific notification of the provider is provided beyond flagging the EHR (via in-basket).

ii. **Time = 24 hours** after the provider is identified as non-compliant with medical records completion, HIM will evaluate the medical record to confirm responsibility, verify the H&P, Psychiatric Evaluation, or Complete Operative Note was truly not completed, and will notify the provider, as well as the Executive Assistant and Department Chair to inform them of the incomplete medical record

and imminent suspension of privileges. The provider will have until the end of the day to complete.

iii. **Time = 24 hours + next business day, excluding Friday:** HIM will evaluate medical record to ensure completion of records, and if not complete HIM will notify MSA that privileges should be suspended. The MSA will contact the Provider, Department Executive Assistant and Department Chair (and/or Vice Chair) of the suspension of privileges.

4.10 Once the suspension of privileges for delinquent medical records has been initiated, the MSA will:

a. Contact the provider via phone call

b. Forward a suspension letter to the provider via email

c. Notify the provider's Department Chair (and/or Vice Chair), the Chief Medical Officer, the Chief of Medical Staff, Credentials Committee Chair, Chief Nursing Officer, and if applicable the Perioperative Associate Chief Nursing Officer, via email.

d. If applicable, unless directed otherwise by the Chief of Medical Staff all elective surgeries scheduled by the provider for the day after the suspension begins will be cancelled.

4.11 The MSA will inactivate practitioners access to admit and perform other related privileges in the EHR system.

4.12 While under suspension of privileges for delinquent medical records, no new non-emergent procedures or admissions will be allowed; however, the Medical Staff member will continue to treat patients already in the hospital until they are discharged.

4.13 The Chief of Medical Staff, Chief Medical Officer, or designee may on a case by case basis decide to withhold suspension for delinquent records in emergent situations as necessary.

4.14 The HIM Department will monitor the medical records for completion and notify the MSA to lift the suspension when delinquent records are complete. The practitioner will remain on suspension until the practitioner has completed all their delinquent medical records.

4.15 Once all delinquent records are completed, a monetary fine will be applied. Fine amounts payable to the RUHS Medical StaffFund, on a rolling calendar year:

a. 1st suspension: $50

b. 2nd suspension: $100

c. 3rd suspension: $200

d. Fine continues to double

In the event membership/privileges terminate and there is an outstanding fine, and the provider chooses to reapply, the fine and initial application fees will be required.

4.16 Upon completion of all delinquent records, the HIM Department will notify the provider and MSA of reinstatement.

4.17 The MSA Department will reinstate access to admit and perform other related privileges in the EPIC system.

4.18 Exceptions to modify the foregoing procedure may be made by the Medical Executive Committee for practitioners with delinquent medical records who have notified the HIM Department of extenuating circumstances such as illness, vacation, sabbatical, personal crisis, or another excused absence. In the practitioners absence, the delinquent medical records shall be re-assigned to the Department Chair (or Vice Chair) or another provider within the practitioners Department.

a. An exception may be made if it is determined by the Chief of Medical Staff or Chief Medical Officer, or designee that suspension and/or removal from service may affect patient safety.

5. MONITORING

5.1 The HIM Department shall conduct regular reviews encompassing all clinical services to ascertain chart completion compliance. Results shall be reported to the Credentials Committee, Professional Practice Evaluation Committee, and Medical Executive Committees for action.

5.2 In the event a practitioner withdraws membership and/or privileges, the MSA Department will inform HIM of the term date. HIM will review to make sure that all medical records under the practitioner are completed. If records are incomplete the practitioner, Department Executive Assistant, and the Department Chair (or Vice Chair) will be notified.

6. SUSPENSION SANCTIONS

6.1 Enforcement of sanctions will be under the direction of the Department Chair (and/or Vice Chair), Chief of Medical Staff, Chief Medical Officer, and Medical Executive Committee (MEC).

6.2 Any physician or Allied Health Professional whose charts remain delinquent and whose suspension extends beyond thirty (30) days will in the case of a physician be deemed a voluntary resignation from the medical staff, and in the case of an Allied Health Professional a voluntary resignation of practice prerogatives in the Hospital with the right of appeal as provided in the Medical Staff Bylaws.

6.3 If a physician or Allied Health Professional has five (5) medical record suspensions in any twelve (12) month period, a mandatory meeting with the Medical Executive Committee (executive session) will be required.

7. REFERENCES:

7.1 Title 22 Section 70751(g)

7.2 The Bylaws, Rules and Regulations of the Medical Staff or RUHS – Medical Center

7.3 The Joint Commission Standard RC. 01.01.01

7.4 42 CFR Part 482.24(b)(c)

Document History:

Prior Release Dates: 5/22/2017	**Retire Date:** N/A
Document Owner: Health Information Management, Medical Staff, MEC Committee	**Replaces Policy:** Practitioner Notification and Accountability of Inpatient Incomplete and/or Delinquent Records

Date Reviewed	**Reviewed By**	**Revisions Made Y/N**	**Revision Description**
7/21/2025	Director, Health Information Management, Director, Corporate Compliance, Director of Medical Staffing, Chief Medical Officer	Yes	Updated 4.9 process to Time = 7 days, Time = 13 days, Time = 14 days + next business day, Time = 24 hours + next business day,. Included H&P and Psychiatric Evaluation with Operative Reports. Updated MSA process to inactivate practitioners access in EHR system
09/11/2025	Medical Executive Committee	No	
11/13/2025	PAC	No	

RIVERSIDE UNIVERSITY HEALTH SYSTEM –

MEDICAL CENTER, COMMUNITY HEALTH CENTERS, AND HOSPITAL BASED UNITS

Housewide

	Document No: 410	Page 1 of 2
Title: Use of Personal Cell Phones	**Effective Date:** 12/23/2025	☒ **RUHS – Community Health Centers** ☒ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☒ **Policy** ☒ **Procedure** ☐ **Guideline**

1. DEFINITIONS

1.1 Mobile device. This is a mobile phone or mobile, also called a wireless, cellular phone, cell phone, or cell speaker box is a long range, portable electronic device for mobile communication, which could include voice or text.

1.2 Cellular. This is related to a mobile telephone system that uses several short-range radio stations to cover the areas that it serves.

2. POLICY

2.1 Riverside University Health System (RUHS) recognizes that staff may use cellphones, smartphones, or electronic devices for business and patient care reasons, and, at times, personal reasons. The use of these devices, however, can create a distraction at the workplace and interfere with operations and patient care. Accordingly, staff are not permitted to use cell phones, smartphones, or electronic devices (including earbuds) for personal reasons in patient care areas or while caring, treating, or transporting patients or supplies. Should an urgent need arise for staff member to use a cell phone, smartphone or electronic device (including earbuds) for personal reasons, the staff member should speak outside of a patient care area, and in a tone that is not disruptive or distracting to patients and other staff members.

For the purpose of this policy, cell phones, smartphones and electronic devices (hereinafter referred to as “phones”) shall include any device that receives or transmits phone calls, emails, or text messages, has internet access, or plays music or games.

3. PROCEDURE

3.1 Phones provided to Staff by RUHS are RUHS property and should be used for business and patient care purposes only. Staff should avoid unnecessary long distance or roaming charges.

3.2 Except in urgent situations, while on duty staff should not use phones or electronic devices to make or receive personal phone calls or text messages. Should an urgent need arise for a staff member to speak on the phone for personal reasons; the staff member should speak outside of a patient care area, and in a tone that is not disruptive or distracting to patients and other staff members.

3.3 While on duty, Staff should not use phones or electronic devices to check personal email messages, log on to the internet for personal reasons, play games, or listen to music. Personal cell phones and accessories may be used in the breakroom, outside or in public areas while on break.

3.4 Unless operational or patient care needs are required otherwise, Staff are prohibited from using phones or electronic devices (including earbuds) in patient care areas or while caring for, treating, or transporting patients or supplies.

3.5 Personal phones should be set to vibrate for incoming calls or at a volume low enough not to be heard by others.

3.6 RUHS prohibits the use of phones that create an unsafe work environment (e.g. near machinery, construction activities, etc.).

3.7 California State bans the use of phones while driving. Using phones (even for work-related calls) without a hands-free device is always prohibited.

3.8 Departments may establish additional rules regarding the use of phones and electronic devices that are consistent with this policy.

3.9 Staff are advised and this shall serve as notice that any and all telephone conversations or transmissions, electronic mail or transmissions, or internet access or usage by an employee by any electronic device or system, including but not limited to the use of a computer, telephone, wire, radio or electromagnetic, photoelectronic or photo-optical systems may be subject to monitoring at any and all times and by any lawful means by RUHS.

3.10 Staff violating this policy will be subject to progressive disciplinary action, up to and including termination of employment.

Document History:

Prior Release Dates: 01/12/2009, 7/5/2017, 3/9/2021, 7/18/2024	**Retire Date:** N/A
Document Owner: Administration	**Replaces Policy:** N/A

Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
2025	Chief Patient Care Officer, Human Resources, Union review	Y	Clarify 'other' devices as defined in 2.1 and clarify personal uses in patient care areas.
12/11/2025	PAC	N	

RIVERSIDE UNIVERSITY HEALTH SYSTEM

Housewide

	Document No: 602	Page 1 of 5
Title: Patient Informed Consent	**Effective Date:** 12/23/2025	☒ **RUHS – Community Health Centers** ☒ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☒ **Policy** ☐ **Procedure** ☐ **Guideline**

1. DEFINITIONS

1.1 **Informed Consent -** A process of obtaining and documenting permission before conducting a healthcare intervention on a person. It involves discussion between a practitioner and the patient or patient's legal representative about the nature of the procedure, the potential risks, benefits and alternatives to the treatment.

1.2 **Medical Emergency -** A medical emergency exists when:

a. Immediate services are required for the alleviation of severe pain

OR

b. The procedure is required for immediate diagnosis and treatment of unforeseeable medical conditions, which, if not immediately diagnosed and treated, would lead to serious disability or death.

AND EITHER

a. The patient is unconscious or incapable of giving consent and there is insufficient time to obtain informed consent from the patient's legal representative

OR

b. The procedure must be undertaken immediately and there is insufficient time to fully inform the patient or a legal representative of possible consequences.

2. POLICY

2.1 RUHS honors each patient's right to give or withhold consent for medical treatment.

2.2 No treatments, other than treatments needed to address a medical emergency, will be permitted unless the patient, or a person legally authorized to consent on the patient's behalf, has consented to treatment.

2.3 **Emergencies -** In the case of a medical emergency:

a. Only the emergency condition may be treated.

b. The medical determination that an emergency exists must be documented by a licensed physician and placed in the medical record.

c. Treatment that exceeds what is necessary for the emergency condition may not be rendered without consent from someone authorized to consent to treatment on a nonemergency basis.

d. The medical emergency treatment exception is not applicable when a patient has validly refused medical treatment, and the emergency arises from the fact that treatment was not given.

e. If evidence exists to indicate that the patient (or the patient's legal representative) would refuse the treatment, legal counsel shall be consulted.

2.4 **Rescue / "Code" Teams -** The designated Medical Center Rescue / "Code" teams may attempt to resuscitate a person who is in immediate danger of loss of life without first seeking consent or a formal determination by a physician that an emergency exists. All care provided by those teams will be documented according to the team protocol.

2.5 The following types of procedures will require documentation of informed consent before they are performed on a non-emergency basis:

a. Operative procedures

b. Invasive procedures that have the potential for serious risks and / or adverse reactions

c. Blood transfusions or other use of blood products

d. Planned use of all forms of general anesthesia and moderate sedation

e. Electroconvulsive therapy

2.6 It is the treating practitioner's responsibility to ensure informed consent is obtained and documented prior to beginning non-emergency medical treatment.

a. The practitioner who performs or orders a treatment is responsible for ensuring the patient's consent is obtained. This responsibility may not be delegated to a non-physician provider or an advanced practice provider without practice privileges to perform the treatment independently, without supervision.

However, the non-physician provider or advanced practice provider without privileges may obtain the patient's consent under the supervision of the practitioner performing or ordering the treatment, and the supervising practitioner shall review and co-sign the consent form after reviewing the information given to the patient and agreeing that the consent process was complete and appropriate.

b. The treating practitioner may assign a licensed resident physician from the treatment team to obtain the informed consent with a patient or patient's representative about a procedure or medical treatment; however, the treating physician is still responsible for ensuring that the nature of the procedure, the potential risks, benefits and alternatives of the treatment are discussed directly with the patient or patient's representative, and all questions are answered.

c. If general anesthesia is required, the anesthesia practitioner must discuss associated risks, benefits and alternatives with the patient or patient's representative prior to treatment and document in the patient's medical record.

d. If Dialysis or Chemotherapy is required

- Initiation of these services at RUHS (first time) require written informed consent.

- Pre-established ongoing treatment will be discussed by the treating practitioner and documented in the medical record via progress note to include associated risks, benefits and alternatives with the patient or patient's representative; and patient agreement to continue pre-established treatment.

e. If a non-physician practitioner, such as a Physician's Assistant (PA), Nurse Practitioner (NP) or Certified Registered Nurse Anesthetist (CRNA), has been granted practice privileges to perform a procedure independently, they are responsible for obtaining the patient's consent prior to beginning the procedure.

f. If a non-physician other than a practitioner with practice privileges will perform the procedure, then the ordering practitioner is responsible for securing the consent. For example, when submitting orders for the administration of blood products or for placement of peripherally inserted central catheter (PICC) lines by nursing staff the ordering practitioner must ensure informed consent is obtained before those orders can be acted upon.

g. If more than one practitioner is providing the treatment, they can determine together which practitioner will obtain consent.

2.7 Physicians in training, who have verifiable competency in a particular procedure, as documented within the Graduate Medical Education (GME) Credentialing lists, are responsible for ensuring informed consent is obtained when supervising other physicians in training performing that particular procedure.

2.8 The patient or patient's representative must also sign and date the informed consent form, unless the consent is obtained by telephone (see section 2.9 below). If requested, a reasonable attempt will be made to provide the patient or patient's representative with a copy of the signed informed consent form and the original will be stored in the patient's medical record. Patients may also visit their My Chart portal for a copy of the consent form at https://myruhealth.org.

2.9 An Informed Consent discussion must include:

a. Assessment of the patient's capacity to understand the discussion or location of an appropriate substitute decision maker if the patient is incapable by age, mental state or medical condition of understanding the decision under discussion.

b. A discussion about the patient's proposed care, treatment, and services.

c. Potential risks, benefits, and alternatives to the proposed care, treatment, and services.

d. Any potentially conflicting interests the practitioner may have such as research or financial interests.

2.10 **Consent by telephone -** Consent for medical or surgical procedures should be obtained by telephone only if the person having the legal authority to consent for the patient is not otherwise available. The telephone discussion between the practitioner and the patient's legal representative and a responsible RUHS employee should be confirmed by either (a) the practitioner and one RUHS employee or (b) by two RUHS employees and documented in the telephone consent section of the informed consent with name, signature, title, date and time.

2.11 **Interpreters -** If a patient or his/her legal representative cannot communicate with the practitioner due to a language or other communication barrier, the practitioner will arrange for an interpreter according to the instruction in RUHS policy *HW 142 Access to Language Services for Non or Limited English Proficient, Deaf, and Hearing-*

Impaired Persons. If an interpreter is used in person, the interpreter will sign, date, and time on the informed consent form. If an interpreter is used online or on phone, the required information will be documented along with the Interpreter's telephone ID on the informed consent form.

2.12 **Nursing role -** The nurse will ensure that the appropriate informed consent form has been signed and is in the medical record prior to the procedure being done.

2.13 **Abbreviations -** Abbreviations should not be used in the informed consent form.

2.14 **Corrections** – If an error is identified in the informed consent form, the treating provider must either prepare a new electronic consent form, or when using a paper consent form, use a single line through the material to be deleted. The physician and patient must initial, date, and time each correction made to paper consent forms.

2.15 **Names of practitioners -** The names of the practitioner(s) performing the procedure(s) should be identified in the consent form. Use of medical group practice name or use of a surgeon's name followed by "and associates" is not acceptable. Also, the name(s) of other practitioners who will conduct specific, significant surgical tasks not being done by the primary surgeon/practitioner, should be included on the informed consent form.

a. If the listed performing practitioner(s) is unable to perform or complete the procedure, a qualified substitute practitioner(s) will be selected, together with associates and assistants (including anesthesia practitioners, pathologists, and radiologists) from the medical staff to whom the practitioner may assign designated responsibilities.

b. If circumstances require a change in the treating practitioner after a consent form has been signed by the patient, the new treating practitioner is responsible for discussing that change with the patient or patient representative, answering any questions and documenting that the discussion took place either by executing a new consent form or in a separate note in the medical record prior to the start of the treatment.

2.16 **Refusal to Consent -** Patient and those giving consent on their behalf are entitled to refuse any and all recommended care and treatments. The practitioner's duty is to make every effort to explain the risks, benefits, and likely consequences of refusing the recommended treatment so that such refusals are informed by that information.

a. Refusals of recommended care or treatments should be documented in the patient's chart.

b. Consultation by Psychiatry or with the RUHS Bioethics Committee may be indicated if there are questions about the patient's capacity to appreciate the consequences of such a refusal, or whether refusal by a substitute decision-maker is in the patient's best interest or the refusal could have consequences for another individual, such as a fetus in utero.

2.17 **Special Consent Requirements -** The following procedures have specialized consent requirements under California land or Federal law:

a. **Blood transfusions -** Patients must be given (1) "A Patient's Guide to Blood Transfusion" whenever there is a reasonable possibility that an autologous transfusion may be needed and (2) allowed adequate time for pre-donation unless there are medical contraindications to pre-donation or the patient waives that right.

b. **HIV testing -** If a patient does not independently request an HIV test, prior to

ordering one a medical care provider must make certain disclosures to the patient. The provider also must provide certain information and counseling when the test result is released to the patient. If a patient declines an HIV test that fact must be documented in the patient's medical record.

c. **Sterilization -** The Obstetric Gynecology Department, Family Medicine Department, and the Urology Division each have a policy regarding sterilization that includes appropriate informed consent in compliance with state and federal laws.

d. Silicone Implants and Collagen Injections - State law requires provision of specified information to patients prior to undergoing procedures that include the use of these materials.

e. Vaccines - Federal law requires the furnishing of written information before the administration of most vaccines. These statements can be found at www.immunize.org/vis

f. Procedures related to research - All research at RUHS is governed by the RUHS Institutional Review Board which may require completion of a specific informed consent form before a procedure relating to research is performed.

3. REFERENCES

3.1 The Joint Commission Comprehensive Accreditation Manual for Hospitals Standard RI.01.03.01.

3.2 California Hospital Association Consent Manual "Role of the Physician Obtaining Consent" 2.7

3.3 Medical Informed Consent: General Considerations for Physicians, Paterick et al., Mayo Clin Proc. 2008;83(3):313-319

3.4 42 CFR Sec. 482.51(b)(2); Interpretive Guideline A-0392

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Date Reviewed	**Reviewed By:**	**Revisions Made Y/N**	**Revision Description**
3/13/2024	Compliance	Y	Added anesthesia documentation Language
5/20/2024	Compliance/Regulatory/Dr. Garrison, Dr. Clark, Dr. Kumar, Dr. Thompson, Gregg Gu	Y	Added Anesthesia and Dialysis clarification 2.6
8/1/2024	Pre-Nursing P&P	Y	Follow up on comments and changes requests
8/15/2024	Nursing P&P	Y	Clarification language
8/22/2024	Nursing P&P	N	
8/26/2024	PAC	Y	Adding 'written' consent, and 'via progress note" to 2.6 d. on dialysis and chemo consent to meet regulatory requirements and to aid in the ability to locate of these consent.
9/10/2024	MEC via evote	Y	Change "anesthesiologist" to "anesthesia practitioner." Change 'anesthesia' to 'general anesthesia'
9/11/2025	MEC	N	Clarification language 2.6 a for advanced practice providers
12/18/2025	NPP	N	

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
Housewide

	Document No: 603.4	Page 1 of 8
Title: Pain Assessment & Management	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

1.1 Applies to all patients of the Medical Center and Arlington campuses in the inpatient settings.

2. DEFINITIONS

2.1 Pain assessment tool: is a reliable, validated tool used to measure pain. Tools may vary based on the patient age, setting, and acuity.

2.2 Anticipatory pain: pain that is likely to be experienced due to a planned activity, or intervention.

2.3 Licensed Practitioner(s) – (LP) An individual permitted by law and by the organization to provide care, treatment and services without direction or supervision.

3. POLICY

3.1 Establishing Competency: the patient care team members shall complete and pass the virtual learning platform training on Pain Assessment and Management as part of their new hire Patient Care Orientation. And will demonstrate competency during their orientation period and on an on-as needed basis.

4. GUIDELINES

4.1 Conduct pain assessments on admission, at regular intervals, and before/after interventions or procedures in accordance with LP orders and approved flowsheets in health record. Refer to online nursing point of care / point of learning resource for detailed pain assessment techniques (i.e. DynamicHealth).

4.2 Pain shall be assessed when new pain is reported and when procedures or activities that are expected to cause pain.

4.3 Pain management shall be individualized, with the consideration of the patient's clinical condition, past medical history, religious, and cultural concerns to establish realistic expectations and reasonable pain management goals.

4.4 The treatment strategies shall include pharmacologic, non-pharmacologic, or a combination of – also known as multimodal therapy.

4.5 Self-report is the most reliable indicator of pain presence and intensity and shall be utilized whenever possible. In patients who cannot self-report or are non-verbal, use an approved assessment tool.

4.6 Scheduled and as needed (prn) pain medications

a. It is permissible for a patient to have both scheduled and prn pain medications.

b. Minimum frequency does not apply when a patient has scheduled and prn orders – continue to give scheduled medications as scheduled, administer prn orders with dose spacing as recommended in this policy below (4.8, 4.9).

c. Scheduled doses should continue to be given as ordered as the base pain management regimen. Examples of patient conditions where commonly prescribed: acute post-operative surgical pain, sickle cell crisis, oncological pain.

4.7 Minimum frequency to administer oral or IV medication:

a. Oral pain medication shall not be given sooner than every 4 hours, unless otherwise ordered by the LP.

b. Injectable pain medications shall not be given sooner than every 2 hours, unless otherwise ordered by the LP.

4.8 Minimum frequency to administer subsequent oral or IV PRN pain medications:

a. Oral pain medication shall not be given sooner than 2 hours following an IV pain medication administration, unless otherwise ordered by the LP.

b. Injectable pain medication shall not be given sooner than 4 hours following an oral pain medication administration, unless otherwise ordered by the LP.

4.9 Pain reassessment

a. Reassessments after intervention to lessen pain should take place within a clinically appropriate time frame (i.e., expected effect) to evaluate the effectiveness of pain management interventions.

i. After IV/IM medication intervention reassessment shall take place approximately 30 - 45 minutes after administration.
ii. After PO medication intervention reassessment shall take place approximately 60 - 90 minutes after administration.
iii. After **non-pharmacologic** intervention reassessment shall take place approximately **60** minutes after intervention.

b. It is not necessary that the results of post-intervention reassessment be documented in a concurrent note. For example, the nurse may document the reassessment of a successful pain intervention at the end of the shift and the documentation may be as simple as “patient resting comfortably following pain medication” or “pain relief interventions were effective,

c. Reassessment for Patient Controlled Analgesia and continuous analgesia infusions per LP order.

4.10 After intervention, and pain is still present, do NOT re-dose the patient, for any pain level, prior to ordered frequency. Call LP for a new pain order.

a. Example: The patient received 1 mg of hydromorphone IV for pain of 10/10, 30 minutes later, the patient was reassessed, and it is now at

7/10- do not give what is prescribed as appropriate for this pain level, instead call the LP for additional or alternative orders.

4.11 Consideration of Patient Preference

a. A Patient may request to take a different (lesser) potent medication or a lower dose of the same medication than that which is ordered per their pain score, as long as the medication has been ordered as part of the prn orders

i. For example, orders written to administer hydromorphone 1mg for severe pain, and hydromorphone 0.5mg for moderate pain. The patient may request hydromorphone 0.5mg even though pain was reported as severe

b. Alternative medication (lesser potency, or lower dose) must have already been ordered as part of the prn orders

i. For example, orders are written to administer hydromorphone for severe pain, and acetaminophen for mild pain. The patient may request acetaminophen even though pain was reported as severe

4.12 Anticipatory Pain Management

a. Management involves anticipating and addressing potential sources of pain before they occur. For example, administering pain medication before physical therapy following a joint replacement to manage anticipatory pain and allow for optimal participation in therapy

i. Pre-procedure medication: For Procedures that are known to be painful (i.e., wound dressing changes, chest tube removal, venipunctures, endotracheal suctioning, etc.), assess the patient's pain level and administer appropriate analgesia prior to the anticipated painful procedure.

b. Document the reason for giving preemptive analgesia

i. If there is an existing prn pain medication order, the documentation may reflect administration for anticipatory pain rather than a reported score

ii. A separate order for anticipatory pain management pre-procedure may be obtained

4.13 Patient and Family Education. Patients and family shall be educated about pain assessment, management plan and reasonable goals.

a. Educate the patient and the family on the tools to be used to score and assess pain. Review their understanding of the pain scale selected to rate the patient's pain.

b. Education shall include the patient's right to medically appropriate pain management.

c. Discuss the patient's goal for pain management and safe treatment options: Non pharmacologic, safe use of opioid, and non-opioid medications when prescribed.

d. How activities of daily living might affect pain management and the strategies to address the issues.

e. Discharge should include side effects of pain treatment, safe use, storage, and disposal of opioids when prescribed.

4.14 Documentation

a. Initial assessment

b. Reassessment, e.g. worklist, brain

c. Flow Sheets

d. Plan of care

e. Document Education provided

f. Multidisciplinary Notes if applicable

5. REFERENCES

5.1 Joint Commission Perspectives. R3 Report. Pain Assessment and Management Standards for Hospitals. Issue 11, August 29, 2017. https://www.jointcommission.org/-/media/tjc/documents/standards/r3-reports/r3_report_issue_11_2_11_19_rev.pdf

5.2 The Joint Commission. PC01.02.07

5.3 The Joint Commission. Standards FAQs. Medication Administration – Incorporating Patient Preference Into Medication Administration Practices. March 13, 2017; last reviewed September 5, 2023. https://www.jointcommission.org/standards/standard-faqs/critical-access-hospital/medication-management-mm/000002058/

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5.6 Center to Advance Palliative Care (CAPC). Prescribing Opioids: A Pocket Reference. Updated August 16, 2021. https://www.capc.org/documents/324/

5.7 RUHS HW 603.5 Acute Pain Management Hospital Discharge Pain Opioid Prescribing Guidance

6. APPENDICES

6.1 Approved and validated tools to measure pain are Self-reporting and Non-verbal Tools

6.2 Comparative Potency of Common Analgesics Tool

6.3 Equianalgesic Conversion Table

6.4 Summary Table: Opioid Adverse Effects to Monitor

Document History:

Release Dates: 1/2001, 4/2003, 9/2005, 3/2012, 12/28/2016,3/2019, 7/20/23, 3/15/2024		**Retire Date:** N/A	
Sponsored by: Nursing Administration		**Replaces Policy:** N/A	
Date Reviewed	**Reviewed By:**	**Revisions Made Y/N**	**Revision Description**
6/17/25	Nursing P&P	Y	Add new sections 4.6 to address administration of concomitantly scheduled and prn medications; added Appendices 6.4 Summary Table. Removed information definitions that are standard to nursing practice/knowledge – definitions in section. Moved pain scales to appendix. Add online skills/education resource for DynamicHealth
08/04/2025	P&T	N	
9/2/2025	PAC	N	
10/9/2025	MEC	N	

6.1 Appendix. Approved and validated tools to measure pain are Self-reporting and Non-verbal Tools. RUHS-Medical Center uses the following assessment tools:

a. **FLACC:** Face, Legs, Activity, Cry, and Consolability. Total points assigned may be from zero to ten. Commonly used for patients unable to verbalize pain: infants, toddlers, and those with cognitive impairment.
b. **CPOT:** Critical-Care Pain Observation Tool. Uses four behaviors: facial expression, body movement, muscle tension and compliance with ventilator patients. It can be used in nonverbal, non-ventilated patients, and sedated patients. It is reliable and valid for assessing pain in patients who are unable to self-report.
c. **FACES:** Wong-Baker FACES Pain rating scale. Generally used for patients ages 3 years and older.
d. **Numeric Pain Intensity (NPI) Scale:** Can be used for patients who can self-report pain. NPI provides a method for consistency in pain assessments. It determines treatment effects and easy to make comparative ratings.
e. **N-PASS:** Neonatal Pain, Agitation and Sedation Scale. Used for patients less than 3 months corrected age (<3months). Points are

assigned for both pain and sedation.

f. **PAIN-AD (Advanced Dementia):** Used to assess pain in individuals with advanced dementia who are unable to verbally communicate their pain. Focuses on observable components: breathing, negative vocalization, facial expression, body language, and consolability.

6.2 Comparative Potency of Common Analgesics

Pain Medication Potency Tool: Weakest to Strongest[1]

Opioids – associated with serious side effects[2]	
Strongest	Fentanyl (Duragesic®)
	Hydromorphone (Dilaudid®)
	Oxymorphone (Opana®)
	Oxycodone (Percocet®)
	Morphine
	Hydrocodone (Norco®)
	Codeine (Tylenol #3®)
	Meperidine (Demerol®)
Weakest	Tramadol (Ultram®)
Non-opioids – much less potent than opioids	
	Acetaminophen (Tylenol®)
	Nonsteroidal Anti-inflammatory Drugs (NSAIDs®)
	- Ibuprofen (Motrin®, Advil®)
	- Naproxen (Aleve®)
	- Diclofenac (Voltaren®)

Adopted from NIH, Twycross et al. 2017 (3) pharmacological profiles of opioids and conversion tables.

Note: 1 - Tool information is only an estimate of potency. If unable to determine medication and dose, contact the licensed practitioner.
2 - Dizziness, confusion, drowsiness, sedation, respiratory depression & death, constipation, nausea, vomiting, itchiness, dry mouth, dependence, opioid use disorder.

6.3 Equianalgesic Conversion Table

Equianalgesic Conversion Table

Drug Name	Equianalgesic Dose		Oral to Parenteral Ratio
	Oral (mg)	Parenteral (mg)	
Morphine	25	10	5:2
Hydromorphone	5	2	5:2
Oxycodone	20	n/a	n/a
Hydrocodone	25	n/a	n/a
Oxymorphone	10	1	10:1

Potency ratios:
→ oral morphine: oral hydromorphone is 5:1
→ oral morphine: oral oxycodone is 1.25:1
→ oral morphine: IV hydromorphone is 12.5:1
→ transdermal fentanyl 25mcg/hr: oral morphine 50mg/24hr

Oral hydromorphone is 5 times as potent (mg per mg) **as oral morphine**

This conversion table is adapted from: McPherson ML. Demystifying Opioid Conversion Calculations: A Guide for Effective Dosing, 2nd ed. American Society of Health-System Pharmacists, Bethesda, Maryland, 2018.

6.4 Summary Table: Opioid Adverse Effects to Monitor

Adverse Effect	Clinical Signs/Symptoms
Respiratory depression	Slow/shallow breathing, low oxygen saturation, cyanosis
Excessive sedation	Difficult to arouse, unresponsiveness
Nausea/vomiting	Complaints of nausea, vomiting episodes
Constipation	Infrequent stools, abdominal discomfort
Confusion/cognitive issues	Disorientation, delirium, agitation
Dizziness/falls	Unsteady gait, reports of dizziness
Pruritus	Reports/Complaints of itching
Urinary retention	Inability to void, bladder distention

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

HOUSEWIDE

	Document No: 604.3	Page 1 of 8
Title: Monitoring of Postoperative ERAS (Enhanced Recovery After Surgery) Patients with Hydrophilic Intrathecal Opioid Injection	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By: Jennifer Cruikshank CEO/Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

1.1 Applies to adult patients postoperatively who received single-injection hydrophilic intrathecal opioids (e.g. Morphine, not including sustained or extended-release morphine) under the ERAS (Enhanced Recovery After Surgery) protocol.

1.2 Guidelines provide the minimum standards for monitoring of patients postoperatively from post-anesthesia care unit (PACU) to the adult inpatient unit.

2. DEFINITIONS

2.1 **ERAS**: Enhanced Recovery After Surgery is an evidence-based care protocol involving a multimodal, multidisciplinary approach that streamlines patient processes before, during, and after surgery to reduce patient's length of stay, reduce infection, and provide optimal management of patients postoperatively.[6.6]

2.2 **Single-Injection Hydrophilic Intrathecal Opioids:** The injection of narcotic (opioid) medication into the spinal canal, or subarachnoid space, also called the intrathecal space, where the cerebrospinal fluid circulates continuously and bathes the spinal cord.[4.8] After injection of intrathecal hydrophilic opioids (e.g. Morphine, not including sustained or extended release morphine), onset of analgesia is over the first 6 hours and CSF concentrations are maintained with a long cord exposure time, followed by a gradual decline after 12 hours providing 13 to 33 hours of analgesia.[6.3]

2.3 **Richmond Agitation-Sedation Scale (RASS):** RASS is a validated and reliable tool to assess patient's level of arousal and agitation, and has been used to guide sedation therapy.[6.2; 6.8]

2.4 **$EtCO_2$:** End-tidal carbon dioxide (CO_2) is the amount of carbon dioxide that is released at the end of an exhaled breath. $ETCO_2$ monitoring (capnography) monitors ventilation, tracking breath-by-breath trend of CO_2 expelled from the lungs.[6.9; 6.4]

3. PROCEDURE

3.1 Nursing staff will use the process guidelines in the Post ERAS Intrathecal Opioid Injection Checklist when monitoring patients on ERAS pathway (see Appendix A). The checklist includes but not limited to the following:

a. A designated wristband will be placed on the patient's wrist, and the date and time will be completed by the anesthesiologist on the wristband, after the intrathecal opioid injection.

b. A sign should be posted above the inpatient bed indicating the time of opioid injection.

c. The patient will be centrally monitored on continuous pulse oximetry; and for patient identified as high risk for opioid induced respiratory depression or other complications, per anesthesiologist, will also be continuously monitored on bedside capnography or EtCO2 monitoring. EtCO2 monitoring will be ordered by the anesthesia provider as appropriate.

d. For 24hrs following the injection, all Opioids must be ordered PRN and no additional CNS suppressant medications [i.e. Robaxin, Gabapentin, Trazadone, etc.] are to be given during unless ordered or approved by Anesthesia.

e. Implement the monitoring parameters and alarm notification to providers protocol as outlined in Appendix A

3.2 The anesthesiologist will be notified if patient's pain is not relieved by current medication orders in the ERAS pathway, based on the patients stated tolerable pain level.

3.3 Documentation guidance is provided in Appendix B and C. Per physician order, the minimum nursing documentation shall include but is not limited to the following clinical scenarios:

a. For low-risk patients with <50mcg intrathecal or <1mg epidural morphine

- No additional monitoring needed

b. For low-risk patients with 50-150mcg intrathecal or 1-3mg epidural morphine **appendix B**.

- For the first 12 hours from the intrathecal injection, monitor every two (2) hours: Respiratory rate, oxygen saturation, RASS score, & if ordered, EtCO2.
- Following the first 12 hours from the intrathecal injection, no additional monitoring required

c. For patients with >150mcg intrathecal or >3mg epidural morphine OR high-risk patients with 50-150mcg intrathecal or 1-3mg epidural morphine **appendix C**.

- For the first 12 hours from the intrathecal injection, monitor every one (1) hour: Respiratory rate, oxygen saturation, RASS score, & if ordered, EtCO2.
- For 12-24 hours from intrathecal injection, monitor every two (2) hours: Respiratory rate, oxygen saturation, RASS score

3.4 Observed complications of intrathecal opioid injection, if present, may include but not limited to the following, and must notify the Anesthesiologist on duty:

a. Hypotension

b. Post spinal headache

c. Opioid induced respiratory depression

d. Nausea and vomiting

e. Excessive itching

f. Palsies and paralysis

g. Urinary retention

h. Hematoma

4. TRAINING

4.1 Nursing staff shall be trained on the following:
a. ERAS pathway and monitoring expectations

b. Competency validation on how to use the Richmond Agitation Sedation Scale (RASS) (see Appendix C).

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6. ATTACHMENTS

6.1 Post ERAS Intrathecal Opioid Injection Checklist

6.2 Post ERAS Intrathecal Opioid Injection Flowsheet (for downtime use only)

6.3 Richmond Agitation Sedation Scale (RASS)

Document History:

Prior Release Dates: 10/26/2022	**Retire Date:** N/A
Document Owner: Nursing Admin	**Replaces Policy:** N/A

Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
03/13/2025	RUHS ERAS Committee	Y	Updated new monitoring standards
5/15/2025	NPP	Y	Made minor revisions/edits. Removed Section 5 and updated References Section 5.4 (referencing numbering after deleting Section 5)
7/1/2025	PAC	N	
10/9/2025	MEC	N	

6.1 Appendix A: Post ERAS Intrathecal Opioid Injection Checklist

Adopted from the Society for Obstetric Anesthesia and Perinatology Consensus Statement and ASA Taskforce for neuraxial opioids and the American Society of Regional Anesthesia and Pain Medicine

Upon Receiving the Patient:
Receive report from PACU RN

- Verify the orders for post procedure
- Verify patient has an intrathecal opioid wrist band and sign at the head of bed with time of injection
- Assess intrathecal injection site for bleeding or drainage
- Obtain and document in Epic an initial set of vital signs including:
    - Temp, HR, RR, B/P, O2 Sat, RASS, Pain, motor/sensation to all 4 extremities
- For 24hrs following the injection, all Opioids must be ordered PRN and no additional CNS suppressant medications [i.e. Robaxin, Gabapentin, Trazadone, etc.] are to be given during unless ordered or approved by Anesthesia. (Senior Anesthesia Resident: ex 18315)
- Assess and ensure IV is patent.

Continuing Monitoring of Patient:
0-12hours from intrathecal injection

- All patients receiving intrathecal morphine should be placed on centrally monitored continuous pulse oximetry
    - Patients who are identified as high risk for opioid induced respiratory depression should have continuous bedside capnography (cutaneous or EtCO2) with respiratory rate monitoring
- Document respiratory rate, oxygen saturation and RASS everyone one (1) or two (2) hours per physician order
- Complete Vital signs every four (4) hours per protocol

12-24 hours from intrathecal injection

- Continue centrally monitored pulse oximetry and, if indicated, continuous beside capnography
- Document Respiratory rate, oxygen saturation and RASS every two (2) or four (4) hours per physician order
- Complete Vital signs every four (4) hours per protocol

Alarms: Notify the Anesthesiologist on call if any of the indicators are observed below:

- O2 Saturation: Notify provider if SpO2 or SaO2 is less than 92% (or specific parameter ordered appropriate for COPD patients).
- EtCO2: Notify provider if EtCO2 greater than 50 or less than 25
- RR: Notify provider if respiratory rate is less than 10 breaths/min and activate Rapid Response Team.
- RASS: Notify provider if RASS is less than Negative 2 (-2)
- Oxygen Requirement: Notify provider if requiring greater than two (2) liter of oxygen or greater than home oxygen requirements (whichever is greater)

00:00 **Preop**	**00:15-08:00** **Intraop**	**06:00-08:00** **PACU**	**~08:00-12:00** **Ward**	**12:00-24:00**
Injection of intrathecal opioid			Follow receiving protocol (x2-6) Q1-2h RR, O_2 Sat, RASS Q4h Vitals	(x3-6) Q2-4h RR, O_2 Sat, RASS Q4h Vitals

6.2 Appendix B: Post ERAS Intrathecal Opioid Injection Flowsheet (for downtime use only)

Post ERAS Intrathecal Opioid Injection Flowsheet

RICHMOND AGITATION SEDATION SCALE (RASS)			
+4	Combative	**-1**	Drowsy
+3	Very agitated	**-2**	Light Sedation
+2	Agitated	**-3**	Moderate Sedation
+1	Restless	**-4**	Deep Sedation
0	Alert and Calm	**-5**	Unarousable

BASELINE DATE: _____ TIME: _____	
Resp Rate	TEMP
SpO2	HR
RASS	BP
$EtCO_2$	PAIN LEVEL 0-10

*CONTINUE VITAL SIGNS AS ORDERED

Note: Patient is in the OR for approximately 8 hours. At 00:00, preoperative injection of intrathecal opioid.

Time of intrathecal opioid injection: _____

(should be posted at the head of the bed/ on patient's armband)

INITIAL 24 HOURS

	Q2H x2 (Hour ~8 to Hour 12)	**Q4H X3 (Hour 12 to Hour 24)**					
	Hour 6	**Hour 8**	**Hour 10**	**Hour 12**	**Hour 16**	**Hour 20**	**Hour 24**
TIME							
Resp Rate							
SpO2							
RASS							
$EtCO_2$							
Temp							
HR							
BP							
Pain 0-10							
Initials							

SIGNATURE	PRINTED NAME	INITIALS	SIGNATURE	PRINTED NAME	INITIALS

00:00 Preop	**00:15-08:00 Intraop**	**06:00-08:00 PACU**	**~08:00-12:00 Ward**	**12:00-24:00**
Injection of intrathecal opioid			Follow receiving protocol (x2-6) Q1-2h RR, O_2 Sat, RASS Q4h Vitals	(x3-6) Q2-4h RR, O_2 Sat, RASS Q4h Vitals

6.3 Appendix C: Post ERAS Intrathecal Opioid Injection Flowsheet (for downtime use only)

Post ERAS Intrathecal Opioid Injection Flowsheet

RICHMOND AGITATION SEDATION SCALE (RASS)			
+4	Combative	**-1**	Drowsy
+3	Very agitated	**-2**	Light Sedation
+2	Agitated	**-3**	Moderate Sedation
+1	Restless	**-4**	Deep Sedation
0	Alert and Calm	**-5**	Unarousable

BASELINE DATE: _____ TIME: _____	
Resp Rate	TEMP
SpO2	HR
RASS	BP
$EtCO_2$	PAIN LEVEL 0-10

*CONTINUE VITAL SIGNS AS ORDERED

Note: Patient is in the OR for approximately 8 hours. At 00:00, preoperative injection of intrathecal opioid.

Time of intrathecal opioid injection: _____

(should be posted at the head of the bed/ on patient's armband)

INITIAL 24 HOURS

	Q1H X4 (From estimate Hour 8 to Hour 12)								**Q2H X6 (Hour 12 to Hour 24)**					
	Hour 5	**Hour 6**	**Hour 7**	**Hour 8**	**Hour 9**	**Hour 10**	**Hour 11**	**Hour 12**	**Hour 14**	**Hour 16**	**Hour 18**	**Hour 20**	**Hour 22**	**Hour 24**
TIME														
Resp Rate														
SpO2														
RASS														
$EtCO_2$														
Temp														
HR														
BP														
Pain 0-10														
Initials														

SIGNATURE	**PRINTED NAME**	**INITIALS**	**SIGNATURE**	**PRINTED NAME**	**INITIALS**

00:00 Preop	**00:15-08:00 Intraop**	**06:00-08:00 PACU**	**~08:00-12:00 Ward**	**12:00-24:00**
Injection of intrathecal opioid			Follow receiving protocol (x2-6) Q1h RR, O_2 Sat, RASS Q4h Vitals	(x3-6) Q2h RR, O_2 Sat, RASS Q4h Vitals

6.4 Appendix D: Richmond Agitation Sedation Scale (RASS)

Adopted from Sessler et al. (2002) and Ely et al. (2003)

Richmond Agitation Sedation Scale (RASS) *

Score	Term	Description	
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive	
+2	Agitated	Frequent non-purposeful movement, fights ventilator	
+1	Restless	Anxious but movements not aggressive vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to *voice* **(≥10 seconds)**	Verbal Stimulation
-2	Light sedation	Briefly awakens with eye contact to *voice* **(<10 seconds)**	Verbal Stimulation
-3	Moderate sedation	Movement or eye opening to *voice* **(but no eye contact)**	Verbal Stimulation
-4	Deep sedation	No response to voice, but movement or eye opening to *physical* stimulation	Physical Stimulation
-5	Unarousable	No response to *voice or physical* stimulation	Physical Stimulation

Procedure for RASS Assessment

1. Observe patient
   a. Patient is alert, restless, or agitated. **(score 0 to +4)**
2. If not alert, state patient's name and *say* to open eyes and look at speaker.
   b. Patient awakens with sustained eye opening and eye contact. **(score –1)**
   c. Patient awakens with eye opening and eye contact, but not sustained. **(score –2)**
   d. Patient has any movement in response to voice but no eye contact. **(score –3)**
3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum.
   e. Patient has any movement to physical stimulation. **(score –4)**
   f. Patient has no response to any stimulation. **(score –5)**

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 606.1	Page 1 of 5
Title: Blood Transfusions - Paul Gann Act	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. SCOPE

1.1 RUHS – Medical Center to provide patients with information about transfusion options prior to medical or surgical procedure for which there is a reasonable possibility that a transfusion may be necessary, pursuant to the Paul Gann Act.

2. DEFINITIONS

2.1 Autologous Blood (autologous means "related to self") is when a patient receives their own blood through various potential methods. For the purposes of this policy, autologous blood includes, but is not limited to, pre-donation, intraoperative autologous transfusion, plasmapheresis, and hemodilution.

2.2 Directed Donor Blood is blood that has been donated by a person specified by the patient.

2.3 Paul Gann Safety Act is a California statute requiring a discussion about, and opportunity for, various transfusion options when there is a reasonable possibility that a blood transfusion may be necessary for a patient as a result of a medical or surgical procedure.

2.4 Licensed Practitioner (LP) - Licensed Practitioner (LP)- is defined as a physician, licensed physician resident, physician assistant, and/or advanced practice nurse, acting within the scope of their license.

2.5 Patient representative - Someone with legal authority to health care decisions on behalf of a patient.

3. PROCEDURES

3.1 Paul Gann Blood Safety Act. Whenever there is a reasonable possibility that a blood transfusion may be necessary for a patient (inpatient or outpatient) as a result of a medical or surgical procedure, the LP (under the direction of a physician, surgeon, or doctor of podiatric medicine) who makes the determination that the reasonable possibility exists MUST do all of the following:

a. Provide the patient with the California Department of Public Health (CDPH) brochure titled *A Patient's Guide to Blood Transfusion* which informs the patient of the positive and negative aspects of receiving autologous blood and directed and nondirected homologous blood from volunteers. Found online at: http://www.mbc.ca.gov/publications/blood_transfusion_english.pdf

i. In a life-threatening emergency or medical contraindication, the Gann Act

brochure does not need to be given and the LP (under the direction of a physician, surgeon, or doctor of podiatric medicine) should document accordingly on the appropriate consent form.

b. When there is no life-threatening emergency and there are no medical contraindications, the LP (under the direction of a physician, surgeon, or doctor of podiatric medicine) shall allow adequate time prior to the procedure for autologous blood process to occur.

c. Frequency of Providing Patients with Gann Act brochure.

   i. For patients meeting the Paul Gann Act requirements, the Gann Act brochure must be given to patients once per admission.

   ii. For inpatients or outpatients who are undergoing a serial course of treatment which requires multiple admissions/treatments and blood transfusions, such as chemotherapy or apheresis treatments, the Gann Act brochure must be given once a year. If the Gann Act brochure is revised by CDPH during this period, a new brochure should be given to the patient.

d. Documentation of Gann Act.

   i. Documentation of the Gann Act brochure being given to the patient shall be completed in the medical record

4. REFERENCES

4.1 Paul Gann Act, Health and Safety Code Section 1645

4.2 California Hospital Association Consent Manual 2024, TREATMENTS THAT REQUIRE SPECIAL CONSENT, Section IIIB. Paul Gann Blood Safety Act.

4.3 RUHS – Medical Center policy HW 602 Patient Informed Consent.

5. ATTACHMENTS

5.1 A Patient's Guide to Blood Transfusions' California Department of Public Health, Revision as most recently developed or revised.

Document History:

Prior Release Dates: 1/1/1991, 3/25/2003, 8/30/2010, 7/1/2019	**Retire Date:** N/A
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01/03/2025	Leah Patterson	Yes	Added Paul Gann Act info.
7/3/2025	Stephen Kernop and Leah Patterson	Yes	Updated title. Added scope. Updated language of Paul Gann Act. Updated references.
8/18/2025	Stephen Kernop, Shana Fujimoto at direction of County Counsel (Gregg Gu)	Yes	Added “under the direction of a physician, surgeon, or doctor of podiatric medicine” after LIP.
9/18/2025	Nursing Policies and Procedures	No	
10/28/2025	Blood and Tissue Committee		
11/13/2025	PAC	No	
11/13/2025	MEC	No	

References:

- Circular of Information for the Use of Human Blood and Blood Components. AABB. Oct 2017.
- AABB Technical Manual, 20th Edition.

This brochure was developed by the California Department of Public Health, Laboratory Field Services (850 Marina Bay Parkway, Richmond, CA 94804)

In partnership with the Medical Technical Advisory Committee of the Blood Centers of California.

For information about brochure contents, please contact Laboratory Field Services: (510) 620-3800 or LFSBiologics@cdph.ca.gov

This brochure is provided as a source of information and is not considered a replacement for the Informed Consent process prior to the transfusion of blood.

Distributed by the Medical Board of California

To place an order for this brochure, please FAX your request to: (916) 263-2497

This information may be obtained electronically at: ***http://www.mbc.ca.gov***

Revised 03/2022

A Patient's Guide to Blood Transfusion

California Department of Public Health

March 2022

This document provides written information regarding the benefits, risks, and alternatives of transfusion of blood products, including red blood cells, plasma, platelets, or other products, collected from a patient or someone who is not the patient. This material serves as a supplement to the discussions you have with your physician. It is important that you fully understand and read the document thoroughly. If you have any questions about transfusion ask your physician before consenting to receiving blood or blood products.

[redacted] Information About the Treatment

Transfusions of blood products are given to increase the amount of blood components in your body when they may be too low for your wellbeing. The transfusion may be red blood cells, plasma, platelets or other specialized products from blood. Your physician will decide on the amount and type of blood product based on your medical condition or diagnosis.

[redacted] Potential Benefits of the Treatment

Transfusion of blood products may be necessary to correct low levels of blood components in your body. In some cases, failure to receive transfusion(s) can have a negative impact on your health, up to and including a serious outcome like dying.

[redacted] Risks of the Treatment

Known risks of this treatment include, but are not limited to:

- Irritation, pain, or infection at the needle site;
- Temporary reactions such as a fever, chills, or skin rashes.

Other rare but more serious complications include but are not limited to bacterial infections (sepsis), severe allergic reactions, heart failure due to fluid overload, fluid leaking into the lungs (acute pulmonary edema), destruction of red blood cells (hemolysis), shock, or death.

Transfusion of blood products carries a very small risk of transmitting infections such as HIV (about 1 in 3 million), Hepatitis C (about 1 in 3.3 million), and Hepatitis B (about 1 in 1.5 million). Other significant infections may also be transmitted by transfusion, but overall this risk is low.

[redacted] Treatment Options / Alternatives

If you need blood you have several options. Most patients requiring transfusion receive blood products donated by volunteer community donors. These donors are extensively screened about their health history and undergo numerous blood tests as mandated by state and federal regulations in order to ensure the safest possible blood supply. Alternatives to transfusion with blood products from volunteer community donors include:

Pre-operative autologous donation: (using your own previously donated blood), see below for more information.

Directed donation: (blood donated by people who you have asked to donate for you), see below for more information.

Intra-operative autologous transfusion/ hemodilution: (the collection of your own blood during surgery which may be given back to you).

Medications: Certain medications given prior to or during surgery can increase blood volume or reduce active bleeding, which may lessen the need for transfusion.

These options may be available only if your health, time, and surgical procedure permit. They may not be available at all locations or for all patients. You may also choose not to receive blood transfusions, however, this decision may have life-threatening consequences.

Pre-operative autologous donation is not appropriate for all patients. Autologous donation involves collecting your own blood prior to a planned surgery and storing it in the hospital or a community blood bank. It is important to discuss with your physician if it is safe for you to donate, and the likelihood of needing a transfusion based on the kind of surgery you are having and current transfusion guidelines. Receiving your own blood may reduce but will not eliminate the risk of transfusion-related complications. Insurance company reimbursement policies may vary for this service. Overall, although autologous donation is an option to consider for those who qualify, the number of autologous donations in the United States has significantly decreased in the last few decades mainly due to major advances in blood safety and efforts to decrease unnecessary blood transfusions.

Directed donation refers to blood collected from "directed donors" who donate blood for a specific patient by request. Directed donors are often family and friends of the patient. Directed donors must go through and pass the same qualification process as volunteer donors, and they must be ABO compatible with the patient. Directed donations are not any safer than the general blood supply.

A safe and adequate blood supply relies on altruistic blood donation by healthy members of your community. Blood donations by family and friends can help ensure an adequate supply for your needs as well as the needs of other patients.

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
HOUSEWIDE

	Document No: 613	Page 1 of 4
Title: Methotrexate Administration and Management for Treatment of an Ectopic Pregnancy	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☒ **RUHS – Medical Center** ☐ **RUHS – Public Health** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. **SCOPE:** The purpose of this procedure is to define the administration of Methotrexate to adult female patients who have been diagnosed with ectopic pregnancy and are outpatients at Riverside University Health Systems – Medical Center, Emergency Department (ED).

2. **DEFINITIONS:**

2.1 Methotrexate: Methotrexate is a chemotherapeutic agent for use as a medical therapy for unruptured ectopic pregnancies. Its mechanism of action is competitive inhibition of folate-dependent steps in nucleic acid synthesis, which effectively kills the rapidly dividing ectopic trophoblast.

2.2 Ectopic pregnancy: A fertilized egg that implants in any location other than the inner lining of the uterus. The majority (95%) of ectopic pregnancies occur in the fallopian tube. However, they can occur in other locations, such as the ovary, cervix, and abdominal cavity.

2.3 Chemotherapy Nurse: An RN who has completed 1) Oncology Nursing Society (ONS) provider course; 2) completed training/certification; and 3) education to administer chemotherapy, antineoplastic hazardous drugs.

3. **PRECAUTIONS**

3.1 Renal dysfunction does not preclude the use of methotrexate for ectopic pregnancy. Complications from low dose methotrexate are extremely rare.

a. Exclusions may apply for high dose methotrexate or chronic low dose use of methotrexate, none of which apply to the therapeutic regimens for ectopic pregnancy

b. The issue is not that methotrexate is going to cause severe renal failure but that the half-life may be prolonged in renal deficiency as this is where it is excreted.

c. The dose of methotrexate for ectopic pregnancy is so low that prolonged half-life does not significantly increase any risk to the patient. Even with renal dialysis you would just need to be aware of when the medication was given in relation to her next dialysis to estimate the efficacy of the dose that you are giving.

4. EXCLUSION CRITERIA:

4.1 Viable intrauterine pregnancy.

4.2 Clinically significant abnormalities of hematologic, renal or hepatic laboratory values. Blood dyscrasias, chronic liver disease, chronic renal disease (dialysis) – discuss with provider.

4.3 Breastfeeding (discontinue for 72 hours - methotrexate will not be given if patient refuses to stop breastfeeding).

4.4 Hypersensitivity to methotrexate.

4.5 Immunodeficiency, active pulmonary disease or peptic ulcer disease.

4.6 Hemodynamically unstable.

4.7 Patient is not able to participate in follow-up.

4.8 Concurrent intrauterine pregnancy (heterotopic pregnancy).

4.9 No signed informed consent by patient for the use of methotrexate in the treatment of ectopic pregnancy.

5. INCLUSION CRITERIA:

5.1 Hemodynamically stable.

5.2 No contraindications to methotrexate therapy.

5.3 Serum beta-human chorionic gonadotropin (hCG) ≤ 5000 mIU/ml.

5.4 Lack of fetal cardiac motion detected on transvaginal ultrasound.

5.5 Ectopic mass < 4 cm.

5.6 Willing and able to comply with post-treatment follow-up with access to emergency medical services.

a. Failure of the hCG level to decrease by at least 15% from day 4 to day 7 after methotrexate administration may require a repeat dose on day 7.

6. CLINICAL PROTOCOL:

6.1 ED Nurse must validate that an order for methotrexate for ectopic pregnancy has been placed by an OB Attending Provider to proceed with protocol and checklist.

6.2 Utilize Methotrexate Administration Checklist for Ectopic Pregnancy to guide nursing practice. See Attachment.

6.3 The informed consent must be completed prior to the administration of methotrexate.

6.4 Patient teaching should be provided prior to methotrexate administration.

6.5 Pharmacy Services will attempt to procure the most ready-to-use methotrexate product, e.g. pre-filled syringes.

6.6 **Pre-filled methotrexate syringes, pre-attached fixed needle (preferred)**

a. Dose: 50mg/m2 to be administered using the patient's actual body weight. Dose will be rounded to meet the available concentrations of the pre-filled syringes. See Attachment for possible syringe combinations.

b. Route: administered **subcutaneously**, will need to administer two or more syringes

- Do not administer intramuscularly
- Do not attempt to remove pre-attached needle

c. Pre-filled methotrexate syringes may be administered by a non-chemotherapy nurse as per policy

d. Don appropriate PPE as per policy

6.7 **When pre-filled syringe is not available, pharmacy will compound methotrexate syringe(s):**

a. Dose: 50mg/m2 to be administered using the patient's actual body weight

b. Route: administered **intramuscularly**

c. The ED charge nurse or designee will notify the house supervisor to assign a chemo nurse to come to the ED to administer the compounded methotrexate.

d. Don appropriate PPE as per policy.

e. The chemo nurse will administer the IM injection of methotrexate as per physician order.

f. The ED and/or chemo nurse will follow the administration checklist (Attachment A) and sign and date when completed.

6.8 The ED and/or chemo nurse will document the care provided in the medical record.

6.9 The ED nurse will conclude the visit and provide the discharge instructions and follow up care.

7. ATTACHMENT

7.1 Methotrexate Pre-filled Syringe Dose Rounding Table

7.2 Methotrexate Administration Checklist for Ectopic Pregnancy

8. REFERENCES

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Document Owner: ED		**Replaces Policy:** N/A	
Date Reviewed	**Reviewed By:**	**Revisions Made Y/N**	**Revision Description**
06/10/25	Pharmacy Review Committee	Yes	Adding statement to 7.1 to allow for other combinations of syringes to be utilized to get to the necessary dose.
7/7/2025	P&T	No	Passed on consent
10/7/2025	PAC	No	Passed on consent
11/13/2025	MEC	No	

7.1 Methotrexate Pre-filled Syringe Dose Rounding Table

NOTE: These are possible syringe combinations. Pharmacist will choose the syringe combination necessary to meet the dose requirement based on syringe availability.

50 mg/m^2 BSA	DOSE (MG)	SYRINGE DOSES TO BE DISPENSED
1.4	70	2x (25 mg) + 1x (20 mg)
1.5	75	3x (25 mg)
1.6	80	2x (25 mg) + 1x (30 mg)
1.7	85	2x (30 mg) + 1x (25 mg)
1.8	90	3x (30 mg)
1.9	95	3x (25 mg)+ 1x (20 mg)
2	100	4x (25 mg)
2.1	105	3x (25 mg) + 1x (30 mg)
2.2	110	2x (30 mg) +2x (25 mg)
2.3	115	3x (30 mg) + 1x (25 mg)
2.4	120	4x (30 mg)
2.5	125	5x (25 mg)
2.6	130	4x (25 mg) + 1x (30 mg)
2.7	135	2x (30 mg) + 3x(25 mg)

7.2 Methotrexate Administration Checklist

SECTION A:	**ED RN VERIFICATION**	
DATE / **Time**		**VALIDATOR INITIALS**
	1. Verify patient does not meet any exclusion criteria, (see Policy 613), if met, notify OB Physician.	
	2. Verify MTX order has been placed in EPIC by the OB Physician.	
	3. Verify MTX Dose (circle) 1st 2nd 3rd	ED RN Initial
	4. Verify baseline labs ordered and resulted for **first dose** (CBC, CMP, LFTs, quantitative beta-hCG. Labs do not need to be repeated for 2nd and 3rd dose unless ordered by MD).	ED RN Initial
	5. Verify transvaginal ultrasound completed. (Not needed for 2nd or 3rd dose unless ordered by MD).	ED RN Initial
	6. Verify Physician Progress Note in EPIC includes ectopic mass < 4cm. (Not needed for 2nd or 3rd dose unless ordered by physician).	ED RN Initial
	7. Verify H&P in EPIC includes: Last menstrual period (LMP). (Not needed for 2nd or 3rd dose unless ordered by physician).	ED RN Initial
	8. Verify informed consent obtained, copy of record is available to the patient. Must be completed for each dose.	ED RN Initial
	9. Verify actual height and weight are documented in EPIC.	ED RN Initial
	10. Verify with Pharmacy if the ordered MTX product is compounded for IM administration or pre-filled with affixed needle for subcutaneous administration. a. If compounded product for IM administration, **go to Section B**. b. If a pre-filled syringe or autoinjector with affixed subcutaneous needle, go to **Section C.**	
	11. ED to notify NHS of need for Chemo RN to administer compounded MTX injection (***Do not call until 1 through 10 above have been completed)***.	ED RN Initial
SECTION B:	**CHEMO RN & PHARMACY VERIFICATION**	

	1. Chemo RN to call main pharmacy to confirm order in EPIC and time for pick-up. Chemo RN to call ED with ETA.	Chemo RN Initial
	2. Chemo RN to obtain MTX checklist from ED RN prior to picking up MTX from Pharmacy.	Chemo RN Initial
	3. Chemo RN to pick up medication from main pharmacy and verify with the pharmacist the following: right medication, dose, route time, and expiration date and time.	Chemo RN Initial / Pharmacist
	4. Chemo RN to bring MTX to the ED for administration.	Chemo RN Initial
SECTION C:	**CHEMO RN & ED or ED & ED RN VERIFICATION**	
	1. Compounded MTX product requires both ED and Chemo RN verification. Commercially prepared syringe with affixed needle only requires ED verification.	
	2. Review patient does not meet any exclusion criteria, (see Policy 613), if met, notify OB physician.	
	3. Review MTX order has been placed in EPIC by the OB Physician.	
	4. Review MTX Dose (circle) 1st 2nd 3rd	ED RN Initial
	5. Review baseline labs ordered and resulted for first dose (CBC, CMP, LFTs, quantitative beta-hCG. Labs *do not* need to be repeated for 2nd and 3rd dose unless ordered by physician).	
	6. Review transvaginal ultrasound completed. (Not needed for 2nd or 3rd dose unless ordered by physician).	
	7. Review Physician Progress Note in EPIC includes ectopic mass < 4cm. (Not needed for 2nd or 3rd dose unless ordered by physician).	
	8. Review H&P in EPIC includes: LMP. (Not needed for 2nd or 3rd dose unless ordered by physician).	
	9. Verify informed consent obtained, copy of record is available to the patient. Must be completed for each dose.	
	10. Review actual height and weight are documented in EPIC.	Chemo RN Initial

SECTION: D	COMPOUNDED MTX ADMINISTRATION BY CHEMO RN	
	1. Perform hand hygiene, use of proper PPE for hazardous drug handling (double gloves, protective gown, eye, and respiratory protection).	Chemo RN Initial
	2. Inspect the medication, checking that it does not have particulates or discoloration. Do not use any medication that is cloudy or precipitated unless manufacturer information states that this is acceptable.	Chemo RN Initial
	3. Explain the procedure to the patient and verify patient has consented to treatment.	Chemo RN Initial
	4. Verify the following: right patient, using two patient identifiers, the right medication, the right dose, the right route, and the right time.	ED RN Initial / Chemo RN
	5. Utilize BCMA (Bar Code Medication Administration) scanning at the patient's bedside, dual signatures are required in EPIC from the Chemo RN and ED RN.	ED RN Initial / Chemo RN
	6. Administer the medication **intramuscularly** (IM) into the right and/ or left ventrogluteal site using a 22g 1 ½" needle. (The dorsogluteal site is not recommended for IM injections due to the risk of sciatic nerve damage).	Chemo RN Initial
	7. Dispose of the syringe, supplies, and PPE into the chemo waste container, and perform hand hygiene.	Chemo RN Initial
	8. Chemo RN and ED RN will monitor and assess the patient for adverse and allergic reactions to MTX, such as dyspnea, wheezing, or circulatory collapse. In the event of an adverse reaction, the RNs will follow RUHS practice for emergency response.	ED RN Initial / Chemo RN
	9. Once steps 1-8 are complete, **go to section F**.	
SECTION E:	**PRE-FILLED MTX ADMINISTRATION BY ED RN**	
	1. Perform hand hygiene, use of proper PPE for hazardous drug handling (double gloves, protective gown, eye, and respiratory protection).	
	2. Inspect the medication, checking that it does not have particulates or discoloration. Do not use any medication that is cloudy or precipitated unless manufacturer information states that this is acceptable.	
	3. Explain the procedure to the patient and verify patient has consented to treatment.	
	4. Verify the following: right patient, using two patient identifiers, the right medication, the right dose, the right route, and the right time.	
	5. Utilize BCMA (Bar Code Medication Administration) scanning at the patient's bedside, dual signatures are required in EPIC by 2 ED RNs.	
	6. Administer the medication subcutaneously (SQ) into the abdomen or right and/ or left thigh using the commercially prepared prefilled syringe or autoinjector. For administration into the abdomen, avoid 2 inches of the navel.	
	7. Dispose of the syringe, supplies, and PPE into the chemo waste container, and perform hand hygiene.	
	8. The ED RN will monitor and assess the patient for adverse and allergic reactions to MTX, such as dyspnea, wheezing, or circulatory collapse for X time. In the event of an adverse reaction, the RNs will follow RUHS practice for emergency response.	
	9. Once steps 1-8 are complete, **go to section F.**	

SECTION F:	ED RN ASSESSMENT AND TEACHING AFTER MTX ADMINISTRATION	
	1. Will assess and treat the patient's pain as needed.	ED RN Initial
	2. Will provide education for the patient via the EPIC Discharge Instruction handout, to include any follow-up visits with the physician, consultation (in office or via phone), or additional lab appointment. Discharge instructions will also include signs and symptoms of complications which will require immediate return to the ED.	ED RN Initial

	3. Will provide a copy of the completed MTX Checklist to the ED Director or designee for auditing purposes.	ED RN Initial

Print	Signature	Initials	Credentials	Date/Time

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 620	Page 1 of 12
Title: Code Blue, Code White, and Code MET	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By: Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

1.1 To ensure a medical emergency response plan is established for the area within 250 yards of the Riverside University Health System – Medical Center for all staff, patients, and visitors.

2. DEFINITIONS

2.1 Code Blue: an emergency code called for any adult patient, staff, or visitor who is in cardiopulmonary arrest or impending loss of airway.

2.2 Code White: an emergency code called for any neonatal or pediatric patient, staff, or visitor who is in cardiopulmonary arrest or impending loss of airway.

2.3 Code MET (Medical Evaluation Team): is the term used to request urgent assistance for non-hospitalized persons throughout the hospital campus.

3. CODE BLUE/WHITE GUIDELINE / PROCEDURE

3.1 Activating a Code Blue/White

3.2 A Code Blue/White should be activated for any patient, staff, or visitor who requires Cardiopulmonary resuscitation or impending loss of airway, with the consideration of the patient's code status.

- Please refer to policy *HW 623: Code Status.*

b. Any staff member may activate a Code Blue/White by dialing the internal 9-1-1 phone activation or by pushing the code blue button in the area closest to the event or in the specific room of the event.

c. Approved locations for a Code Activation:

- Medical Center

  i. The Emergency Department and NICU may may manage a Code Blue/White without activating a Code Blue through the internal 9-1-1 activation system.

- Medical Surgical Center, Same Day Surgery Suite.
- Surrounding parking lots and exterior locations within 250 yards of the medical center (Attachment 7.5).

d. **Code Procedure** American Heart Association (AHA) guidelines for Basic Life Support (BLS) guidelines and Age Appropriate Cardiac Life Support will be used to guide care during a Code Blue/White situation. These include:

- Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), Neonatal Resuscitation Program (NRP), Emergency Nursing Pediatric Course (ENPC).

e. First responders who have ACL/PALS may initiate ACLS protocols prior to the arrival of the Code Blue Team.

f. Roles are identified in Attachment 7.1.

g. Code Leader role will be maintained by the highest qualified personnel responding to the activation.

3.3 Code Documentation

a. Every Code resuscitation must be documented on the approved Code Documentation forms in the electronic health record, or downtime forms when appropriate.

3.4 Post Code Resuscitation

a. Obtain post-resuscitation physician orders.

b. Transporting patient post resuscitation.

- Transfer to a critical care unit requires at least one ACLS certified clinical personnel.
- Continuous EKG monitoring and portable defibrillator.
- Continuous oxygen therapy to support the patient's oxygenation needs.
- Ensure vascular access.
- Emergency medications should be available during transport.

c. Following the Code, the Code Leader (or Code Nurse) will hold a debriefing to identify areas of improvement.

- The debriefing occurrence will be documented on the approved Code Narrator in the electronic health record (EHR), or downtime forms when appropriate. The details of the debriefing are recorded via external tool (linked in the EHR debriefing section).
- Debriefing details are not intended as part of the medical record and are used for internal performance improvement (Attachment 7.8).

4. CODE MET GUIDELINE / PROCEDURE

4.1 Activating a Code MET

a. A Code MET should be activated for non-hospitalized person (Staff, Visitor, Outpatient) within the hospital that require urgent medical attention.

b. Any staff member may activate a Code MET by dialing the internal 9-1-1 activation system.

c. Approved locations for a Code MET Activation:

- Medical Center
- Medical – Surgical Center
- Surrounding parking lots and exterior locations within 250 yards of the medical center (Attachment 7.5).

4.2 Code MET Procedure

a. For clinical staff members trained or certified in BLS, will initiate the current American Heart Association BLS guidelines.

b. Upon activation of a Code MET, roles will be prescriptive to the location the Code MET is called. See Attachment 7.7.

c. Code MET Leader will be maintained by the highest qualified personnel responding to the activation.

4.3 Code MET Documentation

a. If the person is transported to the ER for Medical Screening the initial assessment will be documented in the EHR, or downtime forms when appropriate.

b. If the patient is not registered in the EHR and will not be registered due to refusal for medical screening, the Code MET will be reported via internal tracking.

4.4 Code MET Disposition

a. Transfer of patient based on outcome:

- Patients seeking treatment will be transported to the Emergency Department via RUHS staff, or Emergency Medical Services (EMS).

b. A Code Met can be ramped up to a higher level of response (Code Blue / Code White) if the situation warrants.

5. PERFORMANCE AND QUALITY IMPROVEMENT

5.1 Performance and Quality metrics will be reported to Code Blue Committee, Critical Care Committee, and Performance Improvement and Patient Safety Committee.

5.2 Code Blue/White Committee:

a. Code Blue/White Committee will review and maintain all matters regarding Code Blue, White or MET, with Code Blue Committee Voting Members (Attachment 7.3).

b. Code Blue/White Committee will meet at least once every quarter.

5.3 Quality Management:

a. Reviews code documentation and patient records for data collection and quality and performance improvement.

b. Reports code blue/white data to the American Heart Association, Get with the Guidelines Database (GWTG).

5.4 Education:

a. Certifications must be maintained in accordance with prescribed organization, Attachment 8.4.

6. RELATED POLICIES

6.1 HW 618: Code Cart Readiness

6.2 HW 619: Rapid Response Team Activation

6.3 NURS SP 400: Rapid Response Team RRT Standardized Procedure

6.4 HW 691.1: Scope of Service Inpatient Sepsis Rapid Response Team Program

6.5 HW 623: Code Status

7. ATTACHMENTS

7.1 Code Blue/White Response Roles

7.2 Medical-Surgical Center – Same Day Surgery, Code Blue/White Response Algorithm

7.3 Code Blue Committee Voting Members

7.4 Certification Requirements

7.5 Response Perimeter

7.6 Staff Responding to Code Blue or White

7.7 Code MET Response Algorithm

8. REFERENCES

8.1 American Heart Association – Adult. (2019). https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/algorithms

8.2 Get With The Guidelines® - Resuscitation. (2019). www.heart.org. https://www.heart.org/en/professional/quality-improvement/get-with-the-guidelines/get-with-the-guidelines-resuscitation

8.3 Merchant, R. M., Topjian, A. A., Panchal, A. R., Cheng, A., Aziz, K., Berg, K. M., Lavonas, E. J., & Magid, D. J. (2020). Part 1: Executive Summary: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation, 142(16_suppl_2). https://doi.org/10.1161/cir.0000000000000918

8.4 Textbook of Neonatal Resuscitation, 8th Ed. American Academy of Pediatrics and American Heart Association; 2021.

Document History:

Prior Release Dates: 3/2000, 3/2003, 12/2006, 8/2008, 1/2010, 2/2016, 9/16/2019, 8/24/2020, 9/26/2023	**Retire Date:** N/A
Document Owner: Code Team Coordinator	**Replaces Policy:** N/A

Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
04/10/2025	Code Blue Committee	Yes	Combine Sections for Code White/Blue Update emergency response plan to MSC/SDS surgery. Minor wording changes throughout. Remove common language definitions. Removed down time form attachment
05/15/2025	Nursing P&P	Yes	Remove section 5.4b, competency statement
7/1/2025	PAC	No	
10/9/2025	MEC	No	

Attachment 7.1

Respiratory - Airway
- Assist with airway management
- Supplies for Intubation
- Ventilatory set-up

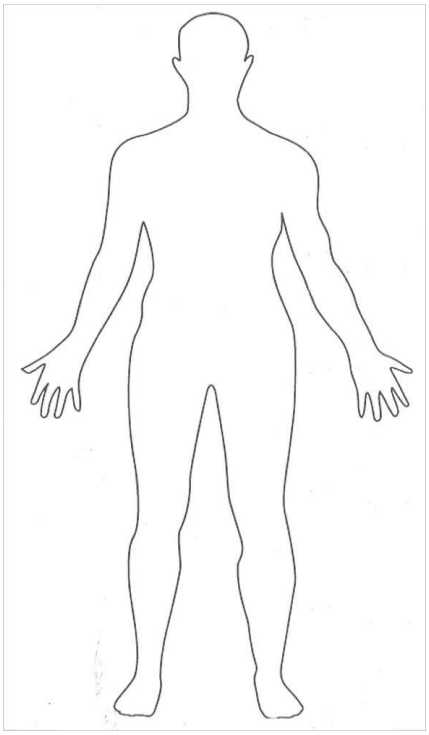
Physician - Airway
- Assist with airway management
- Intubation, if needed

RN #1 - Interventions
- IV starts, Medication administration, IV pump preparation, etc.

RN #2 - Interventions
- IV starts, Medication administration, IV pump preparation, etc.

RN #3 – Crash Cart / Medications
- Maintains the defibrillator and monitor
- Oversees supplies within the crash cart
- Assists with ACLS medications

RN #4 – Recorder / Documentation
- Documents code and interventions
- Maintains the time intervals



Code Leader
- Assigns roles
- Directs code interventions
- Maintains closed loop Communication

Respiratory or ED Tech - Compressions
- Perform Compressions
- Back-up to current compressor

Respiratory or ED Tech - Compressions
- Perform Compressions
- Back-up to current compressor

Respiratory or ED Tech - Compressions
- Perform Compressions
- Back-up to current compressor

Pharmacist
- Assist with ACLS medications
- Assist with compounds
- Assist with drips

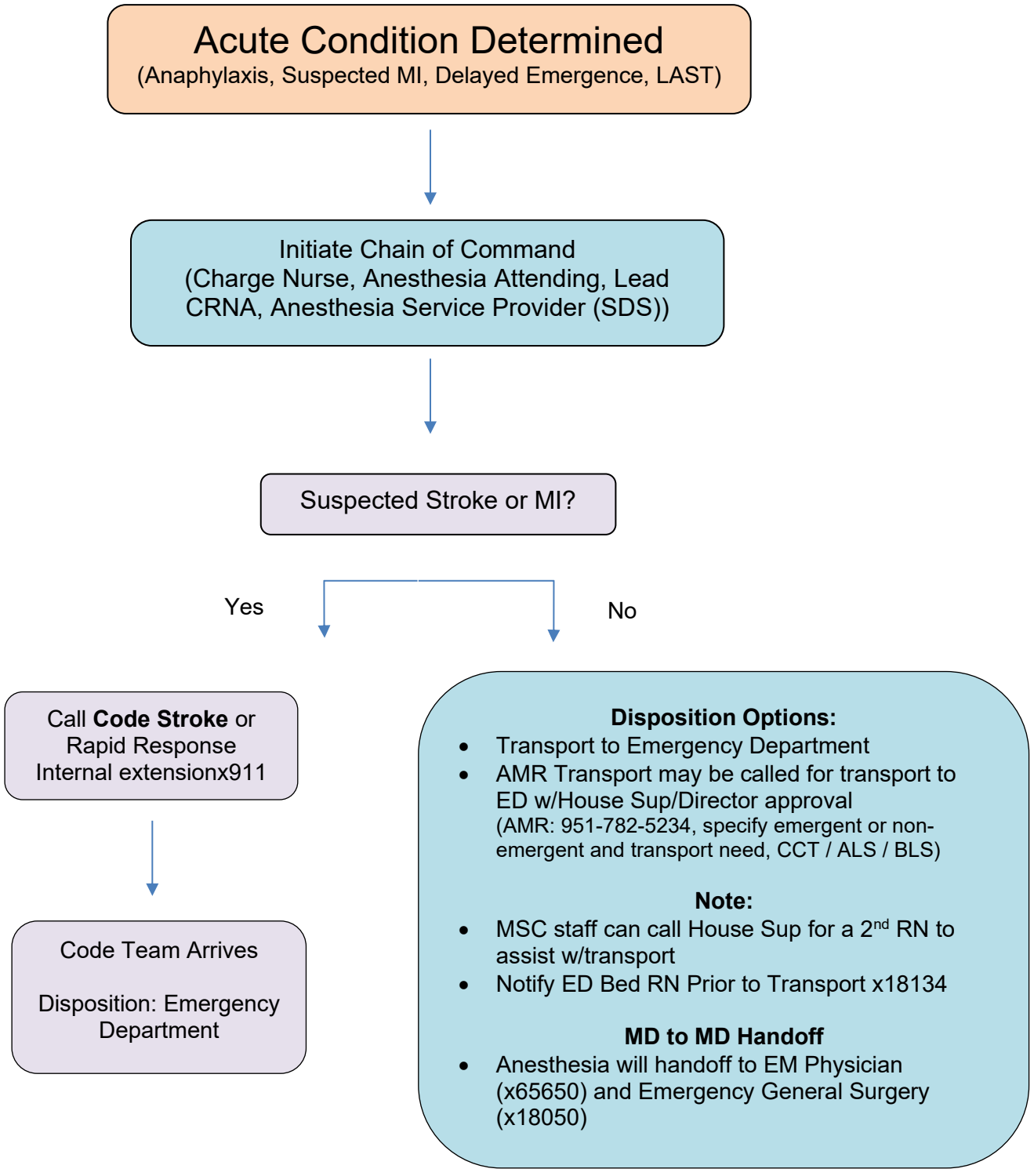
Runner
- Assists with providing supplies not readily available within room

Runner
- Assists with providing supplies not readily available within room

House Supervisor
- Oversees crowd control
- assist with bed assignment

Attachment 7.2 MEDICAL SURGICAL CENTER (MSC) & SAME DAY SURGERY (SDS) EMERGENCY RESPONSE

If patient develops cardiac or respiratory arrest. Call Code Blue ext 911



Attachment 7.3

Code Blue Committee Voting Members

- Adult Critical Care Medical Director-Chair

II. Code Team Coordinator – Co Chair

III. Medical/Surgical Nursing Directors

IV. Pediatrics Chair or representative

V. Assistant Chief Nursing Officer or Representative

VI. Clinic Nurse Manager or Representative

VII. Trauma Department Director

VIII. Emergency Department Nurse Director or Representative

IX. Adult Critical Care Nurse Director

X. Quality Management Nurse

XI. Pediatrics and Neonatal Medical Director.

XII. Pediatric, Pediatric Intensive Care Nurse Director of Representative

XIII. Neonatal Intensive Care Nurse Director or Representative

XIV. Materials Management / Purchasing or Representative

XV. Department of Anesthesia Chair or representative

XVI. Director of Pharmacy/Critical care or representative

XVII. Respiratory Care Manager or designee

XVIII. 2500 Nurse Manager or Representative

XIX. ED Chair or Representative

XX. Family Medicine Chair or Representative

XXI. Education Services

XXII. Administration

Attachment 7.4

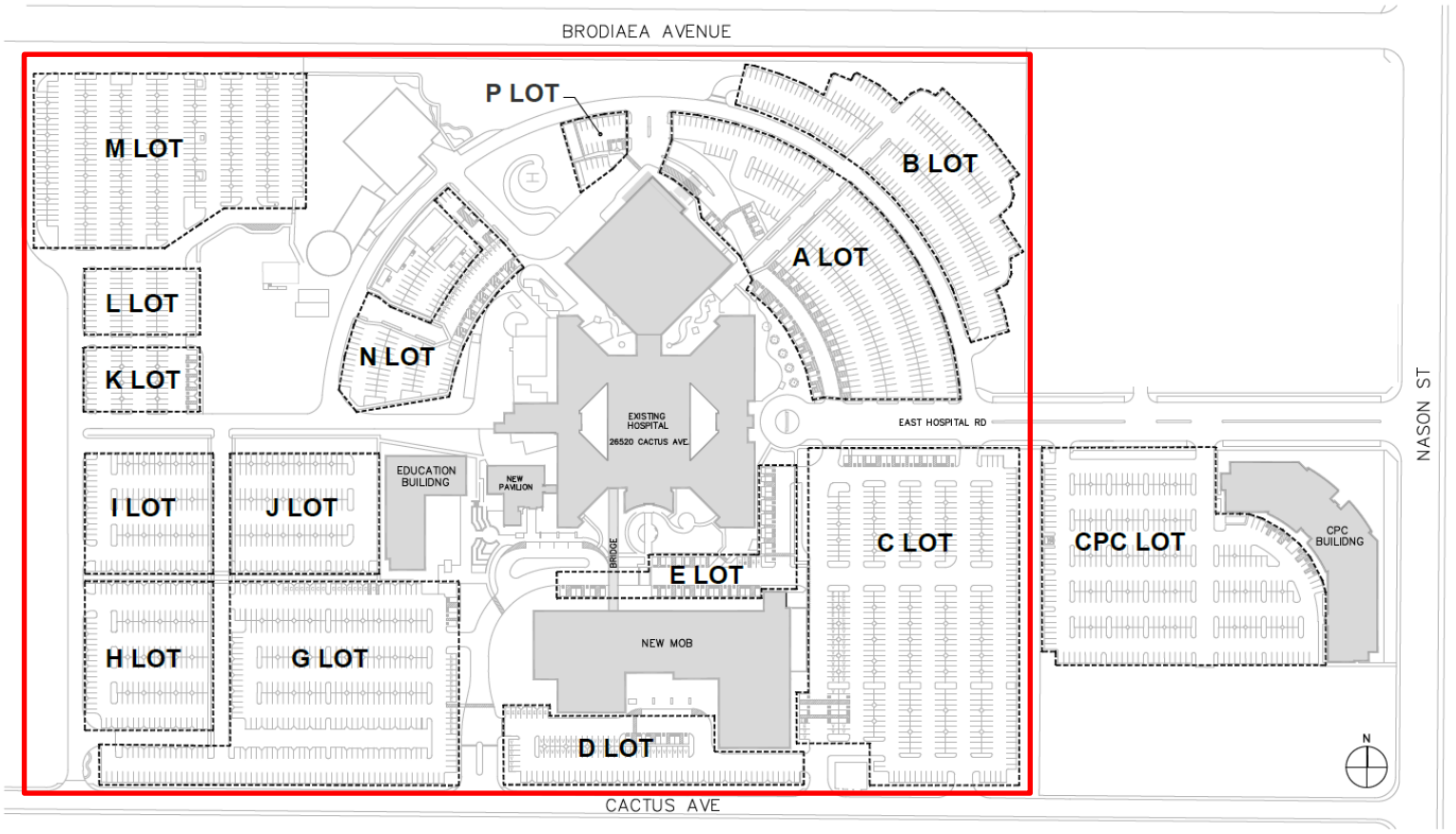
Below ✓ indicates the certification or skill required per department within RUHS-MC.

- NOTE: certifications are required for Nursing staff. Physicians may have a certification or training/skills for each resuscitation practice.
- NOTE: PALS and ENPC can be interchangeable

DEPARTMENT	BLS	ACLS	PALS	ENPC	NRP
ACCU	✓	✓			
PCU	✓	✓			
OR	✓	✓			
ER	✓	✓	✓	✓	
SDS/PACU	✓	✓	✓		
L & D	✓	✓			✓
POSTPARTUM	✓				✓
MED/SURG	✓				
PEDS	✓		✓		
PICU	✓		✓		
NICU	✓				✓
ADULT CLINICS	✓				
PEDS CLINICS	✓				
PROCEDURE RN	✓	✓			
CATH LAB	✓	✓			
GI LAB	✓	✓			
RESPIRATORY THERAPY	✓	✓	PRN	PRN	PRN
TRAUMA TEAM	✓	✓	✓	✓	
BERT TEAM	✓				
PICC/VAT TEAM	✓				
CODE BLUE TEAM	✓	✓	✓	✓	
WOUND CARE TEAM	✓				
DIABETES TEAM	✓				
PALLIATIVE CARE	✓				
GI CLINIC	✓	✓			

Attachment 7.5

Riverside University Health System Medical Center Campus



MASTER PARKING LOT COUNT DIAGRAM

Moreno Valley, CA 92555

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

Attachment 7.6

Staff Response for Code White

TEAM MEMBER	FIRST FLOOR/LL/OUTSIDE ED	2ND-4TH FLOOR INPATIENT/OUTPATIENT	NBN/OB AREAS	PEDS/PICU	NICU/LABOR & DELIVERY
MD	SENIOR FAMILY MED RESIDENT	SENIOR FAMILY MED RESIDENT OR PEDS RESIDENT	NEONATALOGIST	SENIOR FAMILY MED RESIDENT/PEDS ATTENDING OR RESIDENT	NEONATALOGIST
MD	ANESTHESIOLOGIST	ANESTHESIOLOGIST	ANESTHESIOLOGIST	ANESTHESIOLOGIST	ANESTHESIOLOGIST
MD	PEDS RESIDENT	PEDS ATTENDING (if available and in-house)	PEDS RESIDENT	FELLOW/NP (if available and in house)	PEDS RESIDENT
MD/NP	ED ATTENDING OR ED SENIOR RESIDENT	PEDS INTENSIVIST (if available and in house)	NEONATAL FELLOW/NNP (if available and in house)	PEDS INTENSIVIST (if available and in house)	NEONATAL FELLOW/NNP
CHARGE RN	ED CHARGE RN OR DESIGNEE	X	NICU CHARGE RN	PICU CHARGE RN	NICU CHARGE RN
RN	CRITICAL CARE CODE NURSE	PICU RN	NICU RESPONSE RN	PICU RN	NICU RESPONSE RN
RN	CRITICAL CARE CODE NURSE	CRITICAL CARE CODE NURSE	CRITICAL CARE CODE NURSE	CRITICAL CARE CODE NURSE	CRITICAL CARE CODE NURSE
RCP	RCP	RCP	RCP	RCP	RCP
PHARMACY	CODE PHARMACIST	CODE PHARMACIST	CODE PHARMACIST	CODE PHARMACIST	CODE PHARMACIST
SOCIAL SERVICES	ED SOCIAL WORKER	SOCIAL WORKER	NICU SOCIAL WORKER	PEDS SOCIAL WORKER	NICU SOCIAL WORKER
SOCIAL SERVICES	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER
EVS	EVS	EVS	EVS	EVS	EVS
HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR
COMPRESSORS	ED TECH/RCP	UNIT STAFF/RCP	UNIT STAFF/RCP	UNIT STAFF/RCP	UNIT STAFF/RCP
RUNNERS		UNIT STAFF	UNIT STAFF	UNIT STAFF	UNIT STAFF

Staff Response for Code Blue

TEAM MEMBER	FIRST FLOOR/LL OUTSIDE THE EMERGENCY (250 yard perimeter excluding the education building and CPC) DEPARTMENT	2ND-4TH FLOOR INPATIENT/OUTPATIENT, 2500 AND GENERAL NURSING UNITS	ICU
MD	INTERNAL MEDICINE RESIDENT	INTERNAL MEDICINE SENIOR RESIDENT	INTENSIVIST
MD	ANESTHESIOLOGIST 2ND YEAR OR GREATER	ANESTHESIOLOGIST 2ND YEAR OR GREATER	ANESTHESIOLOGIST 2ND YEAR OR GREATER
MD		PRIMARY MD	PRIMARY MD
MD		INTENSIVIST	INTERNAL MEDICINE SENIOR RESIDENT
CHARGE RN		UNIT CHARGE RN	UNIT CHARGE RN
RN	CRITICAL CARE CODE RN	CRITICAL CARE CODE RN	CRITICAL CARE CODE RN
RN	CRITICAL CARE ED RN	CRITICAL CARE RN	CRITICAL CARE RN
RCP	RCP	RCP	RCP
PHARMACY	CODE PHARMACIST	CODE PHARMACIST	UNIT/CODE PHARMACIST
SOCIAL SERVICES	ED SOCIAL WORKER	UNIT SOCIAL WORKER	UNIT SOCIAL WORKER
SOCIAL SERVICES	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER	ON CALL SOCIAL WORKER
EVS	EVS	EVS	EVS
HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR	HOUSE SUPERVISOR
PRIMARY RN		PRIMARY RN	PRIMARY RN
RUNNER		UNIT STAFF	UNIT STAFF
COMPRESSORS	ED TECHS/RCP STAFF	UNIT STAFF/RCP STAFF	UNIT STAFF/RCP STAFF

One or more physicians and one or more critical care RNs will respond from the list above

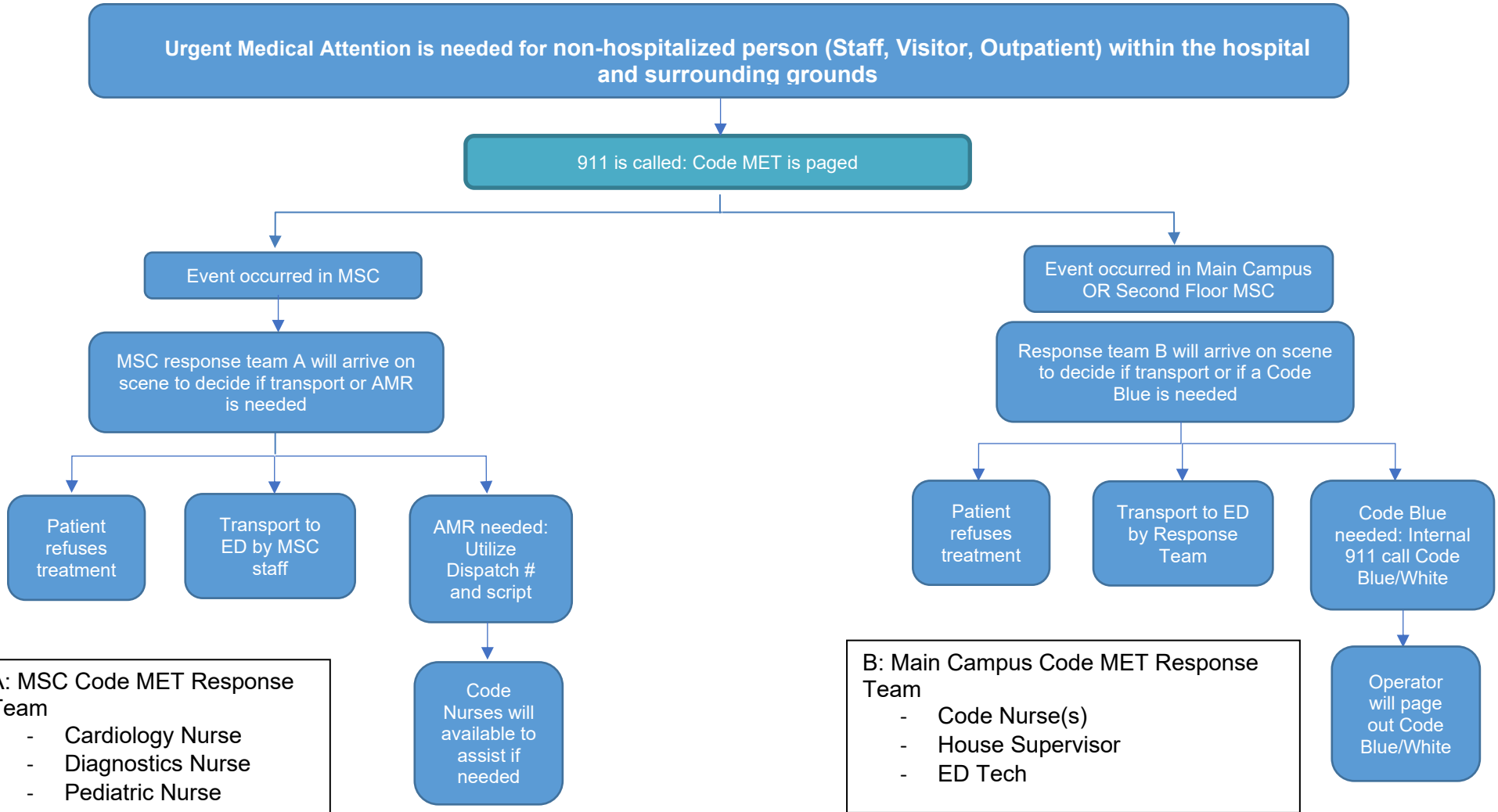
Rev 3/8/20

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

Attachment 7.7

CODE MET RESPONSE



A: MSC Code MET Response Team

- Cardiology Nurse
- Diagnostics Nurse
- Pediatric Nurse
- Diabetic Nurse
- ACC or Screener

B: Main Campus Code MET Response Team

- Code Nurse(s)
- House Supervisor
- ED Tech

Updated: 6/4/2023

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 621	Page 1 of 6
Title: Code Airway	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By: Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

1.1 To provide a standardized and interdisciplinary approach to airway management for any patient in the medical center, whose airway has been determined to be high risk and may require advanced techniques, escalating resources, or surgical airway.

1.2 In the interest of patient safety and optimal outcomes, it is the policy of RUHS that all responding clinicians will offer their full collaboration and assistance to the primary airway operator during airway management procedures. This collaborative approach ensures that the primary airway operator has access to the necessary support and expertise, fostering a team environment that prioritizes patient care and safety.

2. GUIDELINE

2.1 Airway Management

a. If a high-risk airway is known or suspected, ensure a skilled individual and necessary resources are present or immediately available.

2.2 Preparation

a. Conduct a thorough preprocedural airway assessment.

b. Develop primary and alternative airway management plans.

c. Airway operator should brief the team on the assessment and techniques.

d. Ensure all airway equipment is available and functioning.

2.3 Basic Airway Management

a. Optimize oxygenation (e.g., nasal oxygen).

b. Ventilation: attempt facemask ventilation; if unsuccessful, use alternative methods.

c. Continuously monitor EtCO2.

2.4 Intubation Attempts

a. If the first attempt fails, consider a second operator or alternative technique.

b. Monitor time and reassess the situation.

c. Be mindful of airway injury with each pass.

2.5 Emergency Pathway / Code Airway

a. If intubation and/or ventilation fail, initiate emergency airway access and call for help (Code Airway).

b. Do not delay ongoing airway interventions by qualified physicians.

c. The decision to initiate a Code Airway is made by the team, with the primary airway operator confirming the necessity

d. It does not replace a Code Blue, Code White, or RRT.

e. To call a Code Airway, dial x911 and request “code airway,” provide location, age, and gender.

f. If transport to the OR is needed, the RN or MD will call the OR charge to arrange available surgical suite.

2.6 Response Team:

a. Anesthesia Attending on-call

b. Acute Care Surgery (ACS) Attending Surgeon on-call

- The Code Airway Surgeon determines if ENT is required and coordinates services.

c. Code Blue RN

d. Trauma Nurse

e. Respiratory Therapist (will bring difficult airway bag which includes smaller sized airways and glideslope) (bronchoscope is available upon specific request)

f. Nursing House Supervisor

3. ATTACHMENTS

3.1 ATTACHMENT I: Code Airway Algorithm

3.2 ATTACHMENT II: Difficult Airway Bag Contents List

3.3 ATTACHMENT III: Cognitive Aid: Surgical Technique

4. REFERENCES

4.1 Apfelbaum JL, Hagberg CA, Connis RT, Abdelmalak BB, Agarkar M, Dutton RP, Fiadjoe JE, Greif R, Klock PA, Mercier D, Myatra SN, O'Sullivan EP, Rosenblatt WH, Sorbello M, Tung A. 2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway. Anesthesiology. 2022 Jan 1;136(1):31-81. doi: 10.1097/ALN.0000000000004002.

4.2 House wide 620 Code Blue Code White Code MET

4.3 House wide 619 Rapid Response Team Activation

4.4 Mark L, Lester L, Cover R, Herzer K. A Decade of Difficult Airway Response Team: Lessons Learned from a Hospital-Wide Difficult Airway Response Team Program. Crit Care Clin. 2018 Apr;34(2):239-251. doi: 10.1016/j.ccc.2017.12.008.

4.5 Siddiqui, N. , Arzola, C. , Friedman, Z. , Guerina, L. & You-Ten, K. (2015). Ultrasound Improves Cricothyrotomy Success in Cadavers with Poorly Defined Neck Anatomy. *Anesthesiology, 123* (5), 1033-1041. doi: 10.1097/ALN.0000000000000848.

Document History:

Prior Release Dates: 7/20/2023	**Retire Date:** N/A
Document Owner: Code Blue Nurse Coordinator	**Replaces Policy:** N/A

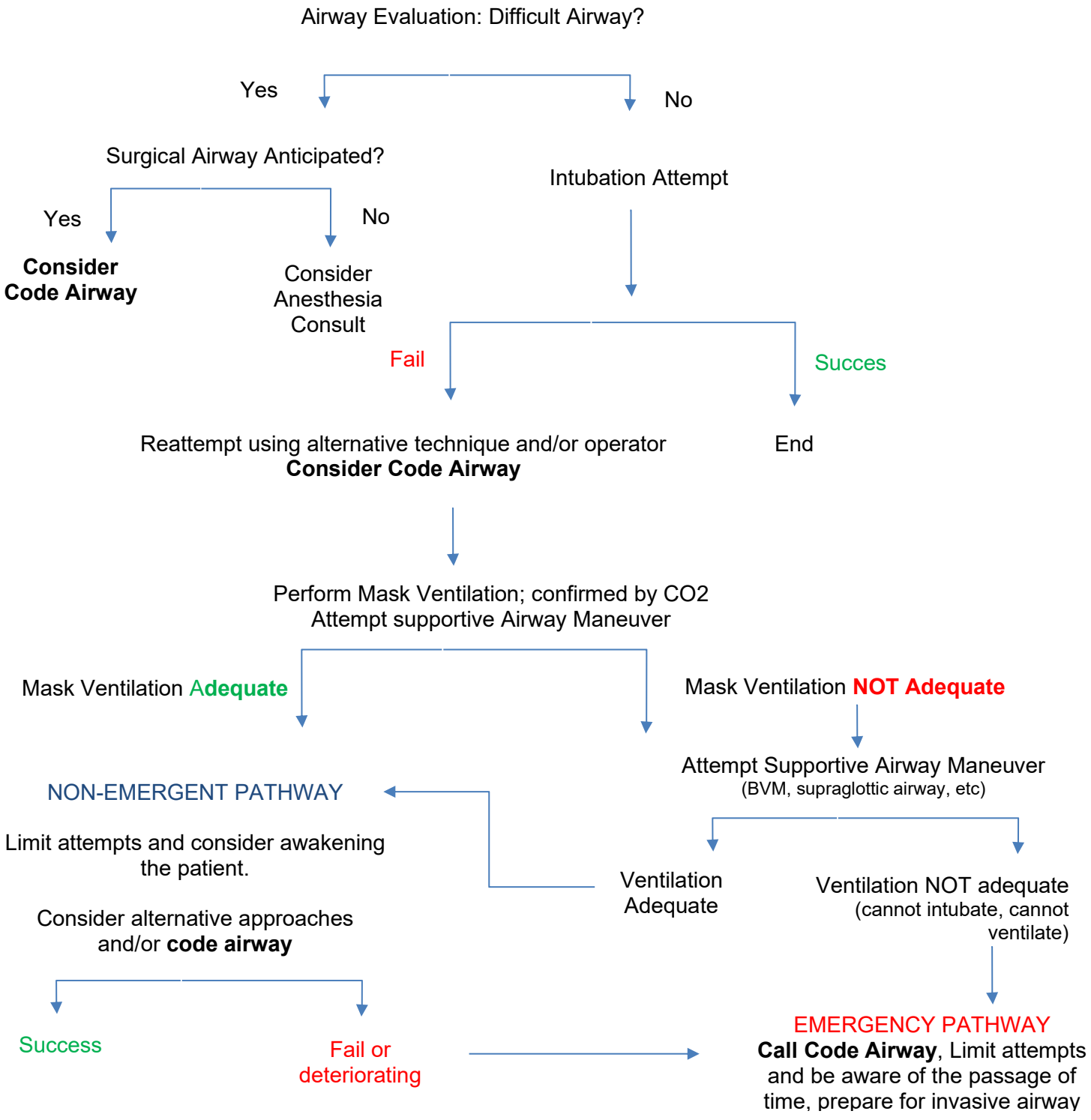
Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
01/2025	Code Airway Workgroup	Y	Add guideline section, revise flow diagram with clinical decision points, add airway checklist, add cognitive aid for surgical airway, addition of evidenced based practice references
6/15/2025	Nursing Policies and Procedures	N	
7/1/2025	PAC	N	
10/9/2025	MEC	N	

ATTACHMENT I: Adult High Risk Airway Algorithm
(adapted from the 2022 ASA Difficult Airway Practice Guideline)

Phone Numbers
64572-O.R Main Line
18313- Anesthesia
18315- Resident

PRE INTUBATION: Before attempting intubation, choose between either an awake or post-induction airway strategy.

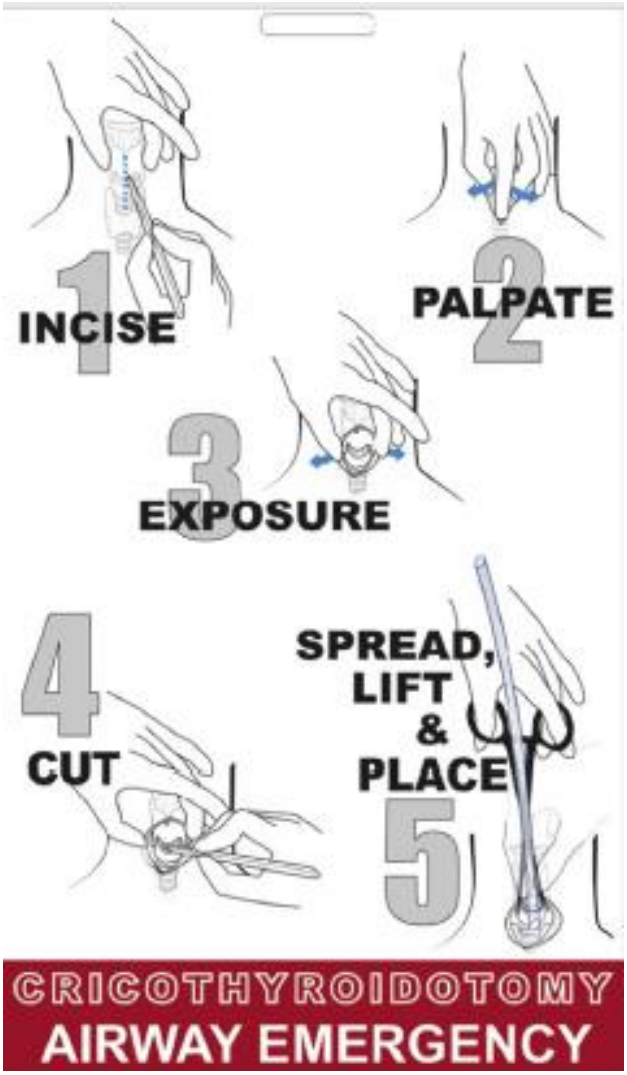
Choice of strategy and technique should be made by the clinician managing the airway. Consider pre procedure Anesthesia consultation. It is appropriate to call a code airway for a planned event in anticipation of supportive services.



ATTACHMENT II: Difficult Airway Bag Contents List

Location	Items	Quantity
Top Insert	LMA Size 3	1
	LMA Size 4	1
	LMA Size 5	1
	Cook Catheter	1
Bottom Insert	10 mL Syringe	2
	Labels	1
	ETT Size 5.5	2
	Stylet	1
	ETT Size 6.0	2
	Yankauer	1
	ETT Size 6.0	2
Layered	Laceration Tray	1
	#11 Blade	2

ATTACHMENT III: Cricothyrotomy Cognitive Aid (Mark et. al., 2018)



RIVERSIDE UNIVERSITY HEALTH SYSTEM-MEDICAL CENTER

Housewide

	Document No: 629	Page 1 of 5
Title: Scope of Service: Behavioral Emergency Response Team (BERT Team)	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE OF SERVICE

1.1 The Riverside University Health System – Medical Center's (RUHS – Medical Center) Behavioral Emergency Response Team (BERT) program services include all pediatric and adult populations exhibiting signs and or symptoms of an actual or impending behavioral crisis to include patients and visitors in the Emergency Center, Medical – Surgical Center (MSC), Education Building, and the surrounding parking areas within a 250-yard radius, excluding RUHS-Arlington Campus.

2. DEFINITIONS

2.1 Code Green: is a code phrase established to alert staff and Code Green responders of a patient or other individual(s) within the hospital environment who is believed to be combative or exhibiting behaviors which pose an imminent threat to themselves or others, or a patient on a legal hold attempting to leave.

2.2 Code BERT (Behavioral Emergency Response Team): A code word established to alert staff and Code BERT responders or other individual(s) within the hospital environment who is exhibiting early escalation behaviors (i.e., raised voice, uncooperative, refusing to follow directions).

2.3 Emergency Responders: Behavioral Emergency Response Team (BERT) registered nurse(s), Security Officer(s), Riverside Sheriff Officers (RSO), and other trained RUHS staff.

2.4 Mobile Crisis Response Team: RUHS – Behavioral Health (BH) Crisis Support System of Care Program. The Team is field based and assist 24/7.

2.5 Healthcare Security Services (HSS): A private security group contracted to provide safety and security on campus.

2.6 Riverside County Sheriff's Department (RSO): A contracted group that provides law enforcement on the campus.

3. GUIDELINE

3.1 The RUHS – Medical Center BERT program is to ensure excellent and consistent care for all patients, family members and visitors exhibiting signs and or symptoms of an impending behavioral crisis or a perceived crisis.

3.2 Locations and hours of service:

a. 24 hours per day, 7 days a week.

b. BERT team services will be provided by BERT emergency responders.

3.3 **The BERT Team performs the following functions:**

a. Facilitate effective interaction and collaboration among agencies, services, and people involved in rapid identification of escalating behaviors that require de-escalation and or immediate interventions.

b. Assess situations using the behavioral scale. (See Attachment 7.1)

c. Debrief with unit staff.

d. Provide one-on-one education to patients, and staff members.

e. Role model interventions.

3.4 **To activate a Code BERT / Code Green:**

a. From RUHS – Medical Center: Call the hospital operator by dialing “9-1-1” from a hospital phone.

b. From Education Building: Call the hospital operator by dialing “0-1” from a hospital phone.

c. From MSC: Only a Code Green can be activated by calling the hospital operator by dialing “0-1” from a hospital phone. For all other behavioral issues (i.e., danger to self), the MSC activates the RUHS Mobile Crisis Response Team by dialing (888) 374-1113.

d. Surrounding parking lots and exterior locations within 250-yards of the RUHS – Medical Center: Caller may activate a Code by locating the closest ‘blue emergency phone’ in all parking lots.

e. Request a Code BERT or Code Green.

f. Provide requested data (which may include but not limited to):

    i. Location

    ii. Legal status

    iii. Presentation

g. The hospital operator will page the Code BERT to the BERT registered nurse. This is a silent activation and not paged overhead.

h. The hospital operator will page the Code Green overhead and to other emergency responders.

3.5 **Emergency Responders:**

a. Code BERT responders:

    i. BERT registered nurse(s)

    ii. Security Officer(s)

b. Code Green responders:

i. BERT registered nurse(s)

ii. Security Officer(s)

iii. RSO

iv. House Supervisor

v. Other trained emergency responders

3.6 **Roles and responsibilities of BERT:**

a. BERT members respond to Code BERT / Code Green.

b. Assess scene for safety.

c. Determine interventions based on behavioral scale.

d. Convey findings to primary team.

e. Assist with medication.

f. Document Code BERT / Code Green within the internal database and electronic health record.

4. EDUCATION

4.1 **BERT nurse education includes but not limited to:**

a. Annual training, or more frequently, for physical containment of aggressive behaviors.

b. Biennial training, or more frequently, in de-escalation techniques, scene safety, appropriate use of restraints and documentation.

c. Biennial Basic Life Support (BLS) certification.

d. Biennial Riverside County 5150 training.

4.2 **BERT Team provides clinical staff with:**

a. Focused in-services as needed.

b. Education for new hire nursing staff at RUHS – Medical Center and ongoing education, or more frequently as needed.

c. Training drills with Security, RSO and BERT registered nurses on Code BERT/Green / de-escalation and restraints.

4.3 **The BERT Committee is a multidisciplinary team and includes the following:**

a. BERT Committee chair or representative.

b. BERT Program Director.

c. BERT Program Assistant Nurse Manager (BERT Committee Co-Chair).

d. Medical Director or representative.

e. Attending Physician ED or representative.

f. Consulting Psychiatric Physician or representative.

g. Critical Care Executive or representative.

h. Clinical Administrator ED or representative.

i. Director of Pharmacy or representative.

j. Chief Clinical Integration Officer or representative.

k. Safety Coordinator or representative.

l. Adult Nursing Services Unit Directors or representative.

m. Pediatric Director of Nursing Services or representative.

n. Riverside County Sheriff Sergeant or representative.

o. Facility Site Supervisor or representative.

4.4 **Meetings are conducted quarterly and as needed.**

5. Quality Improvement: The effectiveness of the BERT Program is evaluated by the BERT Committee through the following process: (a) ongoing data collection on performance metrics; (b) evaluation of the quality outcome indices; (c) process/practice modifications as indicated by quality outcomes measures; (d) data reporting to physicians and sharing outcomes to the clinical staff in collaboration with the BERT Committee.

5.1 **Performance Improvement:**

a. Monitor performance of the BERT Program by the BERT Committee through prospective and retrospective chart reviews for internal measures compliance.

5.2 **Data Collection:**

a. Data collection and maintenance will be gathered concurrently by the BERT Manager or representative.

b. Data reporting:

i. BERT Manager or representative will report overall and individual internal measures to the BERT Committee quarterly.

6. REFERENCES

6.1 CA Welfare and Institutions Code. Division 5 Community Mental Health Service, Part 1. The Lanterman-Petris-Short Act. Chapter 2 Involuntary Treatment (5150-5349.5)

6.2 Medical Board of California, Title 16, CCR Section 1379

6.3 California Nurse Practice Act, Business and Professions Code Section 2725

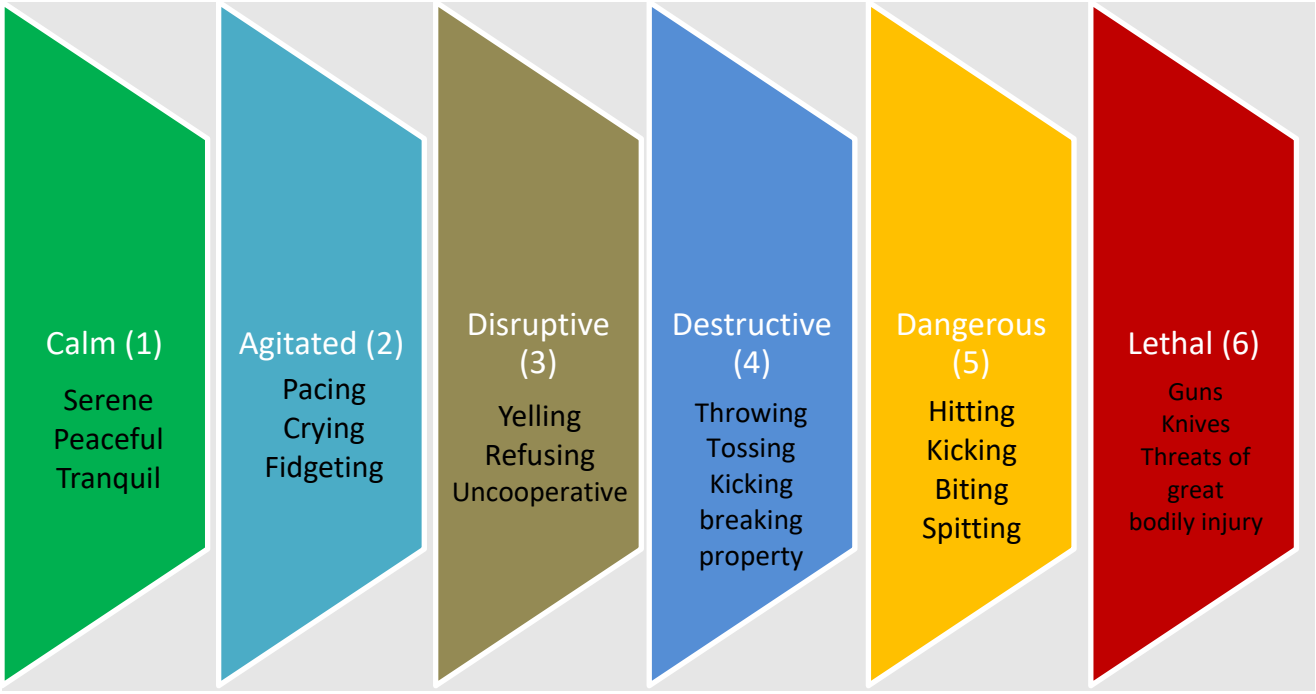
6.4 CA Welfare and Institutions Code. Division 5 Community Mental Health Service, Chapter 3 Section 5370.2

6.5 RUHS Policy HW 631: Code BERT and Code Green (2024)

7. ATTACHMENTS

7.1 BERT Standards – Behavioral Scale

Attachment 7.1 Behavioral Scale



Document History:

Prior Release Dates: N/A	**Retire Date:** N/A
Document Owner: BERT Team	**Replaces Policy:** N/A

Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
2025	BERT Team		
05/15/2025	Nursing Policy and Procedure Committee	N	
7/1/2025	PAC	N	
10/9/2025	MEC	N	

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 680	Page 1 of 3
Title: Telephone and Verbal Orders	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. SCOPE

1.1 This applies to all patients admitted at Riverside University Health System-Medical Center (RUHS-Medical Center) and all patients being treated at the Emergency Department (ED) including Arlington Campus.

2. DEFINITIONS

2.1 Authentication: The date, time, and signature of the prescribing provider.

2.2 Prescribing Provider: is a physician or an independent practitioner permitted by law and regulation and also by the organization, to provide care and services without direction or supervision within the scope of the individual's license and consistent with the privileges granted by the organization.

2.3 Telephone Order: Orders dictated over the telephone to a health care professional authorized under their professional scope of practice to accept such order when the prescribing provider is not physically present.

2.4 Verbal Order: Orders taken by a health care professional authorized under their professional scope of practice to accept such order when the prescribing provider is physically present but is unable to enter orders into the patients' medical record.

3. POLICY

3.1 Limit verbal orders to urgent situations in which immediate written or electronic communication is not accessible and the provision of patient care maybe be impacted adversely, or the patient's condition compromised by not obtaining the order quickly.

3.2 Minimize the use of telephone orders.

3.3 Prohibit verbal orders via electronic communications (e.g. text messaging, secure chat).

3.4 Receive verbal or telephone orders only from a provider authorized to prescribe medications, treatments or therapies.

4. RESPONSIBILITIES

4.1 The prescribing provider is responsible to:

a. Clearly and thoroughly communicate verbal and telephone orders.

b. Verify and authenticate all verbal and telephone orders within 48 hours and in accordance with the RUHS Medical Staff Bylaws.

5. PROCEDURE

5.1 Medical and Physician Assistant (PA) students must not give telephone or verbal orders.

5.2 Elements of a Verbally Communicated Order

a. Verbally communicated orders must contain all of the components of a valid written order and must be communicated clearly. Two of the following patient identifiers must be included:

i. Patient's Full Name

ii. Medical Record Number

iii. Date of Birth

5.3 Receiving Telephone or Verbal Orders

a. Telephone or verbal orders for urgent administration of medications, treatments, therapies, or nutritional support will be accepted by the following health professionals who are expressly authorized under their scope of practice to receive and act upon medical telephone or verbal orders.

i. Registered Nurse

ii. Licensed Vocational Nurse

iii. Pharmacist

iv. Physician

v. Physician Assistant and Nurse Practitioner (from supervising physician)

vi. Registered Dietician

vii. Respiratory Therapist

viii. Radiology Technologist

ix. Physical, Occupational and Speech Therapist

x. Radiation Therapist

5.4 Upon receiving a telephone or verbal order:

a. The telephone or verbal order must be immediately documented by the recipient including read back & verified to the prescribing provider and a confirmation from the provider.

b. The telephone or verbal order must also include the following elements:

i. Name and title of the prescribing provider giving the telephone or verbal order and the Supervising Attending Physician upon order entry to the Electronic Health Record.

5.5 Clarification of Orders

a. When clarifying telephone or verbal orders, all pertinent information and questions must be directed to the prescribing provider initiating the order, if

unavailable, by another provider responsible for the care of the patient in accordance with RUHS Medical Staff Bylaws.

b. If questions remain after consulting with the prescribing provider, use of the appropriate chain of command must be followed in an effort to obtain resolution.

5.6 Provider Review of Telephone and Verbal Orders

a. Telephone or verbal orders must be verified and authenticated by the prescribing provider or another provider responsible for the care of the patient in accordance with RUHS Medical Staff Bylaws.

5.7 Telephone or verbal orders for antineoplastic agents and any hemodialysis procedures are not permitted.

5.8 Students

a. Students may not accept any telephone or verbal orders.

6. REFERENCES

6.1 RUHS Medical Staff Bylaws, Rules, and Regulations.

6.2 42 Code of Federal Regulations, Nursing Services.

6.3 California Code of Regulations, Title 22, Pharmaceutical Service General Requirements.

6.4 The Joint Commission RC.02.03.07 EP 3.

6.5 HW 802 Medication Orders

Document History:

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Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
12/18/2024	NPP	Yes	Update 5.4 B to align with EHR workflow, remove reference to HW630, add secure chat as a prohibited verbal order method or Remove Reference to HW 607.1
6/30/2025	PAC	N	
10/9/2025	MEC	N	

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 811	Page 1 of 9

Title: Automated Dispensing System (Pyxis®)	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☒ **Policy** ☐ **Procedure** ☐ **Guideline**

1. PURPOSE

1.1 To define Automated Dispensing System user security policy, training requirements, ADS contents, downtime procedures, and quality assurance processes.

2. DEFINITIONS

2.1 Automated Dispensing System (ADS) – Computerized medication storage device that allows for secure medication storage and dispensing, such as Medstation® and Anesthesia Cart

2.2 Pyxis® - BD Carefusion Automated Dispensing System trade name.

2.3 MedStation® - Automated medication dispensing system supporting decentralized medication management.

2.4 CII Safe® - Stores, tracks and monitors the replenishment of controlled substance inventory.

2.5 Pyxis Profile® - Software that interfaces with the pharmacy computer order entry / approval system to Pyxis System software that requires pharmacist review / activation of all medication orders before medication access is granted at the ADS.

2.6 BioID - Fingerprint recognition technology used to verify the identity of the Pyxis user.

2.7 Blind Count - Pyxis functionality used during dispense process that requires the user to inventory the contents of the pocket and verify count without a machine prompt of how many doses should be in the pocket. This function is primarily used for controlled substances.

2.8 Console - Pyxis Server located in Pharmacy that links to all ADS and stores centralized databases including formulary, users, and transactions.

2.9 Override - A process that allows a user to remove medications from a patient's profile on the ADS prior to the entry of a medication order into the pharmacy computer system and subsequent pharmacist verification process. The list of overridable medications is approved by the Pharmacy and Therapeutics Committee and managed by Pharmacy. The process for selection of medications that are overridable is driven by:

a. Patient Safety: e.g. naloxone, diphenhydramine, furosemide

b. Patient Suffering / Pain: narcotics, anti-emetics

c. Patient Comfort: anxiolytics

d. Emergent situations as dictated by Director and Assistant Directors of Pharmacy

2.10 Override Groups – A preset list of medications that is available to users by override based upon nursing assignment areas and corresponding patient needs in those areas.

2.11 Critical Override – A function that allows nursing staff to override all medications in an ADS during periods of critical downtime when medication orders are unable to be verified and the interface between the pharmacy system and the ADS is not functioning. Functionality is managed by pharmacy.

2.12 Lead Time – The time period prior to the administration time of an order, in which the medication will be available to be accessed from Pyxis machine (i.e., if the administration time of famotidine 20 mg is 0900 and the lead time is set at 2 hours, then the order of famotidine will be available on the Pyxis Patient Profile at 0700).

2.13 Lag Time - The time period after an order is discontinued from the pharmacy computer system, but the medication can still be accessed from Pyxis machine (i.e., a one-time order for furosemide 20 mg at 0900 will not drop off the Pyxis Patient Profile until 1100, if the lag time is set for 2 hours).

2.14 Security User Template Assignments - All security user template assignments are performed by Pharmacy System Managers only.
a. Nursing (or other designated staff) are entered and maintained in the Pyxis ADS
b. Nursing (or other designated staff) that is assigned to a specific work area will only have Pyxis ADS access in their respective work area**.**
c. Nursing (or other designated staff) that is temporary assigned to a specific work area (e.g. floater or registry) user has access to temporarily assign area after activation by charge nurse for a single 14-hour period.

2.15 Privilege Templates – All privilege templates are assigned by Pharmacy Informatics only

a. Pyxis users will be assigned an appropriate privilege template in accordance with their respective security user template.

2.16 Electronic health record (EHR) – Electronic version of a patient's medical history that is managed by healthcare providers, which includes the following but not limited to patient's allergies, laboratory results, medications, and encounter notes.

3. POLICY

A. **Pyxis Security: User ID/ BioID; Authorized Access**

a. **User ID/ Password Assignment**

i. Acquiring Pyxis access should not be considered as a "STAT" request. The policies on access are to be followed and are designed to protect patient confidentiality and to maintain the security of medications stored in Pyxis ADS.

ii. Nurse Managers, Pharmacy Directors or designee, Education department directors, Anesthesia department designees, House Supervisors, and individuals designated by Nursing management are authorized to complete a Pyxis System Access Request (SAR) form to request access to the Pyxis system.

iii. Pharmacy maintains a list of users who may authorize Pyxis System Access.

iv. New users must complete the Pyxis tutorial training and EHR training before a user shall be granted Pyxis access.

v. The employee/user shall be required to present a certificate(s) of Pyxis tutorial Moodle training completion, SAR form, and two valid forms of US Government picture IDs, The 1st form must be the Riverside County employee badge and the 2nd can be any of the following: US passport, state ID or driver license, permanent resident card to the Education Department or Staffing Office. The Education Department, Staffing Office, or Pharmacy Compliance shall forward completed documents to Pharmacy Informatics.
vi. The user I.D. must be the same as the user's employee ID number.
vii. The initial password will be randomly assigned by authorized pharmacy personnel.
viii. First-time users shall be prompted to change their password the first time they sign onto the system.
ix. All access passwords are confidential and, if revealed, can lead to disciplinary action, up to and including termination.
x. Users shall be required to complete BioID registration the first time they log in. This one-time process enables each user to register their biometric information in ADS. After successfully registering in the system, users have BioID log in rights in each station where they have access privileges.
xi. A user who has problems with their BioID must report to their supervisor, who will submit an e-mail to Pharmacy Informatics. Pharmacy will then contact the user to verify and evaluate their fingerprint before they can be exempted.
xii. Only Pharmacy personnel with the proper level of security (Pharmacy Directors and designated staff) can add, revise, and terminate users in the Pyxis Console.
xiii. No user shall add temporary users to the Pyxis ADS. All Pyxis access shall be granted by Pharmacy Informatics.
xiv. Terminated users or those with no activity within 180 days will have their access removed within the Pyxis Console and CII Safe®.
xv. Human Resources will notify the Pharmacy Supervisor when employees are terminated so that their Pyxis access will be revoked accordingly. Additionally, Nurse Managers shall e-mail Pharmacy Administration as soon as an employee is terminated.
xvi. Periodically, and no less often than yearly, Pharmacy shall print a report of users for nursing departments to determine that individuals listed are still employed and that the employee's Pyxis privileges are appropriate.

B. **ADS Contents**
   a. All ADS units shall contain a managed formulary of orderable medications.
   b. Additional medications may be added to the ADS if space allows. If additional space is not available in the ADS, Pharmacy shall send the ordered medication to the nursing floors to be stored in a secure medication storage area outside of Pyxis (e.g., cassettes, patient specific medication bins, etc.).

C. **Pharmacist Review of Medication Orders in Profile Service Areas**
   a. Prior to removal of medications from an ADS, it is required that a registered pharmacist review the medication order and enter it into the pharmacy information system.
   b. Pharmacists shall enter all medication orders into the pharmacy information system and review them for appropriateness.
   c. Upon pharmacist verification of the medication order, Pyxis Profile shall release the corresponding medication in Pyxis for dispensing and administration under the corresponding patient.

d. Exceptions to this procedure shall be managed by the Pyxis Profile "Override" functionality and will be reviewed and approved by the Pharmacy and Therapeutics Committee. Exceptions shall include, but are not limited to the following:
    i. Considerations for areas where the physician directly controls the ordering, dispensing, administration and monitoring process components of medication use.
    ii. Code Blue events (pursuant to Emergency Standing Orders).
    iii. Situations that would compromise patient safety result in suffering / loss of comfort if the medication were not administered promptly or if the patient's condition warrants.
    iv. A STAT medication needed to treat an adverse medication event (medication reaction treatment/antidote).

D. **Medication Administration from ADS**
    a. See HW 852 on Medication Administration. All medications packaged with barcodes shall be scanned for accuracy using barcode recognition technology prior to confirming medication removal from Pyxis.

E. **Orderable medications not stored in ADS**
    a. First Doses
        i. If medication is not available in ADS, Pharmacy shall send the ordered medication to the nursing floor to be stored in a secure medication storage area outside of Pyxis (e.g., cassettes, etc.).
    b. Subsequent doses for medications not added to ADS:
        i. Pharmacy shall send a 24-hour supply of the ordered medication to the nursing floor to be stored in a secure medication storage area outside of ADS.
    c. Controlled Substances not routinely stocked in ADS shall be dispensed from the Inpatient Pharmacy.
    d. Oversized/ Bulk Medication Storage / Access
        i. Oversized or bulk medications shall be stored in a secure location in the nursing area.
    e. Patients' own medications are not to be stored in ADS.

F. **Override Function in Profile ADS**
    a. Override refers to a process where a nurse withdraws and administers a medication before a pharmacist has had an opportunity to review the order. The following criteria shall drive which medications nursing can access before a pharmacist has reviewed a medication order.
        i. Medications that may be overridden and that are included on the override list shall be driven by the patient condition and will be dictated by:
            1. Patient Safety
            2. Patient Suffering/Pain
            3. Patient Comfort
            4. Emergent situations as dictated by Director and Assistant Directors of Pharmacy
        ii. Any changes to privilege templates will be reviewed by Pharmacy Informatics, who will require the approval of the Director of Pharmacy or Assistant Directors of Pharmacy.
    b. The Pharmacy department shall routinely evaluate medications for addition or deletion from the override list and make recommendations to the Pharmacy and Therapeutics Committee.
    c. The Pharmacy and Therapeutics Committee shall determine which medications and under what conditions nursing shall be able to override the medication removal process prior to a pharmacist's review.
    d. Pharmacy shall routinely monitor the override report for compliance.

e. When overriding a medication that has not been reviewed by a pharmacist, the nurse is responsible for screening for allergies, appropriate dose, route, frequency, and all other relevant clinical criteria to ensure patient safety.
f. Override medications are intended for STAT and first-time doses that meet the override criteria. Nurses shall not override for medications that already appear on the patient's Pyxis Profile screen.
g. If the medication does not appear on the list of override medications and the nurse does not have access to the medication, they must contact Pharmacy for resolution.

G. **Override Orders**
   a. It is the responsibility of the Pyxis user, who is overriding the Pyxis Profile system to retrieve a medication, to obtain a physician order in compliance with regulatory requirements. All overridden medications shall be reconciled by linking to a verified EHR medication order.

H. **Override Groups for Profile ADS**
   a. Based upon the patient needs in their assigned area, nursing staff shall be linked to an override medication group.
   b. Override medications are entity specific and will be maintained by the Pharmacy System Managers with nursing and medical staff contribution.

I. **Overridden Controlled Substances Without Corresponding Order**
   a. Pharmacy shall review narcotic override reports within 24 hours or the first workday after holiday or weekend and shall refer any overridden medications without orders to the appropriate department for resolution.

J. **Critical Override**
   a. Pyxis failure: critical override shall be manually activated or shall automatically activate after 15 minutes of ADS failure. The pharmacy administrator-on-call must be notified.
   b. Others: the pharmacy administrator-on-call should be contacted for authorization. The pharmacy administrator-on-call should consider the workload, staffing issues, and other circumstances.
   c. Critical override is only turned on when necessary and should be turned off as soon as possible. The pharmacy administrator-on-call must ensure the Pyxis is taken off critical override when appropriate.

K. **Wasting of Partially Used Doses or Unusable Doses of Controlled and Non-Controlled Substances**
   a. All medications including controlled substances that have been removed from the ADS, opened, used, or have a compromised tamper-resistant system, shall be wasted in compliance with Federal and State regulations. Two authorized users, the user wasting and a witness, shall document wasted controlled substances in Pyxis.
   b. Pharmacy Staff shall review Pyxis Narcotics record with administration record.

L. **ADS Medication Load/Unload (Pocket Assignment)**
   a. Load/unload Privileges: All designated pharmacy staff shall have load/unload privileges, but Pharmacy Informatics will oversee load/unload activities. Pharmacy will load/unload medication data as necessary to optimize medication-related patient care.

M. **Stock Replenishment**
   a. Pharmacy will be responsible for maintaining adequate inventory levels of Pyxis formulary medications.
      i. A pharmacy technician shall pull the medications based on the fill list with all items at or below minimum periodic automatic replacement (PAR) level.
      ii. A pharmacist will check the stock before it leaves the Pharmacy.

iii. A pharmacy technician shall deliver and refill the medications in the Pyxis ADS.

N. **Console Settings**
   a. Lead time shall be set at two (2) hours and lag time shall be set at four (4) hours.
   b. Menu timeout shall be set at thirty (30) seconds. The Pyxis MedStation® will automatically log the user out if there is no activity within this time. For Pyxis Anesthesia Cart, the menu timeout shall be set at fifteen (15) minutes. However, it is the responsibility of the user to log out after each use to prevent diversion.
   c. Discharge delay shall be set at two (2) hours. This time window will allow a user to return or waste a medication on a patient that was recently discharged.

O. **Downtime Procedures**
   a. Documentation of Pyxis Hardware and Software Problems
      i. All patient care areas will call the Inpatient Pharmacy for initial triage with Pyxis Problems at 951.486.4490.
      ii. RUHS staff will call the Vendor Technical Support (BD Pyxis) at 1.800.727.6102 to report all equipment problems or failures. The Vendor Technical Support (BD Pyxis) will keep a log of Pyxis problems for tracking purposes.
   b. **Downtime Procedures for Hardware / Electrical Power Outage or extended H.I.S Downtime**
      i. In the event of an ADS failure, the following medication dispensing procedures shall be followed.
         1. All medications that are stored within the failed ADS shall not be utilized.
         2. The nursing staff shall coordinate with the inpatient pharmacy staff to have all requested medications be delivered from the inpatient pharmacy.
      ii. The nursing staff shall reconcile the inventory count of controlled substances as soon as power is reestablished.
         1. The following table describes the most common failure types:

Failure Type	Result	Remediation	Contact
Power Outage	Station down	Troubleshoot power source	a. RUHS Helpdesk b. Pharmacy c. Pyxis Technical Support
Hospital Information Systems Failure	No Admit, Discharge, Transfer (ADT)	Follow hospital downtime procedure; Admitting / nursing to notify Rx of ADT information	a. RUHS Helpdesk b. Pharmacy c. Pyxis Technical Support
Pharmacy Information Systems Failure	Verified orders not passing to profile, no ADT	Critical override occurs after 15 minutes	Pharmacy to notify RUHS Helpdesk
Pyxis Server Failure	Verified orders not passing to profile, no ADT, no refill function	Critical override occurs after 15 minutes, Pharmacy has to go to the ADS to print refill reports	a. Pyxis Technical Support b. RUHS Help desk
ADS Failure			
ADS Unresponsive	ADS does not respond to user input	Reboot	a. Pharmacy b. Pyxis Technical Support

			c. RUHS Helpdesk
Communication Failure	Verified orders not passing to profile, no ADT, no refill function	Reboot and check network cable for connection	a. Pharmacy b. RUHS communications c. Pyxis Technical Support
Drawer Failure	Cannot open drawer	Recover drawer	a. Pharmacy b. Pyxis Technical Support
Hardware Failure	Verified orders not passing to profile, no ADT, no refill function	Open the back of ADS w/ keys if necessary	a. Pharmacy b. Pyxis Technical Support
Interface Failure (network)	Verified orders not passing to profile, ADT, no refill function	Critical override occurs after 15 minutes	a. Pharmacy b. RUHS Helpdesk c. Pyxis Technical Support

c. **<u>Resumption of Power and /or Pyxis Interface Downtime</u>**
   i. The EHR shall populate Pyxis with patient demographic information when the patient is admitted.
   ii. The Contact Serial Number (CSN), NOT Medical Record number (i.e. hospital identification number), shall be manually entered to avoid billing compliance issues.
   iii. Upon resumption of electrical power and/or Pyxis, the pharmacy staff shall restock, inventory and correct the inventory in Pyxis.

P. **Data Archiving**
   a. Regular data archiving is automatically conducted daily onto the RUHS network drive. Retrieval of archived data is readily accessible through a Web-based archiving software.

Q. **Adding Patients to Pyxis**
   a. Patient names shall be automatically entered into Pyxis via the ADT/Pyxis interface.
   b. If the patient info is not automatically populated in Pyxis correctly and it is the responsibility of the nurse to inform Pharmacy to aid in the resolution of the missing patient profile
      i. See downtime protocols in Section O

R. **Operating Room/Surgical Suite ADS**
   a. **Machine Access:** The following personnel shall be granted user access to the ADS:
      i. Anesthesia Provider
      ii. RN, LVN
      iii. Pharmacy Technician
      iv. Pharmacist
      v. OR Technician (for stock supply drawers only)
   b. **Machine Refilling**
      i. Pharmacy shall refill Pyxis periodically throughout the day as indicated.
   c. **Controlled Substance Waste**
      i. Controlled substances waste shall not be returned to stock and shall be wasted to return bin with receipt in the presence of a licensed

witness who is an authorized user. The witness shall document the waste electronically in the Pyxis System.

ii. Pharmacy Staff shall review Pyxis Narcotics record with Anesthesia administration record.

d. **Emergency Backup**
   i. The Pyxis keys shall be stored in the Pharmacy narcotics vault.
e. **Formulary Adjustments to Anesthesia Pyxis**
   i. Requests to adjust the formulary of the Anesthesia system shall be a formal process between the Chair of Anesthesia and Pharmacy Administration.
   ii. Medications stored in the Anesthesia system will require the review and approval for inclusion by the Pharmacy and Therapeutics Committee.

S. **Quality Assurance for Pyxis**
   a. **Controlled Substance Inventory/Monitoring**
      i. Refer to HW899 Controlled Substances Handling & Medication Diversion Management
   b. **Blind count** functionality shall be used for medications including, but not limited to controlled substances and designated medications.
   c. **Quality checks**
      i. Medication outdates:
         1. The outdate tracking function shall be used to track outdates of Pyxis medications.
         2. Personnel filling Pyxis medications are responsible for updating the medication expiration date within the system.
         3. The removal of outdates shall occur no less frequently than every thirty (30) days by personnel designated to perform this function.
      ii. Pocket access frequency and PAR levels shall be evaluated periodically to assess appropriateness of ADS contents.
   d. **Accuracy of Medication Fill by Pharmacy**
      i. All Pyxis medications intended for Pyxis stock replenishment will be checked by a licensed pharmacist prior to leaving the Pharmacy.
      ii. Bar code medication administration (BCMA) is enabled for all Pyxis devices to ensure the accuracy of stocked medication.
      iii. Narcotics refill accuracy: Pharmacy supervisor or designee shall review the Pyxis CII Safe comparison report daily to ensure refill accuracy between pharmacy dispensing and Pyxis ADS refill.
      iv. Nursing and pharmacy staff shall report all ADS fill errors to pharmacy management via the incident report process.
   e. For more information about Quality Assurance, refer to Policy PHARM B209

T. **Returning medications**
   a. Any medication removed from the Pyxis ADS that is not administered to a patient and remains in its original, sealed, and untampered packaging shall be placed in the return bin.
   b. Medications should not be returned to Pyxis if adulterated or removed from patient care areas for any reasons except for direct patient care. If medication is unable to be returned to the ADS, call the inpatient pharmacy for guidance. (Refer to Policy PHARM F600 for details)

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7/8/2025	Pharmacy Review Committee		Definition 2.15 Pharmacy Informatics Section S.a. refer to HW 899 for controlled substance inventory/monitoring
9/2025	P&T	No	
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11/13/2025	MEC	No	

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
Housewide

	Document No: 829	Page 1 of 11
Title: Ordering, Preparing, and Monitoring Parenteral Nutrition in Adult Patients	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. DEFINITIONS

1.1 PN: Parenteral Nutrition

1.2 TPN: Total Parenteral Nutrition

1.3 RMR: Resting Metabolic Rate

1.4 AEE: Actual Energy Expenditure

1.5 MAP: Mean Arterial Pressure

1.6 IBW: Ideal Body Weight

1.7 GI tract: Gastrointestinal tract

1.8 ASPEN: American society for parenteral and enteral nutrition

1.9 BMI: Body mass index

1.10 ILE: Intravenous lipid emulsion

1.11 SO-ILE: soybean oil intravenous lipid emulsion; contains eggs, soybean, peanut

1.12 SMOF-ILE: Containing four different types of oils: 30% SO, 30% MCT, 25% OO, and 15%FO; contains eggs, soybean, peanuts, fish, olive

1.13 CRRT: Continuous Renal Replacement Therapy

1.14 TRIG: Triglyceride

1.15 SCAPN: Standardized Commercially Available PN formulations

1.16 ACD: Automatic Compounding Devices

2. GUIDELINES FOR ORDERING/PRESCIBING PN

2.1 The physician may consult the clinical pharmacist to manage the patient's TPN by writing for "TPN per pharmacy". All consult requests need to be received before 14:00 for patient to receive PN on that same day. All consult requests not received on time will be started the next day and the physician as well as the nurse taking care of the patient must be informed by the Pharmacist.

2.2 The clinical pharmacist is responsible for writing completed chart orders for TPN including indications, co-morbid conditions, and weight daily as well as supplementary

orders related to clinical monitoring, and, if necessary, electrolyte replenishment in the form of oral or intravenous electrolyte riders.

2.3 Standardized electronic PN orders (eg, a computerized prescriber order entry CPOE system) should be used to prescribe PN for all patients. When CPOE system is not available, a standardized order template should be used, and it should include all the required components of the electronic orders

2.4 All PN ingredients shall be ordered in amounts per days. Electrolytes shall be ordered as the complete salt form rather than the individual ion.

2.5 Prescribing a PN formulation that includes non-nutrient medications should be avoided and shall only be included if data support compatibility/stability.

2.6 A progress note must be written daily by the clinical Pharmacist, which documents dietician recommendation is reviewed, must detail the rationale for any adjustments to the patient's formula, include all relevant information and describes the patient's clinical response to TPN.

2.7 The TPN order will undergo a second check review by another pharmacist prior to compounding. The second pharmacist will confirm the appropriateness of the written TPN order for compatibility of formula, electrolytes, and other additives.

2.8 The TPN goal time for administration is 21:00.

2.9 The clinical Pharmacist may:

a. Add/decrease/discontinue main IV fluids to prevent excessive administration of fluid volumes when PN begins.

b. Initiate bedside glucose monitoring every 6 hours and more frequently in hyperglycemic patients.

c. Discontinue TPN if the TPN bag is refused for more than 2 times by a patient and notify Physician.

d. Upon a request from the physician cycle TPN infusions in select patients over less than 24 hours to encourage transition to an oral diet, to minimize long-term hepatic complications of TPN or to prepare for discharge.

e. Wean calories/volume as patients transition to an enteral or oral diet and discontinue TPN when enteral or oral intake provides at least 60% of caloric needs.

f. Convert between intravenous and oral dosage forms of TPN additives (e.g., zinc supplementation) when patients are taking other medications orally.

g. Order baseline labs at initiation of TPN: Comprehensive Metabolic Panel, Magnesium, Phosphate, Triglycerides. Ammonia, and pre-albumin may be ordered only if needed. The previous day's lab values may be used upon initiation of TPN if today's lab results are not available. Daily labs may include Comprehensive (or Basic) Metabolic Panel, Magnesium and Phosphate. Triglyceride may be ordered at baseline and weekly or more frequent if needed.

h. Monitor clinical and laboratory parameters necessary to ensure safe and efficacious use of TPN (e.g., patient weight, serum chemistries, lipid profiles, prealbumin, and complete blood count).

i. Initiate and titrate insulin in PN to minimize hyperglycemia.

2.10 Absolute Indications for Parenteral Nutrition (PN): Patient shall have an appropriate indication for PN therapy consistent with published guidelines, which shall be documented in the medical record. Below are some examples of PN indications:

a. Patient is malnourished and unable to ingest/absorb adequate nutrients for >7 days.

b. Failed Enteral Feeding (Patient is unable to tolerate or meet nutrition requirements with enteric route). Or EN is contraindicated

c. Cardiac: Patient is having postoperative complications that preclude use of GI tract.

d. Liver: Perioperative nutrition for patients undergoing liver resection for hepatocellular carcinoma associated with cirrhosis.

e. Severe necrotizing Pancreatitis: Only if enteral feeding is not tolerated, not available, or not meeting caloric requirements.

f. Intestinal Tract: Severely diminished function due to underlying disease or treatment. Specific conditions are as follows: Paralytic Ileus, Mesenteric Ischemia, Small bowel obstruction, Short bowel syndrome (less than 100 cm of functional gut), and hypoperfusion of gut (MAP less than 79) while on multiple vasopressors.

g. Preoperative: Nutrition for moderately to severely malnourished patients undergoing major GI surgery.

h. Postoperative: Support to patients anticipated to be unable to meet their nutrient needs orally or enterally for 7 to 10 days or longer.

i. Inflammatory Bowel Disease: Patients not tolerating enteral nutrition or perioperative patients who are severely malnourished.

j. Crohn's disease with fistulae: Brief course of bowel rest and parenteral nutrition can be attempted.

k. Gastrointestinal Fistulae: PN should be reserved for those patients with high fistula output (more than 200ml output in 24 hours), except when enteral access may be placed posterior to the fistula, who cannot meet their needs by oral intake or who are malnourished or expected to have inadequate oral intake for 7- 14 days or more.

l. Hyperemesis Gravidarum: PN should be used when enteral nutrition is not tolerated.

m. Continuation of home PN

2.11 **Allergy**: Consideration should be taken with regards to patient allergy or known hypersensitivity to eggs, soybean, peanuts, fish, and olives. Select an appropriate intralipid product based on the component profile.

2.12 **Contraindications to Peripheral Parenteral Nutrition** (Central Parenteral Nutrition is necessary in these situations)

a. Significant malnutrition

b. Severe metabolic stress

c. Large nutrient or electrolyte needs

d. Fluid restriction

e. Need for prolonged parenteral nutrition (greater than 2 weeks)

f. Renal or liver compromise

2.13 **Energy Prediction Considerations**

a. Indirect Calorimetry: to be used when available and in the absence of variables that affect the accuracy of measurement.
   i. Indirect calorimetry is the most accurate method to measure resting metabolic rate (RMR) in the clinical setting.
   ii. In addition to estimating resting energy expenditure, indirect calorimetry may be used to calculate a respiratory quotient: results in excess of 1.0 generally indicate overfeeding, while results less than 0.82 suggest underfeeding.
   iii. Certain patient characteristics tend to limit the accuracy of predictive energy equations; patients likely to benefit from indirect calorimetry assessment are those who fail to respond to nutrition support based on predictive equations, to evaluate the contribution of overfeeding/underfeeding to those who have metabolic or respiratory derangements, or patients with any of the following: acute or chronic respiratory distress syndrome, large open wounds or burns, malnutrition with altered body composition (underweight, obesity, limb amputation, peripheral edema, ascites), multiple or neurological trauma, multisystem organ failure, post-operative organ transplantation, sepsis, systemic inflammatory response syndrome, or use of paralytic or barbiturate agents.
   iv. Factors leading to decreased accuracy of indirect calorimetry and recommendations to improve accuracy have been described in the literature.

b. Predictive Energy Equations
   i. Because of the highest level of accuracy in estimating caloric needs, resting metabolic rate (RMR) must be calculated using the **Mifflin-St. Jeor** equation in non-critical care adults.
   ii. Use of this equation is endorsed by the American Dietetic Association.
   iii. Calculated RMR requires adjustment factors for stress and activity to estimate the patient's actual energy expenditure (AEE).
   iv. Based on metabolic research, the multiplication factors are 1.2 for elective surgery, 1.4 for trauma, 1.8 for sepsis, and 2.3 for burns. Disease-specific recommendations are provided elsewhere in this document.

Mifflin-St. Jeor Equation

Men: RMR = 5 + 10 (wt in kg) + 6.25 (ht in cm) – 5 (age in years)

Women: RMR = -161 + 10 (wt in kg) + 6.25 (ht in cm) – 5 (age in years)

- Using predictive equations to estimate energy requirements for critically ill patients has, at best, been tenuous. Many equations exist which factor in moment-to-moment variables such as minute ventilation and body temperature. **Ireton-Jones** developed a more practical equation to estimate actual energy expenditure (and thus multiplication

factors for injury and illness are not required). **Penn State** equation is widely used in critically ill patients for energy requirement calculation.

Ireton-Jones Equations

Spontaneously breathing patients= 629 – 11(A) + 25(W) – 609 (O)

Ventilator-dependent patients= 1784 – 11(A) + 5(W) + 244 (S) + 239 (T) + 804(B)

A = age (years); W = actual body weight (kg); S = sex (male = 1, female = 0); T = diagnosis of trauma (present = 1, absent = 0);

B = diagnosis of burn (present = 1, absent = 0); O = obesity above 30% of ideal body weight (present = 1, absent = 0)

Penn State

Penn State (modified): RMR (kcal/d) = Mifflin (0.71) + V_E (64) + T_m (85) – 3085

T_m = maximum body temperature in the previous 24 hours, RR = respiratory rate (breath/min), V_E = minute ventilation (L/min)

- The use of both predictive equations and simplistic formulas (25-30 kcal/kg/day) has been endorsed for critically ill patients. It is generally considered adequate to aim for 25 kcal/kg/day as long as subsequent adjustment in calorie goal is made based on the patient's clinical response. Both predictive equations and kcal/kg methods must be calculated, and the results must be checked against each other for similarity. The Pharmacist may consult with Dietician if there is discrepancy between the two methods.

2.14 **Composition of Calories**

a. Calories: Unless described elsewhere in a disease-specific context, nutrition goals for Riverside University Health System (RUHS) – Medical Center patients generally contain 20 – 35 kcal/kg/day. Patients may be initiated at approximately 50-60% of goal kcals and advanced to goal as tolerated over 3-5 days. Exceptions include patients on TPN at goal before hospital admission or not malnourished or no risk of developing refeeding syndrome.

b. Protein: Protein must be provided based on patient-specific needs and clinical response. Azotemia is a risk factor for the development of uremic encephalopathy. However, allowing BUN to increase up to 100 mg/dL is generally well-tolerated. In cases where dialysis is not desired or clinically advisable, administration of amino acids might be restricted or reduced to prevent BUN in excess of 100 mg/dL (up to and including discontinuation of PN, if necessary).

c. Dextrose: Carbohydrate content in PN must be provided as recommended in various disease-specific conditions as discussed below however, carbohydrate content must not exceed 7g/kg/d or oxidation rate of 5mg/kg/min in adults.

d. Lipid**:** ILE intake should be limited to less than 30% of total calories or 1g/kg/d. Acceptable serum triglyceride concentrations are less than 400 mg/dL. In the case should a patient suffer from fat intolerance, IVFE must be reduced or discontinued until level is below 400mg/dL. IVFE is considered safe for use in patients with pancreatitis without hypertriglyceridemia. Propofol infusion provides 1.1 fat kcal/mL. Patients receiving propofol infusion must have PN fat calories

reduced in an amount equal to that provided by propofol. Additionally, serum triglyceride level in excess of 400 mg/dL is a known risk factor for pancreatitis. In such cases, IVFE administration may be removed or reduced to two to three times weekly. Special considerations for IVFE in adults during a national shortage are as follows; IVFEs must not be administered to adults, mild to moderately undernourished patients on PN less than 2 weeks. Adults requiring PN longer than 2 weeks must receive a total of 100 g of fat per week in order to avoid essential fatty acid deficiency. Special populations requiring PN such as patients with glucose intolerance, at risk for refeeding syndrome and during pregnancy must receive lipids daily.

e. Hang times of 12 hours for lipid administration as a separate infusion and 24 hours when in a total nutrition admixture

f. SMOF-ILE to be used for adult patients. SMOF-ILE recommended dose is 1-2 g/kg/day with max dose = 2.5 g/kg/day

2.15 **Fluid volumes**. Unless patients need to be fluid restricted, PN volumes may contain between 30 – 40 mL/kg/day. Adjustments may be required to account for administration of other fluids (main IV fluids, IV piggybacks, tube feeds, etc.).

2.16 **Electrolytes.** Electrolytes must be added to PN formulas, initially based on estimated TPN requirements and then titrated to maintain normal serum levels. Normal serum electrolyte concentrations and usual requirements are summarized in Appendix, Table 1. Titration of electrolytes depends on disease state, clinical picture and degree of electrolyte loss. Abnormalities in renal excretion and excessive losses from the GI tract (i.e., vomiting, nasogastric suctioning, diarrhea) are often cited as primary contributors to electrolyte imbalances as shown in Appendix, Table 2. Parenteral nutrition solutions must be formulated only to maintain normal serum electrolytes. If correction is required for low serum values, the patient must be provided with electrolytes by an appropriate route of administration. The TPN pharmacist must replace electrolytes with riders if not already replaced by the physician. The TPN pharmacist must use their clinical judgment when following empiric treatment of electrolyte replacement recommendation by the ASPEN guidelines as shown in Appendix, Table 3. The TPN pharmacist must not correct electrolytes at critical values instead the physician must be informed and together must formulate a plan to correct the electrolyte in question.

2.17 **Vitamins, and Trace Minerals:** Patients ~~may~~ shall receive ~~a standard mixture of~~ multivitamins and trace mineral daily in PN admixtures unless there are contraindications. In the event of product shortage, follow the ASPEN parenteral nutrition shortage considerations.

2.18 **Additives.** Thiamin, ascorbic acid, folic acid and zinc should be provided daily to all patients for the first three days and for longer period when there are indications for them, and they cannot be given via orally or enterally.

2.19 **Insulin** may be added in PN to maintain Blood sugar within the acceptable range of 140-180 mg/dL. An initial regimen of 0.05 to 0.1 units of insulin per gram of dextrose in the PN solution is common or 0.15 to 0.2 units of insulin per gram of dextrose in patients already hyperglycemic. Up to two thirds of the total sliding scale insulin required over 24 hours might be added to next day's PN formulation.

2.20 **Intravenous Access**

a. An IV line is reserved solely for PN administration. PN should be administered as a primary infusion. When it is impossible or impractical to maintain a dedicated line for PN administration, pharmacist must conduct a comprehensive review of stability and compatibility before co-infusing medications through the same line of PN

b. Central administration- Use of a central venous catheter is required for administration of full nutrient support with PN. This allows for administration of highly concentrated and osmotic fluids.

c. Peripheral administration- To prevent phlebitis, PN may be provided via a peripheral line with maximum of 900 mOsm/L, 10% dextrose and 3% amino acid. Peripheral formulas exceeding 900 mOsm/L must be recalculated by the TPN pharmacist to 900mOsm/L or less. Peripherally administered PN usually requires large fluid volumes to adequately dilute the solution below these maximums.

2.21 **Condition-specific recommendations**

a. **Burns**

Amino acids: 1.5-2 g/kg/d which is equivalent to 20-25% of total calories from amino acids
60-65% from dextrose
10-15% as IVFE

b. **Head Injury**

Total calories* = 1.4 x RMR
1.3 – 2.5 gm/kg/day amino acids
* Reduce by 20-50% if sedated

c. **Spinal Cord Injury**

1.5 – 2.0 gm/kg/day amino acids
22-24 kcal/kg/day for paraplegics
20-22 kcal/kg/day for quadriplegics

d. **Sepsis**

1.5 – 2.0 gm/kg/day amino acids
Maximum glucose infusion rate: 5 mg/kg/min
Maximum calories from fat: 30% goal kcals or 1 gm/kg/day (whichever is less)

e. **Acute Kidney Injury**

0.8 – 1 gm/kg/day amino acids in AKI without dialysis
1 – 1.5 gm/kg/day amino acids in AKI on RRT

f. **Peritoneal dialysis and hemodialysis**

1.2 - 1.3 gm/kg/day amino acids
Up to 1.5-1.8 gm/kg amino acids

g. **CRRT patients**

1.5 - 2 gm/kg/day amino acids
Up 2.5 gm/kg amino acids

h. **Critically ill patients**

1.2-2.0 gm/kg/day amino acids

i. **Obesity:** Patients must receive no more than 80% of goal kcals until their critical disease process has stabilized. When feasible, providing soy-based lipid solutions must be avoided for the first seven days in the ICU. Serum glucose levels should be maintained between 140 to 180 mg/dL.
   i. Caloric goals for obese patients are to provide 60-70% of needs (or 11-14 kcal/kg/day based on TBW when BMI in the range of 30-50 and 22-25 kcal/kg/day based on IBW when BMI > 50)
   ii. Protein ≥2 gm/kg (based on IBW) for BMI 30-40 and protein ≥2.5 gm/kg/day for BMI>40 (based on IBW).

j. **Pregnancy**

To support fetal growth, patients in the second trimester must receive an additional 340 kcal/day while those in the third trimester must receive an additional 452 kcal/day. Patients in the second or third trimester of pregnancy must receive an additional 25 gm of amino acids per day

k. **Wound Healing**

To support wound healing, additional vitamin C and zinc may be added.

3. GUIDELINE FOR PREPARING/COMPOUNDING PN

3.1 When an ACD is used to prepare PN admixtures.

a. An independent double-check process for the initial daily ACD setup shall be performed by two staff members (one must be a pharmacist). Tubing sets shall be traced from the source container to the port where it is attached during the initial daily ACD setup and with each change in the source container. An ACD should deliver all ingredients. Manual compounding should only be used:

   i. If the volume of a PN component to be mixed is less than the ACD can accurately deliver.

   ii. If there is an interaction between a PN component and a component of the ACD (eg, insulin and tubing).

   iii. If there is a chemical interaction between PN components that cannot be mitigated sequencing the addition of ingredients.

   iv. During a shortage, manual compounding can be a consideration as part of conservation efforts

b. The additive sequence in compounding shall be optimized and validated as a safe and efficacious method.

c. The use of a checklist or signoff sheet shall be required when adding new products, changes in vial size or concentration and when making other modifications to the ACD database. Two staff members (one must be a pharmacist) shall be required to sign off on or validate changes.

d. Barcode verification shall be used to verify product identity during ACD setup and replacement of ingredients.

3.2 Standardized, commercially available PN products may be viable options to manually compounded sterile PN products. These are multi-chamber bags separate components of the PN formulation with a seal to reduce the risk for instability or precipitation. Pharmacy staffs will mix and add additives under aseptic conditions prior to dispensing for administration. The use of these products may be considered when the formulation meets the metabolic needs of the patients.

3.3 An in-line filter and tubing for administration will be delivered together with PN admixtures. ASPEN recommends using a 1.2 micron in-line filter for administration of all PN admixtures such as 3-in-1, 2-in-1 and ILE. This filter is effective in preventing Candida albicans, a pathogen frequently associated with PN administration, from reaching the patient.

4. GUIDELINE FOR MONITORING PN

4.1 Will monitor serum glucose, electrolytes, BUN, creatinine, triglycerides, total & direct bilirubin, Alkaline Phosphate, V/S, MAP, changes to patient weight, I&Os, urine output, UA/electrolytes, GI effluent, ventilatory status, arterial blood gases, presence of wounds, tolerance to enteral feeding, medication profile and signs or symptoms of vascular access device complications daily.

4.2 Will monitor Refeeding Syndrome (RS) – patients deemed at risk for RS should at first receive conservative calories, be monitored closely and receive appropriate treatment for electrolyte abnormalities. Patients with low electrolyte levels before PN initiation should undergo more aggressive supplementation prior to PN.

4.3 Patients who are new to PN should be monitored daily until stable (more frequently if patient is at high risk for refeeding syndrome).

4.4 Stable patients with no or minor changes in formulation for 1 week should be monitored every 2-7 days as deemed appropriate.

5. REFERENCES:

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Appendix

Table 1: Normal Serum Electrolyte Concentration and Estimated TPN Requirement

	Sodium	Potassium	Magnesium	Phosphorus	Calcium
Normal values	135-145 mEq/L	3.5-5 mEq/L	1.8-2.4 mg/dl	2.5-4.9 mg/dl	8.5-10.1 mg/dl*
Estimated TPN requirement	1-2 mEq/Kg/day	1-2 mEq/Kg/day	8-24 mEq/day	20-40 mMol/day	10-15mEq/day

*Based on corrected total calcium level (mg/dL) = measured total calcium (mg/dL) + 0.8 x [4 – albumin (g/dL)]

Table 2: Contributors

Source/Type of secretion	Volume (ml/d)	Electrolyte Concentration (mEq/L) Na^+	K^+	Cl^-	HCO_3^-
Saliva	1500	10	26	10	30
Stomach	1500	60	10	130	0
Ileum	3000	140	5	104	30
Colon	Variable	60	30	40	0

Table 3: Empiric Treatment of Electrolytes Replacement Riders

Serum Potassium Concentration (mEq/L)	**IV Potassium Dose (mEq)**
3-3.4	20-40
2.5-2.9	40-80
<2.5	Call Physician
Serum Magnesium Concentration (mg/dL)	**IV magnesium Dose**
1.0-1.5	8-32mEq (1-4 g) magnesium sulfate, up to 1.0 mEq/kg
<1.0	Call Physician
Serum Calcium Concentration (mg/dL)	**IV Calcium Dose**
4-5	2 g calcium gluconate over 2 hours
<4	Call physician

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8/12/2025	Pharmacist changes – PRC submission	Y	2.14(f) SMOFLipid to be used instead of Intralipid
9/2025	P&T		
10/7/2025	PAC	N	Consent
11/13/2025	MEC	N	

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
Housewide

	Document No: 830	Page 1 of 4
Title: Adult Guidelines for the Administration of Parenteral Medications	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

This guideline applies to adult patients at Riverside University Health System – Medical Center, Main Campus and Arlington.

2. DEFINITIONS

2.1 Parenteral medications: medications administered by some route other than through the digestive tract, such as by subcutaneous, intramuscular, intravenous, or intraosseous injection.

a. Medications administered via the intranasal route are covered in other policy.

2.2 Titration orders are generally defined as those in which the medication dose is either progressively increased or decreased in response to the patient's status.

2.3 Block Charting is a documentation method that can be used when rapid titration of medication is necessary in specific urgent/emergent situations specified in section 4.4 Block Charting

3. GUIDELINES

3.1 All parenteral medication ordered in the hospital will be administered according to evidenced based practices and standard guidelines.

a. If an order written by an authorized prescriber does not specifically state how the intravenous medication is to be diluted or infused, it will be processed and completed with the standard concentration and rate of administration according to the guidelines for the Administration of Parenteral Medication (listed in Appendices)

3.2 A list of parenteral medications and solutions for each type of administration methods and route (e.g. continuous, intermittent or push/direct injection, etc) are listed in the appendices of this guideline

a. Most medications / fluids that can be safely given through a peripheral vein may be given via the intraosseous (IO) route. IO doses, rates, and compatibility precautions are the same as with the IV route.

b. Use of the IO route is acceptable in emergency and extremis and includes hypertonic solutions and vasopressors that would normally require a central line.

3.3 For patient care areas or medications not addressed in this policy, medications shall be administered in accordance with:

a. established department medication administration guidance

b. provided level of care consistent with established medication safety practices

c. contact Pharmacy Services for further guidance

4. Titration Specific Guidelines

4.1 Titration and taper order should provide directions for increasing or decreasing the dose, either in response to a patient's condition or according to a planned schedule and are detailed in the administration instructions.

4.2 Required Elements for Medication Titration Orders:

a. Medication Name

b. Medication Route

c. Initial or starting rate of infusion

d. Incremental Units the rate can be increased or decreased and frequency for incremental doses (how often dose (rate) can be increased or decreased)

1. The rate and frequency of dose titration is dependent upon the patient's individual hemodynamic parameters, clinical status, and response to therapy.

2. The lowest effective dose achieving the stated objective response will be utilized. When there is a range provided in the incremental dose;

a. To treat anxiety/agitation: start with the lowest dose. In the event the goal is not achieved a higher incremental dose can be administered in order to titrate the patient's condition in accordance with the objective end point assessment and documentation.

b. To treat hypotension: for patients with moderate shock (i.e. a mean arterial pressure (MAP) of 50 mm Hg up to their MAP goal), the RN may start on the low to middle end of the range. For patients with severe shock (i.e. MAP less than 50 mm Hg), the RN may start in the middle to high end of the range. If unclear as to which dose to use, the RN should consult with the unit Pharmacist or Provider.

e. Maximum rate (dose range) of infusion

f. Objective clinical end point (RASS score, CPOT, Blood pressure, RDOS, etc)

4.3 The patient status shall be monitored according to the assessment parameters and endpoint specified.

a. It is recognized that some circumstances may inhibit immediate titration. In the absence of severe deviation from the targeted therapeutic goal, it is acceptable for a nurse to respond within 15 minutes of a value above or below the specific parameter range.

4.4 Block Charting

a. If the patient requires frequent or emergent dose titration, the patient will have continuous or cycled monitoring of vital signs. Vital signs will then be documented at least every 15 minutes until vital signs are stable.

b. A single note reflecting multiple titrated doses over no more than 4 hours may be entered in the medical record

c. Locations: critical care or procedural settings for situations that render real-time documentation impractical.

- Situations include, but are not limited to
- Frequently changed doses necessary to attain a desired sedation level
- The management of titrations in a patient with rapidly changing physiological parameters requiring frequent dose adjustments and
- The simultaneous management of multiple titrated medications

d. A single block charting instance cannot exceed a four-hour time frame.

e. If a patient's urgent/emergent situation exceeds four hours and block charting is to be continued, the current block charting must be closed and a new instance of block charting must be created

- Block charting should document
    i. Time of initiation of the charting block
    ii. Name(s) of titrated medications administered during the block
    iii. Starting rates and ending rates of medications administered during the charting block
    iv. Maximum rate (dose) of medications administered during the charting block
    v. Time of completion of the charting block
    vi. Physiological parameters evaluated to determine the administration of titratable medications during the charting block

4.5 Pausing Titrated Medications

a. It is allowed to intermittently pause the infusion of titrated medication if the patient no longer meets the criteria for the infusion based on the assessment of physiological parameters.

b. If the medication needs to be restarted based on assessment of the patient and physiological parameter the medication shall be restarted at the rate required immediately before pausing the infusion. The medication can then be further titrated.

- If a provider specifies restart rate those instructions supersedes this guidelines standard approach

c. Infusions at a rate of zero for more than 24 hours shall only be reinitiated with a newly signed order by the prescriber.

d. RNs and Pharmacists may discontinue medications that have been weaned off after 24 hours with order mode “per protocol”

4.6 When the prescriber(s) present at the bedside during an acute episode, he/she may direct the rapid titration of the continuous infusion. A new order is not needed unless it exceeds the max dosing rate of the original order.

a. The provider shall document the emergent event and evidence of the active management of the patient at the bedside.

b. Upon patient stabilization of the acute episode, the titration will continue per new or existing order.

5. The Infusion Guideline Appendices will be accessible in an electronic format. A hard copy of the document will be available in the event of an electronic communication failure.

6. REFERENCES

6.1 The Joint Commission Standards FAQs Medication Administration – Titration orders.

6.2 The Joint Commission Republication Requirements. (2020). Elements of performance RC.02.01.01

6.3 Lexicomp Online, Lexi-Drugs Online, Hudson Ohio: Wolters Kluwer Clinical Drug Information, INC. 2013

7. ATTACHMENTS

7.1 Appendix 1 Guidelines for the Administration of Injectable Medications - Adult

7.1 Appendix 2 Titration of Critical Medications - Adult

Document History:

Prior Release Dates: 6/29/15, 11/12/15, 3/20/18, 7/12/18, 12/26/18, 5/6/19, 8/24/20, 7/26/22, 7/26/2022	**Retire Date:** N/A
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6/12/25	Pharmacy Review Committee	Yes	added 3.3 to address locations and medications not specified
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10/9/2025	PAC	No	Consent
11/13/2025	MEC	No	

RIVERSIDE UNIVERSITY HEALTH SYSTEM - MEDICAL CENTER
Housewide

	Document No: 848	Page 1 of 4
Title: Automatic Medication Substitution for Adult Emergency Department or Inpatients	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐**Policy** ☒**Procedure** ☐**Guideline**

1. SCOPE

The scope of these procedures includes the drugs for automatic substitution by pharmacists at the Riverside University Health System – Medical Center, Moreno Valley and Arlington Campuses, emergency department and inpatients

2. DEFINITIONS

2.1 Biologic products. Generally large complex molecules produced through biotechnology in a living system, such as a microorganism, plant cell, or animal cell.

2.2 Biosimilar. A biological product that is highly similar to an existing FDA-approved reference product and has no clinically meaningful differences with respect to safety, purity, and potency. Excipients may differ. May receive FDA approval prior to the reference product patent expiration

2.3 Follow-on product. “Copies” of biologic products approved under the Food, Drug, and Cosmetic Act 505(b)(2) pathway introduced after the reference product patent expiration

2.4 Closed Formulary. A list of medication (formulary) limiting access of prescribers to certain medications. Further restrictions may limit certain medications to specific prescribers, patient care areas or diseases with formulary restrictions.

2.5 Formulary. “A continually updated list of medications and related information, representing the clinical judgment of pharmacists, physicians, and other experts in the diagnosis and treatment of disease and promotion of health. A formulary includes, but is not limited to, a list of medications and medication-associated products or devices, medication use policies, ancillary drug information, decision support tools, and organizational guidelines.” (Chase, 2010)

2.6 Formulary restriction. The act of limiting use of certain formulary medication(s) to specific prescribers, patient care areas, or diseases

2.7 Generic. A product that is the same as a brand name drug in dosage, safety, strength, how it is administered, quality, performance, and intended use

2.8 Generic substitution. A pharmacist-initiated act by which a different brand or an unbranded drug product is dispensed instead of the drug brand prescribed

2.9 Interchangeability. A reference product may be substituted with an interchangeable biosimilar. The Biologics Price Competition and Innovation Act (BPCIA), enacted

2010 allows interchangeability designation for FDA-approved biosimilars that meet certain requirements. Although granted at the federal level, interchangeability is governed by state laws. The Board of Pharmacy on its public internet website has a link to the current list of biological products determined by the federal Food and Drug Administration to be interchangeable.

2.10 Nonformulary. A medication that is not part of the drug formulary

2.11 Prescriber. Refers to any health care professional with the legal authority to prescribe legend medications

2.12 Reference product. The single biologic product, already approved by the FDA, against which other biosimilar products are compared

2.13 Therapeutic equivalent. Drug products with different chemical structures but the same pharmacologic or therapeutic class with similar therapeutic effects and adverse-reaction profiles when administered in therapeutically equivalent doses

2.14 Therapeutic interchange. The dispensing of a drug that is therapeutically equivalent but chemically different from the prescribed drug

2.15 Therapeutic substitution. A pharmacist-initiated act by which a pharmaceutical or therapeutic alternative (e.g., chemically different drug but same therapeutic category) for the prescriber drug is dispensed without consulting the prescriber

3. PURPOSE

3.1 To provide an effective means as authorized by the Pharmacy and Therapeutics Committee for managing a closed formulary. The protocol allows automatic substitution of therapeutic alternatives in accordance to established and approved guidelines.

3.2 Automatic substitution promotes standardized, safe, appropriate, clinically effective, and cost-effective use of pharmaceuticals.

3.3 This procedure does not encompass all substitutions as permitted by law (e.g., generic substitution, interchangeable biologics)

3.4 Therapeutic interchange also serves to maintain access to medications impacted by shortages

4. PROCEDURES

4.1 Procedures for automatic substitution.

a. The Pharmacy and Therapeutics Committee (P&T) will provide formulary guidelines for various classes of pharmaceuticals.

- development of the dosage conversion tables for automatic substitution are established using comparable or customary interchange dosing, or when not readily available, by evaluating evidence based therapeutic interchange literature related to interchange studies, comparative clinical studies, and manufacturers' recommended dosing

- Non-FDA designated interchangeable biological products (biosimilars):

  a. Will be reviewed for therapeutic interchangeability when evaluated for addition to formulary

b. A list of P&T approved biologics for interchangeability will be included in Appendix 6.1: Biological Products (biosimilars) Approved for Therapeutic Interchange

b. Prescribers may opt out of this protocol if clinically indicated.

- To order non-formulary medications, the prescriber will follow the non-formulary process

c. According to the dosage conversion tables or therapeutic substitution lists in this policy, the pharmacist will automatically substitute P&T approved medications

- The order for the replaced medication will be discontinued
- A new order for the therapeutic substitution, will be placed "Per Protocol" as a computerized provider order entry or written order (i.e., during downtime)
- The "Administration Instructions" section will include: "P&T approved auto-sub for: _____"

a. Example:

Scenario: Prescriber orders simvastatin 40 mg PO at bedtime.

Step 1. pharmacist will discontinue the order for "simvastatin 40 mg PO at bedtime" and

Step 2. enter a new order *Per Protocol* for "atorvastatin 20 mg PO at bedtime"

Step 3. edit the Administration Instructions field to include: "P&T approved auto substitution for Simvastatin 40 mg at bedtime"

- The pharmacist will document the therapeutic interchange utilizing the pharmacy intervention process (not part of the permanent medical record).

Figure 1. EPIC® EHR "i-Vent" (intervention) Documentation for Therapeutic Interchange

5. REFERENCES

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6. ATTACHMENTS

6.1 Appendix I: Biological Products (biosimilars) Approved for Therapeutic Interchange

6.2 Appendix II: Medication for Automatic Substitution (organized by Therapeutic Class)

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8/12/25	Pharmacy Review Committee	Yes	Update statement of interchangeability for non-FDA interchangeable designated biosimilars; add Appendix of Biological Products Approved for Therapeutic Interchange
9/8/25	P&T	No	Approved
10/7/2025	PAC	No	Consent
11/13/2025	MEC	No	

RIVERSIDE UNIVERSITY HEALTH SYSTEM - MEDICAL CENTER

Housewide

	Document No: 851	Page 1 of 10
Title: Handling of Hazardous Medications	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. SCOPE

1.1 Applies to all workforce members who may handle, administer, and come into contact with hazardous medications.

1.2 Describes workforce member safe handling of medication and supplies used in the storage, preparation, dispensing, distribution, administration, and cleaning of areas that are exposed to or contaminated with hazardous medications.

2. DEFINITIONS

2.1 *Contaminated*: Material that has been in direct contact with a hazardous drug. Urine, fecal matter, vomit, blood, or body fluids from patients receiving a hazardous drug are considered contaminated for a minimum of 48 hours after administration. Containers that have held contaminated urine, fecal matter, vomit, blood, or other body fluids are considered contaminated until emptied.

2.2 *Exposure:* Physical contact with a hazardous drug, such as during preparation or administration or unprotected contact with a hazardous drug.

2.3 *Hazardous Drug Waste:* An unused or partially used hazardous drug that has not been used for its intended purpose or material that has been contaminated with a hazardous drug.

2.4 *Manipulation/manipulated:* Repackaging of a medication from the original dose form supplied by the manufacturer for patient administration to another dose form.

2.5 *Closed-system drug transfer device (CSTD*): A drug transfer device that mechanically prohibits the transfer of environmental contaminants into the system and the escape of HD or vapor concentrations outside the system.

2.6 *Chemotherapy glove*: A medical glove that meets the ASTM Standard Practice for Assessment of Resistance of Medical Gloves to Permeation by Chemotherapy Drugs (D6978) of its successor.

2.7 *Protective gown:* Gowns must be disposable and shown to resist permeability by HDs. Gowns must close in the back (i.e., no open front), be long sleeved, and have closed cuffs that are elastic or knit. Gowns must not have seams or closures that could allow HDs to pass through.

2.8 *Respiratory protectio*n: a fit-tested NIOSH-certified N95 or more protective respirator is sufficient to protect against airborne particles.

2.9 *Hazardous Drugs (HDs)*: Hazardous drugs include those used for cancer chemotherapy, antiviral drugs, hormones, some bioengineered drugs, and other miscellaneous drugs. Drugs considered hazardous include those that exhibit one or more of the following six characteristics in humans or animals:

a. Carcinogenicity

b. Teratogenicity or other developmental toxicity

c. Reproductive toxicity

d. Organ toxicity at low doses

e. Genotoxicity

f. Structure and toxicity profiles of new drugs that mimic existing drugs determined hazardous by the above criteria

2.10 *NIOSH (National Institute for Occupational Safety and Health)* approach involves two groups of drugs:

2.11 **NIOSH Table 1** now includes drugs that have MSHI (manufacturer's special handling information) in the package insert and/or meet the NIOSH definition of a hazardous drug and one or more of these criteria:

2.12 Are classified by the National Toxicology Program (NTP) as "known to be a human carcinogen"

2.13 Are classified by the International Agency for Research on Cancer (IARC) as Group 1"carcinogenic to humans" or Group 2A "probably carcinogenic to humans"

2.14 **NIOSH Table 2** now contains drugs that meet one or more of the criteria in the NIOSH definition of a hazardous drug and

2.15 Do not have MSHI

2.16 Are not classified by the NTP as "known to be a human carcinogen"

2.17 Are not classified by the IARC as Group 1 "carcinogenic to humans" or Group 2A "probably carcinogenic to humans"

2.18 Some drugs in Table 2 may also have adverse developmental and/or reproductive effects.

2.19 Table 2 now also includes drugs that only meet the NIOSH criteria as a developmental (including teratogenicity) and/or reproductive hazard.

2.20 *Personal Protective Equipment (PPE)*: items such as gloves, gowns, respirators, goggles, face shields, and others that protect individual workers from hazardous physical or chemical exposures.

2.21 *Chemotherapy Nurse*: A RN who has completed 1) Oncology Nursing Society (ONS) provider course; 2) completed training/certification; and 3) education to administer chemotherapy, antineoplastic hazardous drugs.

3. PROCEDURES

3.1 This procedure describes the general aspects of handling hazardous drugs (HDs): receipt, storage, labeling, transport and administration that are not directly associated with compounding activities.

a. Preparation and compounding are addressed in separate pharmacy procedure.

b. HD and chemotherapy spill and waste handling are addressed in separate procedure.

3.2 HD will be handled using methods that protect employees, the surrounding environment and others who may encounter them in the healthcare environment.

3.3 **RUHS hazardous drugs are further categorized by formulation, and adapted from the NIOSH classifications Table 1 (a, b, and c) and Table 2 (a, b) as below to aid in the safe handling process for employees:**

3.4 **Attachment A**-Table 1a- Antineoplastic - Injectable: IVPB, IVP, IM, SQ

3.5 **Attachment B**-Table 1b- Antineoplastic - Oral route, Topical, No manipulation Syringe

3.6 **Attachment C**-Table 1c- Non-Antineoplastic

3.7 **Attachment D**-Table 2a- Antineoplastic

3.8 **Attachment E**-Table 2b- Non-Antineoplastic

3.9 Potential Routes of Exposure Based on Activity:

Activity	**Potential Route of Exposure**
Dispensing	Counting tablets and capsules from bulk containers
Compounding	• Crushing tablets or opening capsules • Pouring oral or topical liquids from one container to another • Weighing or mixing components • Constituting or reconstituting powdered or lyophilized HDs • Withdrawing or diluting injectable HDs from parenteral containers • Expelling air or HDs from syringes • Contacting HD residue present on PPE or other garments • Deactivating, decontaminating, cleaning, and disinfecting areas contaminated with or suspected to be contaminated with HDs • Maintenance activities for potentially contaminated equipment and devices

Administration	• Generating aerosols during administration of HDs by various routes (e.g. injection, irrigation, oral, inhalation, or topical application) • Performing certain specialized procedures (e.g., intraoperative intraperitoneal injection or bladder instillation) • Priming an IV administration set
Patient-care activities	• Handling body fluids (e.g., urine, feces, sweat, or vomit) or body-fluid-contaminated clothing, dressings, linens, and other materials
Spills	• Spill generation, management, and disposal
Receipt	• Contacting with HD residues present on drug container, individual dosage units, outer containers, work surfaces, or floors
Transport	• Moving HDs within a healthcare setting

3.10 **General Handling of HDs**

3.11 Appropriate PPE must be worn when handling HDs including during: receipt, storage, transport, compounding, administration, deactivation, decontamination, cleaning, disinfecting and spill control. Refer to other specifc policies for guidance in compounding and adminstering of HDs.

3.12 Chemotherapy gloves are always worn for handling hazardous medications.

a. Gowns are required when administering antineoplastic HDs except for intact tablet or capsule. Gowns worn in HD handling areas must not be worn to other areas in order avoid spreading HD contamination and exposing other healthcare workers.

b. When there is a risk of respiratory exposure to HDs, including 1) spills larger than what can be contained with a spill kit 2) deactivating, decontaminating, cleaning of HDs hood 3) suspected airborne exposure to powders or vapors, an appropriate full-face piece chemical cartridge-type respirator should be worn by employee handling HDs such as EVS, pharmacy technician or nursing staff who help with cleaning HD spills.

c. Antineoplastic HDs shall be always handled with caution using appropriate chemotherapy gloves during receiving, distribution, stocking, inventorying, preparation for administration and disposal.

d. Hands should be washed before and after the use of gloves.

e. HD vials are considered contaminated with HD, any personnel handling these vials will wear chemotherapy gloves.

f. Double gloves and protective gown are required when handling bodily fluids.

3.13 **Receipt of HDs**

3.14 Antineoplastic HDs (**Table 1a**) will be unpacked in an area that is neutral/normal or negative pressure relative to the surrounding areas.

3.15 Antineoplastic HDs (**Table 1a**) will not be unpacked from their shipping containers in sterile compounding areas or in positive pressure areas.

a. Pharmacy personnel responsible for Antineoplastic HD inventory receiving functions will receive training on hazardous drug handling and spill procedures.

b. Should a package of HD (**Table 1a**) be received which is suspected of being damaged, the following will occur:

- The HDs in question will be received and opened in an isolated area.
- In addition to the double chemotherapy gloves, additional PPE will be worn which will include: a coated chemotherapy gown, disposable utility gloves, eye shield and an OSHA-certified N-95 fit tested respirator.
- If a container is broken, the procedure on HD Spills will be followed.

3.16 **Storage of HDs**

a. HDs are stored in a manner that prevents spillage or breakage if the container falls. HDs are not stored on the floor.

3.17 Refrigerated antineoplastic HDs (**Table 1a**) are stored in a dedicated refrigerator, separate from non-hazardous medications, in bins that will contain leakage, in a negative pressure area with at least 12 air changes per hour (ACPH).

3.18 Non-antineoplastic HD and final dosage forms of antineoplastic HDs may be stored with other inventory.

3.19 Antineoplastic HDs (**Table 1a**) requiring manipulation other than counting final dosage forms are stored separately from non-HDs in a manner that prevents contamination and personnel exposure. These HDs (**Table 1a**) must be stored in a negative-pressure room with at least 12 air changes per hour (ACPH).

a. Sterile and non-sterile HDs may be stored together.

b. Specific labels that have been adopted by the organization to be used to designate HDs will be affixed to shelves, or drawers or bins as appropriate where HDs are stored.

3.20 **Transport of HDs**

a. Compounded HDs (**Table 1a**) in final containers for patient administration will be placed inside of sealed transport bags that are labeled prominently using labels and identifying stickers.

b. Antineoplastic drugs are prepared for transport by individually wrapping each dose in an impervious, sealed plastic bag (1 dose per bag) to prevent contamination in the event of leakage. If the bottle is glass, it must be wrapped in shock absorbent material before being placed in the bag.

c. Pneumatic tubes must not be used to transport any liquid HDs or antineoplastic HDs (**Table 1a**)

d. Personnel involved in the transport of HDs (**Table 1a**) will be trained in transport and spill procedures.

e. Chemo Spill Kit will be kept in main pharmacy, infusion center and nursing units where chemotherapy is given.

f. HDs that are shipped outside of the facility will be shipped in accordance with local and state Department of Transportation regulations.

3.21 **Labeling**

3.22 All packages, containers, prepared syringes, intravenous (IV) bottles, or other devices containing antineoplastic drugs (**Tables 1a and 1b**) shall be marked with "CHEMOTHERAPY" sticker to alert personnel that the contents involve antineoplastic drug. Chemotherapy Drug Delivery bags (if applicable) may also be used for transportation of antineoplastic drugs.

3.23 All packages, containers, prepared syringes, intravenous (IV) bottles, or other devices containing hazardous drugs (**Tables 1c, 2a and 2b**) shall be marked with "HAZARDOUS DRUG" stickers in a manner sufficient to alert personnel that the contents involve a hazardous drug. Delivery bags are also labeled with "HAZARDOUS DRUG" sticker for hazardous drugs.

4. ADMINISTRATION AREAS

4.1 **Engineering Controls**

a. Closed-system transfer devices must be used for administration of antineoplastic HDs. Needleless system is used to reduce the risk of needle sticks.

4.2 Infusion and Intravenous sets should be attached and primed with base solution in the pharmacy department under the proper engineering control for antineoplastic HDs (**Table 1a**)

4.3 **Worker's Apparel and Protection**

4.4 Appropriate PPE must be worn when handling HDs. Refer to other RUHS policies for compounding and administering PPE requirements.

4.5 After use, PPE must be removed and disposed of in an approved HD waste container at the site of drug administration. Equipment (such as tubing and needles) and packaging materials must be disposed in HD waste containers after administration. Apparel used when hazardous drugs in any category are administered may not be worn out of the administration area.

a. When handling the body wastes and fluids of patients receiving antineoplastic drugs, employees should wear appropriate PPE while caring for the patient for 48 hours after the drug was administered

b. For splash risk, wear face-shield or protective goggles. If used, should be disposable. Do not attempt to clean or re-use.

4.6 Employees must wash their hands thoroughly with soap and water before and after administering hazardous drugs and whenever gloves are changed.

4.7 Refer to attachments for Personal Protective Equipment

4.8 **Respiratory Therapy**

The respiratory therapy department should maintain a standard operating procedure for each specific hazardous drug administered as an aerosol. The treatment area should be posted during administration, and nonessential personnel should not be admitted.

4.9 **Environmental Services**

a. Environmental services staff must wear appropriate protective gloves when working in any area where HDs are compounded or administered. They must also be trained in spill response and clean-up procedures.

b. Wear two pairs of chemotherapy gloves and impermeable disposable gown if handling linens, feces, or urine from patients who have received antineoplastic HDs within the last 48 hours.

c. N95 masks are required for reproductive category employees.

d. Further efforts to limit employee exposure are defined by specific policies set by environmental services department

4.10 **Patient Signage**

a. Nursing staff member will post a sign on the door to the room of every inpatient who has received antineoplastic drugs within the past 3 days (including those from prior admissions or those transferred from other institutions).

b. The sign will note that medication exposure precautions exist and specify the date when the signage can be removed (a minimum of 48 hours after the completion of the last administration of the antineoplastic drug).

4.11 **Patient Transport**

Patients receiving antineoplastic drugs are considered a moderate risk for transport. If patient needs to be transported, must be accompanied by chemotherapy nurse.

4.12 **Laundry**

It is standard procedure to treat all laundry as if it is contaminated with hazardous material. Employees must wear latex or nitrile gloves when handling laundry.

4.13 **Investigational Drugs**

A large number of investigational hazardous drugs are under clinical study in health care facilities. Personnel not directly involved in the investigation should not administer these drugs unless they have received adequate instruction on safe handling procedures.

4.14 **Contaminations and Spills –** Refer to Housewide policy 865 “Hazardous Drug Spill Deactivation and Waste Management”

5. DOCUMENTATION AND TRAINING

5.1 All personnel working with HDs must receive training on the possible health risks associated with exposure to these agents and be instructed on their safe handling and disposal. Employees must have access to this plan.

5.2 Employees who handle HDs or HDs waste should receive initial hazard communication training during new employee orientation. They must also receive additional specific training from their department on the drugs they will be exposed to. Before working with hazardous drugs, they must demonstrate their understanding of and competence in safe and proper drug handling procedures to their supervisor. The department must verify staff competency annually

5.3 Training must include all aspects of the work involving HDs; the potential exposure involved and the steps necessary to prevent exposure, including the availability and location of Safety Data Sheets; the physical and health risks of the hazardous drugs

used in the department; and the content of local policies and of other department policies dealing with hazardous drugs.

6. EXPOSURE REPORTING AND MEDICAL SURVEILLANCE

6.1 Personnel who have contact with a hazardous substance should notify others in the vicinity of the exposure and proceed with decontamination.

6.2 Personnel safety is of the utmost importance. Intervention should begin as soon as possible if not immediately. Nearby personnel may assist, and the Supervisor or designee on duty should be notified about the incident

6.3 Supervisor or designee to follow hospital and/or County protocol for personnel safety events

6.4 Possible exposures, examples:

a. Eye exposure: the eyes should be immediately flushed with water or an approved saline eye wash for 15 minutes

b. Skin exposure, the affected area should be immediately washed with soap and water for 15 minutes

c. Minor cuts caused by contaminated broken glass or other sharp objects: the affected area should be immediately washed with soap and water for 15 minutes

d. Inadvertent injection with the needle remaining in the injection site, the plunger should be withdrawn to remove as much of the drug as possible. If the needle has already been withdrawn, a new, sterile 1-mL syringe with needle should be inserted into the site to aspirate as much drug as possible

6.5 For possible exposures, the employee should then be sent for evaluation in the Emergency Department

6.6 Medical surveillance programs are designed and implemented by Occupational Health. Surveillance programs involve assessment and documentation of symptom complaints, and physical findings. To determine whether there is a deviation from the expected norms, laboratory analysis, such as complete blood count or urinalysis may be done. Occupational Health will develop a follow-up plan for employees who have shown health changes suggesting toxicity or who have experienced an acute exposure.

7. RESPONSIBILITIES AND ACTIONS:

Responsible Entity	Action
Department of Pharmacy	• Provides oversight for HDs used at hospital
Departments	• Provides appropriate education and training for all personnel working with or having contact with HDs and all personnel who may be exposed to such drugs during the normal course of their work. • Ensures that training occurs before any employee begins working with these drugs. • Provides the required personal protective equipment. • Verifies staff competency annually. • Verifies periodically that employees are handling hazardous drugs in accordance with local policy.

	• Ensures that employees know about and have access to this plan at all times.
Employee	• Demonstrates competence in safe and proper handling procedures before working with HDs. • Administers hazardous drugs in accordance with this and other applicable policies. • Stores, transports, and otherwise handles hazardous drugs in accordance with local policy. • Cleans up spills properly. • Disposes of hazardous drugs and hazardous drug waste properly.
Employee health services	• Manages the medical surveillance program.
Safety	• Provides assistance to departments implementing local policy.

8. ATTACHMENTS

8.1 Attachment A-Table 1a-NIOSH Table 1-Antineoplastic - Injectable: IVPB, IVP, IM, SQ

8.2 Attachment B-Table 1b-NIOSH Table 1-Antineoplastic-Oral route, Topical, No manipulation Syringe

8.3 Attachment C-Table 1c- NIOSH Table 1- Non- Antineoplastic

8.4 Attachment D-Table 2a- NIOSH Table 2- Antineoplastic

8.5 Attachment E-Table 2b- NIOSH Table 2-Non-Antineoplastic

8.6 Attachment F-Personal Protective Equipment for All Other Activities

8.7 Attachment G. Administering: Personal Protective Equipment

9. REFERENCES

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Document History:

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Date Reviewed	Reviewed By:	Revisions Made Y/N	Revision Description
3/21/2024	Cancer Quality of Care Committee	Yes	Triennial Review. Validated practice. Clarified section 6 – employee exposure. Updated drug tables and references.
4/4/2024	Pre-Nursing P&P Committee	Yes	Updated definition 2.12 chemotherapy nurse
4/9/2024	Pharmacy Review Committee	No	
4/22/2024	Nursing Policy and Procedure	No	
05/06/2024	Pharmacy & Therapeutics Committee	Yes	For section 6 – occupational exposure – change the order of 6.4 and 6.5 to list exposure examples first before treatment
5/17/2024	PAC	No	
9/2025	Cancer Quality of Care Committee	Yes	Revision with updated information from new NIOSH 2024 HD list and PPE required. Updated references. Created Tables 1a-1c, 2a-2b. Revised table F-G for PPE.
10/14/2025	Pharmacy Review Committee	No	
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12/11/2025	PAC	No	

ATTACHMENTS

Attachment A-Table 1a-NIOSH Table 1-Antineoplastic - Injectable: IVPB, IVP, IM, SQ

Adotrastuzumab (Kadcyla)	Doxorubicin (Adriamycin, Doxil)	Nelarabine (Arranon)
Amsacrine	Enfortumab Vedotin (Padcev)	Omacetaxin (Synribo)
Arsenic trioxide (Trisenox)	Epirubicin (Ellence)	Oxaliplatin
Azacitidine (Vidaza)	Eribulin (Halaven)	Paclitaxel
Belantamab mafodotin (Blenrep)	Etoposide	Pemetrexed (Alimta)
Belinostat (Beleodaq)	Fam-Trastuzumab Deruxtecan (Enhertu)	Pentostatin (Nipent)
Bendamustine (Bendeka; Treanda)	Floxuridine	Polatuzumab vedotin (Polivy)
Bleomycin	Fludarabine	Pralatrexate (Folotyn)
Bortezomib (Velcade)	Fluorouracil (Adrucil)	Romidepsin (Istodax)
Brentuximab vedotin (Adcetris)	Gemcitabine (Gemzar)	Sacituzumab Govitecan (Trodelvy)
Busulfan (Busulfex)	Gemtuzumab ozogamicin (Mylotarg)	Streptozocin (Zanosar)
Cabazitaxel (Jevtana)	Idarubicin (Idamycin PFS)	Temozolomide (Temodar) (IV/PO)
Carboplatin	Ifosfamide (Ifex)	Temsirolimus (Torisel)
Carmustine (BiCNU; Gliadel Wafer)	Inotuzumab ozogamicin (Besponsa™)	Teniposide
Cisplatin	Irinotecan (Camptosar)	Thiotepa (Tepadina)
Cladribine	Ixabepilone (Ixempra Kit)	Tisotumab Vedotin (Tivdak)
Clofarabine (Clolar)	Loncastuximab tesirine (Zynlonta)	Topotecan (Hycamtin)
Cyclophosphamide	Lurbinectedin (Zepzelca)	Trabectedin (Yondelis®)
Cytarabine	Melphalan (Alkeran; Evomela,Pepaxto)	Trimetrexate (Neutrexin)-IV
Dacarbazine	Methotrexate	Valrubicin (Valstar)(Intravesical)
Daunorubicin	Mirvetuximab Soravtansine (Elahere)	Vinblastine
Decitabine (Dacogen)	Mitomycin (Mutamycin)	Vincristine (Vincasar PFS)
Docetaxel (Taxotere)	Mitoxantrone	Vinorelbine

Attachment B-Table 1b-NIOSH Table 1-Antineoplastic-Oral route, Topical, No manipulation Syringe

Altretamine (Hexalen)	Imatinib (Gleevec) (TKI)	Pomalidomide (Pomalyst)
Busulfan (Myleran)	Ixazomib (Ninlaro)	Procarbazine (Matulane)
Capecitabine (Xeloda)	Lomustine (Gleostine)	Tamoxifen (Soltamox)
Chlorambucil (Leukeran)	Mechlorethamine (Topical route)	Thioguanine (Tabloid)
Dasatinib (Sprycel) (TKI)	Mercaptopurine (6-MP)	Trifluridine/Tipiracil (Lonsurf)
Estramustine (Emcyt)	Methotrexate (Trexall; Xatmep, Rasuvo)	Vandetanib (Caprelsa) (TKI)
Everolimus (Afinitor; Afinitor Disperz; Zortress)	Mitotane (Lysodren)	Vorinostat (zolinza)
Hydroxyurea (Hydrea; Droxia; Siklos)	Panobinostat (Farydak)	

Attachment C-Table 1c- NIOSH Table 1- Non- Antineoplastic

Azathioprine (Azasan; Imuran)
Chloramphenicol
Cidofovir (IV)
Cyclosporine (Gengraf; Neoral; SandIMMUNE) (IV,PO)
Dexrazoxane (Totect; Zinecard) (IV)
Diethylstilbestrol
Estrogen-progesterone combinations
Estrogens, conjugated, esterified
Ganciclovir (Cytovene) (IV)
Mycophenolate mofetil (CellCept)(PO)
Thalidomide (Thalomid)
Uracil mustard
Valganciclovir (Valcyte)

Attachment D-Table 2a- NIOSH Table 2 - Antineoplastic

Abiraterone (Yonsa; Zytiga)	Dabrafenib (Tafinlar)	Ponatinib (Iclusig) (TKI)
Afatinib (Gilotrif)	Enzalutamide (Xtandi)	Raloxifene (Evista)
Axitinib (Inlyta) (TKI)	Erlotinib (Tarceva) (TKI)	Regorafenib (Stivarga)(TKI)
Bexarotene (Targretin)	Flutamide	Sonidegib
Bicalutamide (Casodex)	**Fulvestrant* (Faslodex)**	Sorafenib (Nexavar) (TKI)
Blinatumomab*	Lenvatinib	Sunitinib (Sutent) (TKI)
Bosutinib (Bosulif) (TKI)	Letrozole	Toremifene (Fareston)
Cabozantinib (Cometriq; Cabometyx)	Leuprolide (Lupron-prefilled syringe)	Trametinib (Mekinist)
Carfilzomib* (Kyprolis)	Megestrol (Megace)	Triptorelin (Trelstar, Triptodur)-IM
Ceritinib	Nilotinib (Tasigna)	Vemurafenib (Zelboraf)
Cobimetinib	Olaparib-po	Vismodegib (Erivedge)
Crizotinib (Xalkori) (TKI)	Pazopanib (Votrient) (TKI)	**Ziv-aflibercept* (Zaltrap)**

***Infusion**

Attachment E-Table 2b- NIOSH Table 2-Non-Antineoplastic

Abacavir (Ziagen)	Ganirelix (subq)	Pentetate calcium trisodium (IV, inhalation)
Acitretin (Soriatane)	Gonadotropin,chorionic (Novarel) (IM)	Phenoxybenzamine (Dibenzyline)
Alefacept (Amevive) (IV)	Goserelin (Zoladex)	Phenytoin
Alitretinoin	Histrelin (Supprelin LA; Vantas)	Pipobroman
Ambrisentan (Letairis)	Icatibant (Firazyr) (subq)	Plerixafor (Mozobil) (subq)
Anastrozole (Arimidex)	Isotretinoin	Progesterone (PO, IM)
Apomorphine (Apokyn) (subq)	Ivabradine	Progestins
Bosentan (Tracleer)	Leflunomide (Arava)	Propylthiouracil
Cabergoline	Letrozole (Femara)	Raloxifene (Evista)
Carbamazepine (TEGretol)	Leuprolide (Lupron; Eligard)	Rasagiline (Azilect)
Cetrorelix (Cetrotide) (subq)	Lomitapide (Juxtapid)	Ribavirin (Copegus)
Choriogonadotropin (Ovidrel)(subq)	Macitentan (Opsumit)	Riociguat (Adempas)
Clobazam	Medroxyprogesterone acetate (IM,subq, PO)	Sirolimus (Rapamune)
Clomiphene (Clomid)	Megestrol (Megace)	Spironolactone (Aldactone)
Clonazepam	Menotropins (Menopur)	Tacrolimus (Prograf)
Colchicine	Methimazole (Tapazole)	Temazepam
Deferiprone (Ferriprox)	Methylergonovine	Teriflunomide (Aubagio)
Degarelix (Firmagon)	Methyltestosterone	Testosterone
Dihydroergotamine	Mifepristone (Mifeprex)	Tofacitinib (Xeljanz)
Dinoprostone (Cervidil; Prostin E2)	Miltefosine	Topiramate (Topamax)
Divalproex	Mipomersen (Kynamro) (SQ)	Toremifene (Fareston)
Dronedarone (Multaq)	Misoprostol (Cytotec)	Tretinoin
Dutasteride (Avodart)	Mycophenolic acid (Myfortic)	Triptorelin
Entecavir (Baraclude)	Nafarelin (Synarel) (nasal)	Ulipristal (Ella)
Eslicarbazepine (Aptiom)	Nevirapine (Viramune)	Urofollitropin
Estradiol (PO, IM, transdermal, vaginal)	Ospemifene (Osphena)	Valproate/valproic acid
Estropipate	Oxcarbazepine (Trileptal)	Vigabatrin (Sabril)
Exemestane (Aromasin)	Oxytocin	Voriconazole
Exenatide	Palifermin (Kepivance) (IV)	Warfarin (Coumadin)
Finasteride (Proscar)	Pamidronate	Zidovudine (Retrovir)
Fingolimod (Gilenya)	Paroxetine	Ziprasidone (Geodon)
Fluconazole	Pasireotide (Signifor)	Zoledronic acid (Reclast) (IV)
Fluoxymesterone	Peginesatide	Zonisamide (Zonegran)
Fosphenytoin		

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Attachment F- Personal Protective Equipment for All Other Activities (does not include compounding, or administering) *regardless of Table 1 or Table 2*

Activity	Formulation	Double chemo-therapy gloves (ASTM rated)	Protective gown (impervious, single use)	Eye, face, hair, sleeve, and shoe protection	Respiratory protection (N 95)	Other
Receiving, unpacking, and placing in storage	All types of hazardous drugs	No (Single pair of gloves)	No, unless a leak is observed or suspected	Consider protective sleeves; add additional protection if a leak is observed or suspected	No, unless a leak is observed or suspected	
Transportation within facility	Intact tablets or capsules, manufacturers' prefilled syringes	No (Single pair of gloves)	No	No	No	Transport in containers that minimize the risk of break- age or leakage; Double-bag or place in a sealed container
	Cut or crushed tablets or capsules (in containers); powders, liquids, or creams; in-house filled syringes	Yes	No	No	No	Transport in containers that minimize the risk of break- age or leakage; Double-bag or place in a sealed container
Disposal and Cleaning	Drugs and metabolites in body fluid	Yes	Yes	Eye and face protection if liquid could splash	Yes, if inhalation potential	Fold soft materials (sheets, hygiene care products) inward to prevent leakage Place in sealed bags
	Drug- contaminated waste	Yes	Yes	Eye and face protection if liquid could splash	Yes, if inhalation potential	Avoid creating dust; Place in sealed bags; Use caution when closing bags; Pushing waste down may force hazardous drug dust up into face.
Routine Cleaning	All types of hazardous drugs	Yes	Yes	No	No	Use wet wiping methods; Avoid creating dust; Disinfection, deactivation, or decontamination agents may be necessary; Place in sealed bags for disposal
Spill cleanup	All types of hazardous drugs	Yes	Yes	Yes, as needed	Yes, full facepiece or PAPR* with combination particulate/ chemical cartridges may be needed	Limit access to area. Use absorbent pads for liquid spills; Disinfection, deactivation, or decontamination agents may be necessary; Avoid creating dust; Place in sealed bags

Attachment G. Administering: Personal Protective Equipment

Formulation	Double chemo-therapy gloves (ASTM rated)	Protective gown (impervious, single use)	Eye, face, hair, sleeve, and shoe protection	Respiratory protection	Closed system drug transfer device	Chemo Nurse
Intact tablets or capsules from unit dose package	No (Single glove)	No	Eye and face protection if vomit potential	No	NA	no
Cut, crushed, or uncoated tablets or capsules	Yes	Yes	Eye and face protection if vomit potential	No	NA	no
Subcutaneous or intramuscular injections from manufacturer's supplied prefilled syringe or injector	No (Single glove)	Yes	Eye and face protection if liquid likely to splash	No	NA	no
Subcutaneous or intramuscular injections from a prepared syringe or injector	Yes	Yes	Eye and face protection if liquid likely to splash	No	NA	no
Table 1 Intravenous injections from prepared syringes	Yes	Yes	Eye and face protection if liquid that could splash	No	Yes, when dosage form allows	**Yes**
Intravenous solution for infusion	Yes	Yes	Eye and face protection if liquid that could splash	No	Yes, when dosage form allows	**Yes**
Ophthalmologic applications	Yes	Yes	Eye and face protection if liquid likely to splash	No	Yes, when dosage form allows	no
Oral liquid drug: PO/feeding tube/NG tube	Yes	Yes	Eye and face protection if liquid likely to splash	Yes, if inhalation potential	NA	no
Topical drug (ointment, cream)	Yes	Yes	Eye and face protection if liquid likely to splash	Yes, if inhalation potential	NA	no
Irrigation solution, bladder instillation, HIPEC, limb perfusion	Yes	Yes	Eye and face protection	Yes	Yes, when dosage form allows	**Yes**
Powder/ solution for inhalation/ aerosol treatment	Yes	Yes	Eye and face protection if liquid that could splash	Yes, full facepiece or PAPR with combination particulate/ chemical cartridges if inhalation potential	Yes, when dosage form allows	no

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	Document No: 854	Page 1 of 2
Title: DaVita Dialysis Medication and Storage	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☒ **Policy** ☐ **Procedure** ☐ **Guideline**

1. SCOPE

1.1 This document applies to the allowed storage of dialysates at Riverside University Health System – Medical Center at Moreno Valley; and the access of these fluids by the DaVita staff.

2. DEFINITIONS

2.1 DaVita: DaVita Inc. and its authorized representatives providing dialysis services within RUHS-Medical Center under contractual agreement.

2.2 Designated Medication Storage Area: A secure area within the hospital that meets all requirements for medication storage as defined in this policy and applicable state and federal regulations, specifically approved for storage of DaVita dialysis medications.

3. POLICY

3.1 Only medications approved by the Pharmacy & Therapeutics Committee may be brought in by DaVita or other contracted services for dialysis.

3.2 Procurement and Storage

a. Medications shall be procured by DaVita and brought into the hospital for storage.

3.3 Medications used for dialysis shall be stored in designated medication storage areas. DaVita staff shall not store medications anywhere else in the hospital.

a. When operational needs warrant, dialysis solution may be stored as floor stock on patient care units, for example in the intensive care units for patients receiving CRRT. The unit is secure, and these patients have continuous nurse monitoring and presence.

3.4 DaVita or staff contracted by DaVita will be responsible for ensuring that medications are properly stored and are not outdated according to RUHS – Medical Center policies.

3.5 Only the following P&T approved medications may be brought into to the hospital by DaVita:

a. Naturalyte Acid solution
   i. 2.5 Ca 1K

ii. 2.5 Ca 2K
iii. 2.5 Ca 3K
iv. 2.0 Ca 2K

b. Dianeal Low Calcium Peritoneal Dialysis Solution with Dextrose

c. PureFlow Bicarbonate Solution
   i. 2k RFP 400
   ii. 4k RFP 404
   iii. PrismaSATE BGK 4/2.5 (4K 2.5 Ca)

d. Solcart B NaHCO3 650g

e. Dry pack (additives)
   i. Potassium chloride 5.8 grams 0.5 mEq/L
   ii. Calcium chloride 5.7 grams 0.5 mEq/L

3.6 Pharmacy shall inspect medication storage area as required by the law.

Document History:

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Sponsored by: Pharmacy	**Replaces Policy:** Pharmacy 388, B242

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6/30/2022	Anhdiem Le, PharmD	Yes	Removed duplicated word
8/1/22	P&T	No	
	No PAC no significant changes or MEC required as not patient care..		
9/26/25	Dialysis Coordinator	Yes	Updated current medications
10/25	Pharmacy Review Committee	Yes	Added Scope, and definition
10/25	Director of Pharmacy	Yes	Updated scope to specify dialysates, and DaVita. Added exception for floor stock of Dialysis solution 3.3a
10/16/2025	NPP	No	
11/3/2025	P&T	No	
12/18/2025	PAC	No	Consent

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER

Housewide

	Document No: 860	Page 1 of 7
Title: Adult and Pediatric Renal Dosing Protocol	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☒ **Policy** ☐ **Procedure** ☐ **Guideline**

1. SCOPE

This policy applies to adult and pediatric (excluding neonates) inpatients admitted to RUHS – Medical Center Moreno Valley and Arlington campuses.

2. DEFINITIONS

2.1 ABW: Actual body weight

2.2 AdjBW: Adjusted body weight for obese patients greater than 130% of their IBW

2.3 AKI: Acute kidney injury defined by a serum creatinine increase ≥ 0.3 mg/dL within 48-hour, serum creatinine increase ≥ 50% within 48-hours, or urine output < 0.5 mL/kg/hour for > 6 hours per Acute Kidney Network (AKIN) and Kidney Disease: Improving Global Outcomes (KDIGO) criteria

2.4 GFR: Glomerular filtration rate can be estimated by calculated creatinine clearance (developed using measured serum creatinine clearance as a proxy for measures GFR), and/ or race-free estimated GFR (eGFR) equations developed by the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI)

2.5 CrCL: Creatinine clearance, calculated by the Cockcroft-Gault equation, estimates renal function from serum creatinine clearance. Note, race-based adjustments were removed from this equation as recommended by the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI)

2.6 Estimated renal function: Pharmacists to use their clinical judgment based on available evidence (e.g. package insert, tertiary databases, primary literature, and specialty resources) with regards to renal estimation by CrCL or eGFR equations. Estimated renal function by eGFR may be used in lieu of listed CrCL values in various drug references per the consensus statement from the National Kidney Foundation Workgroup for Implementation of Race-Free eGFR-Based Medication

2.7 CRRT: Continuous renal replacement therapy

2.8 CVVH: Continuous veno-venous hemofiltration

2.9 CVVHD: Continuous veno-venous hemodialysis

2.10 CVVHDF: Continuous veno-venous hemodiafiltration

2.11 IBW: Ideal Body Weight

2.12 iHD: Intermittent hemodialysis

2.13 LD: Loading dose

2.14 MD: Maintenance dose

2.15 Obesity: Defined by the National Institute of Health as a body mass index ≥ 30 kg/m². For the purposes of this policy and recommendations for dosing weight, obesity is defined by an ABW greater than 130% of their IBW.

2.16 Peritoneal dialysis: Antibiotic administration in peritoneal dialysis can be in the form of intravenous antibiotics or antibiotics included in peritoneal dialysate. For the purposes of this policy, antibiotic doses recommended for patients on peritoneal dialysis are in the form of IV antibiotics.

2.17 SDD: Susceptible dose dependent, as defined by the Clinical Laboratory Standards Institute, refers to an organism that can be considered susceptible to an antimicrobial if higher drug exposure is achieved through higher antimicrobial doses

3. POLICY

3.1 Per "renal dosing per pharmacy protocol" order, pharmacists are authorized by the medical staff to adjust the dosages of renally eliminated medications based on estimated renal function calculated for each patient.

3.2 Pharmacists will communicate with the physician to obtain an order for "renal dosing per pharmacy protocol" as appropriate.

3.3 In the absence of a physician order, pharmacists are authorized to place "renal dosing per pharmacy protocol" order when:

a. Patient is expecting to receive renal replacement therapy based on Nephrology Consultation, active dialysis order and/ or patient medical history.
b. Patient's clinical presentation is consistent with AKI based on RIFLE, AKIN, or KDIGO definition (see Figure 1 in Appendix)
c. Patient's eGFR is ≤ 50 mL/min/1.73m2 or CrCL ≤ 50 mL/min (see 3.4)

3.4 When the pharmacist receives a "renal dosing per pharmacy protocol" order, the pharmacist shall:

a. Review patient's profile to screen for renally eliminated drugs and make dose adjustments as deemed clinically appropriate.

b. Document medication changes that are made per policy and estimated renal function (e.g. eGFR or CrCL) in medication order and via i-Vent.

c. Evaluate the patient's specific eGFR:

- Pharmacists may utilize **Appendix A** to select most appropriate eGFR calculations for each patient's individual factors

- For obese (BMI> 30) or underweight patients (BMI<18), eGFR should be adjusted using individual BSA to obtain $eGFR_{BSAadj}$:

d. Evaluate the patient's specific CrCL

- For patent's weighing 120-130% of IBW or patients > 65 years of age with a serum creatinine < 1 mg/dL, it is recommended that pharmacists manually calculate patient CrCL as specified below.

- For non-obese patients, the pharmacist will calculate CrCL by Cockcroft-Gault method using IBW.

$$\text{Estimated CrCL (mL/min)} = \frac{(140 - \text{Age})\,(\text{IBW in kg})}{(72)\,X\,\text{Serum Creatinine}} \quad X\ 0.85 \text{ if female}$$

- For obese patients (greater than 130% of their IBW), the pharmacists shall calculate CrCL by Cockcroft-Gault method using AdjBW in place of IBW.

$$\text{AdjBW (kg)} = \text{IBW (kg)} + 0.4(\text{ABW} - \text{IBW in kg})$$

e. Screen any for significant changes in renal function (e.g. change in serum creatinine ≥ 0.3 mg/dL over a 48-hour period, change in serum creatinine ≥ 50% within 48-hours, or urine output < 0.5 mL/kg/hour for > 6 hours) or initiation / change of dialysis modalities.

f. Use clinical judgment considering fluid status, administration of contrast and other potential nephrotoxic agents, disease status, patient demographics (height, weight, muscle mass, amputations, etc.), and other factors when evaluating a patient's need for dosage adjustment.

g. Communicate with the physician for clarification of patient clinical condition as needed.

h. Dose recommendations under the "renal dosing per pharmacy protocol" shall utilize:

- **Table 1** for antimicrobial dosing recommendations based on estimated renal function or dialysis modality.
- If a medication is not listed in **Table 1**, dosing recommendations will utilize appropriate drug information resources.

3.5 Once a patient has been identified as having reduced / changing renal function, that patient shall be monitored daily for changes in serum creatinine, renal function, dialysis modalities, and dose adjustments will be made accordingly.

3.6 Considerations for specific populations:

a. Infants: estimated renal function should be based on the Schwartz equation which includes adjustments for pre-term versus term infants

Patient Characteristics	**Calculation**
Premature infant up to 1 year of age	eGFR = 0.33 x ht/Scr
Term infant up to 1 year of age	eGFR = 0.45 x ht/Scr

b. Pediatric patients: estimated renal function should be based on eGFR utilizing the CKiD U25 equation calculator

$$eGFR = \kappa \times (ht/SCr)$$

where:

- eGFR = estimated GFR in mL/min/1.73 m^2
- κ = sex- and age-dependent κ values (see Table 1)
- SCr = enzymatically assayed (recommended) in mg/dL
- ht = height in meters

Table 1. Sex- and age-dependent values of *K* for CKiD U25 eGFRcr

Age, years	Female	Male
1 to <12	$36.1 \times 1.008^{(Age-12)}$	$39.0 \times 1.008^{(Age-12)}$
12 to <18	$36.1 \times 1.023^{(Age-12)}$	$39.0 \times 1.045^{(Age-12)}$

c. Transgender patients: If a patient has a gender identity and legal sex or sex assigned at birth that do not match, it is recommended that the clinical pharmacist:

- Initiate a medication history check if one has not already been performed during the index admission
- If the patient has received hormone therapy for ≥ 6 months, it is recommended that the pharmacist calculate estimated renal function using patient's gender identity
- If the patient is not receiving hormone therapy or has received hormone therapy for < 6 months, it is recommended that the pharmacist calculate estimated renal function using patient's sex assigned at birth

4. ATTACHMENTS

4.1 Table 1: Adult Antimicrobial Dosing Reference

4.2 Figure 1: Acute Kidney Injury Criteria

4.3 Appendix A: Non-GFR Determinants on eGFR Accuracy and Suggested Use f Serum creatinine, Cystatin C, or Both in Calculating eGFR

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RIVERSIDE UNIVERSITY HEALTH SYSTEM ANTIMICROBIAL REFERENCE GUIDE

HW860 Att. 4.1 - P&T Approved:6/2/25
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Table I. Adult Antimicrobial Dosing Reference

Drug	eGFR > 50 mL/min	eGFR 10-50 mL/min	eGFR < 10 mL/min	iHD	CRRT	PD
Acyclovir (IV) *IBW, AdjBW if obese	*eGFR > 50*	*eGFR 25-50*	*eGFR 10-25*	*eGFR < 10*		
-HSV	5 mg/kg q8h	5 mg/kg q12h	5 mg/kg q24h	2.5 mg/kg q24h	2.5 mg/kg q24h administer after HD	5-10 mg/kg q24h	2.5 mg/kg q24h
-HSV CNS, Zoster	10 mg/kg q8h	10 mg/kg q12h	10 mg/kg q24h	5 mg/kg q24h	5 mg/kg q24h administer after HD	10 mg/kg q12h	5 mg/kg q24h
Acyclovir (PO)	*eGFR > 25*	*eGFR 10-25*	*eGFR < 10*			
-HSV	400 mg q8h Alt: 200 mg 5x daily	200 mg q8h	200 mg q12h	200 mg q12h administer after HD	insufficient data	200 mg q12h
-HSV CNS, Zoster *10-20% bioavailability, consider valacyclovir	800 mg q4h Alt: 800 mg 5x daily	800 mg q8h	800 mg q12h	800 mg q12h administer after HD	insufficient data	800 mg q12h
Liposomal Amphotericin B (IV) *IBW, ABW if < IBW, AdjBW if obese	3-6 mg/kg q24h Incompatible with NS, flush line with D5W before and after infusion Give 250-500mL NS before and after infusion			No dose adjustment	No dose adjustment	No dose adjustment
Amoxicillin (PO)	*eGFR > 30*	*eGFR 10-30*	*eGFR < 10*	250-500 mg q24h administer after HD Avoid ER formulation	insufficient data	Insufficient data
-Uncomplicated	500 mg q8h Alt: 875 mg q12h	250-500 mg q12h Avoid ER formulation	250-500 mg q24h Avoid ER formulation			
-H. pylori (in specific triple & quadruple regimens)	1 g q12h					
-Procedural prophylaxis	2 g x 1 given 30-60 minutes prior to procedure‡					
Amoxicillin / Clavulanate (PO) *Dose by amoxicillin	500 mg q8h 875 mg q12h	250-500 mg q12h	250-500 mg q24h	250-500 q24h administer after HD	insufficient data	insufficient data
Ampicillin (IV)						
-Mild, Uncomplicated	2 g q6h	1 g q6h	1 g q12h	1 g q12h administer after HD	1 g q6-12h	250-500 mg q12h
-Meningitis, PJI, Endovascular	2 g q4h	2 g q6h	1 g q8h	2 g q12h administer after HD	2 g q6h	500 mg - 1g q12h
Ampicillin / Sulbactam (IV) ▲Acinetobacter	*eGFR > 30* 3g q6h	*eGFR 15-30* 3g q12h	*eGFR < 15* 3g q24h	3g q12-24h administer after HD	3 g q8h	insufficient data
Azithromycin (IV/PO)	500 mg q24h Alt: 500mg x1, followed by 250mg q24h			No dose adjustment	No dose adjustment	No dose adjustment
Aztreonam (IV)	*eGFR > 30*	*eGFR 10-30*	*eGFR < 10*	Standard dose x1, followed by	2 g q12h	1 g q24h
-Uncomplicated	1-2 g q8h	1 g q8-12h	500 mg q8-12h	1 g q24h administer after HD		
-Meningitis, severe, Pseudomonas	2 g q6-8h	1 g q6-8h	1 g q12h	1 g q12h administer after HD		
Cefazolin (IV)	*eGFR ≥ 35*	*eGFR 11-34*	*eGFR ≤ 10*	1 g q24h Alt: 2g/2g/3g on HD days administer after HD	2 g q12h	1 g q24h
-Uncomplicated	1 g q8h	500 mg q12h	1 g q24h			
-Blood stream infection, osteomyelitis, complicated	2 g q8h	1 g q12h	1 g q24h			

Drug	eGFR > 50 mL/min	eGFR 10-50 mL/min	eGFR < 10 mL/min	iHD	CRRT	PD
Cefdinir (PO)	*eGFR ≥ 30* 300 mg q12h	*eGFR < 30* 300 mg q24h		300 mg q48h administer after HD	insufficient data	insufficient data
Cefepime (IV)	*eGFR > 60*	*eGFR 30-60*	*eGFR 10-29*	*eGFR < 10*	1 g q24h Alt: 2 g on HD days administer after HD	2 g q12h Alt: 2 g q8h if effluent rate ≥ 35 mL/kg/hour	1-2 g q48h
-Uncomplicated	1 g q8h Alt: 2 g q12h	1 g q12h Alt: 2 g q24h	1 g q24h	500 mg q24h			
-CNS / complicated	2 g q8h	2 g q12h	2 g q24h	1 g q24h			
Cefotaxime (IV)	1-2 g q6-8h	1-2 g q8-12h	1-2 g q24h	1-2 g q24h administer after HD	*CVVH* 1-2 g q12h *CVVHD / CVVHDF* 1-2 g q8h	1 g q24h
Cefoxitin (IV)	*eGFR > 50* 1-2 g q6-8h	*eGFR 30-50* 1-2 g q8-12h	*eGFR 10-29* 1-2 g q12-24h	*eGFR 5-9* 0.5-1 g q12-24h	*eGFR < 5* 0.5-1 g q24-48h	1-2 g q12-24h administer after HD	insufficient data	insufficient data
Ceftriaxone (IV)						
-Uncomplicated	1g q24h	No dose adjustment		No dose adjustment	No dose adjustment	No dose adjustment
-Bloodstream infection, endocarditis‡	2g q24h					
-Meningitis, endocarditis‡	2g q12h					
Cefuroxime (IV)	*eGFR > 20* 750 - 1500 mg q8h	*eGFR 10-20* 750 mg q12h	*eGFR < 10* 750 mg q24h	750 mg q24h administer after HD	750 mg q8-12h	750 mg q24h
Cefuroxime (PO)	*eGFR > 30* 250-500 mg q12h	*eGFR 10-30* 250-500 mg q24h	*eGFR < 10* 250-500 mg q48h	250-500 mg q24h administer after HD	insufficient data	insufficient data
Cephalexin (PO)	*eGFR > 30* 250-500 mg q6h Alt: 500 mg q12h NTE 1g q24 CrCL< 60	*eGFR 15-29* 250mg q8-12h	*eGFR 5-14* 250 mg q24h	*eGFR 1-4* 250 mg q48h	250-500 mg q12-24h administer after HD	insufficient data	250-500 mg q12-24h
Ciprofloxacin (IV, PO)	*eGFR > 50*	*eGFR 30-49*	*eGFR < 30*	400 mg IV q24h 500mg PO q24h administer after HD	400 mg IV q12-24h 500mg PO q12-24h	200-400 IV mg q24h 250-500 mg PO q24h
-Uncomplicated	400 mg IV q12h 500 mg PO q12h	400 mg IV q12h 500 mg PO q12h	200 mg IV q12h 250 mg PO q12h			
-Pseudomonas, severe	400 mg IV q8h 750 mg PO q12h	400 mg IV q8h 500 mg PO q12h				
Clindamycin (IV, PO)						
-Necrotizing fasciitis, GAS	900 mg q8h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
-Uncomplicated	450 - 600 mg q8h					
Daptomycin (IV) *ABW, AdjBW if obese	*eGFR ≥ 30*	*eGFR < 30*		*Dose as CrCL < 30* Alt: 6 / 6 / 9 mg/kg 3x/week post-HD administer after HD	8 mg/kg q48h	*Dose as CrCL < 30*
-Staph & other GP -SSTI, Septic arthritis, DFU	6-8 mg/kg q24h	6-8 mg/kg q48h				6-8 mg/kg q48h
-VRE (E. faecalis or Enterococcus spp.)	8-10 mg/kg q24h	8-10 mg/kg q48h				8-10 mg/kg q48h
-VRE (E. faecium SDD)	10-12 mg/kg q24h	10-12 mg/kg q48h				10-12 mg/kg q48h
Doxycycline (IV/PO)	100mg q12h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
Ertapenem (IV)	*eGFR > 30* 1 g q24h	*eGFR ≤ 30* 500 mg q24h		500mg q24h Alt: 1 g 3x/week† after HD administer after HD	1 g q24h	500 mg q24h†

Drug	eGFR > 50 mL/min	eGFR 10-50 mL/min	eGFR < 10 mL/min	iHD	CRRT	PD
Flucytosine (PO) ᵟ *IBW, IBW if obese	*eGFR > 40* 25 mg/kg/dose q6h	*eGFR 21-40* 25 mg/kg/dose q12h	*eGFR 10-20* 25 mg/kg/dose q24h	*eGFR < 10* 25 mg/kg/dose q48h	25-50 mg/kg/dose q48-72h administer after HD	insufficient data	insufficient data
Fluconazole (IV/PO)	*eGFR ≥ 50*	*eGFR < 50*				
-Uncomplicated	400-800 mg x1, followed by 200-400 mg q24h	200-400 mg x1, followed by 100-200 mg q24h		200-400 mg 3x/week after HD	400-800 mg q24h	200 mg q24-48h
- Severe, CNS, SDD Candida glabrata	800 mg q24h	800 mg x1, followed by 400 mg q24h		800 mg 3x/week after HD		
Ganciclovir (IV) *IBW, AdjBW if obese	*eGFR ≥ 70*	*eGFR 50-69*	*eGFR 25-49*	*eGFR 10-24*	*eGFR < 10 or iHD*		
-Induction	5 mg/kg q12h	2.5 mg/kg q12h	2.5 mg/kg q24h	1.25 mg/kg q24h	1.25 mg/kg 3x/week after HD	*CVVH* 2.5 mg/kg q24h *CVVHD / CVVHDF* 2.5 mg/kg q12h	1.25 mg/kg 3x/week
-Maintenance	5 mg/kg q24h	2.5 mg/kg q24h	1.25 mg/kg q24h	0.625 mg/kg q24h	0.625 mg/kg 3x/week after HD	*CVVH* 1.25 mg/kg q24h *CVVHD / CVVHDF* 2.5 mg/kg q24h	0.625 mg/kg 3x/week
Gentamicin (IV)	Refer to policy HW843: Management of Vancomycin / Aminoglycoside Therapy in Adults						
Levofloxacin (IV/PO)	*eGFR > 50*	*eGFR 20-49*	*eGFR < 20*	*administer after HD*			
-Uncomplicated	250-500 mg q24h	250 mg q24h 500 mg q48h	500 mg x1, followed by 250 mg q48h	500 mg x1, followed by 250 mg q48h	*CVVH* 750 mg x1, followed by 250 mg q24h *CVVHD/CVVHDF* 750 mg x1, followed by 500-750 mg q24h	500 mg x1, followed by 250 mg q48h
-Pseudomonas, Stenotrophomonas	750 mg q24h	750 mg q48h	750 mg x1, followed by 500 mg q48h	750 mg x1, followed by 500 mg q48h		750 mg x1, followed by 500 mg q48h
Linezolid (IV/PO)	600 mg q12h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
Meropenem (IV)	*eGFR > 50*	*eGFR 26-50*	*eGFR 10-25*	*eGFR < 10 or iHD*		
-Uncomplicated	1 g q8h	1 g q12h	500 mg q12h	500 mg q24h administer after HD	1 g q12h consider 1 g q8h for CVVHDF rate > 2L/h	insufficient data
-Meningitis, cystic fibrosis	2 g q8h	2 g q12h	1 g q12h	1 g q24h administer after HD		
Metronidazole (IV/PO)	500 mg q8h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
Micafungin (IV)	100 mg q24h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
Nafcillin (IV)	2 g q4h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
Nitrofurantoin monohydrate (PO)	*eGFR > 61* 100 mg q12h	*eGFR 30-60* Contraindicated per mfg, limited data suggest safe	*eGFR < 30* Not recommended in patients ≥ 65	Contraindicated	Contraindicated	Contraindicated
Piperacillin / Tazobactam (IV)	Refer to policy HW848: Automatic Substitutions for Adult Inpatients					
Rifampin (IV/PO)						
-Tuberculosis	weight based	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
-Prosthetic joint infection	300mg q12h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment
-Endocarditis	300mg q8h	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment	No dose adjustment

Drug	eGFR > 50 mL/min	eGFR 10-50 mL/min	eGFR < 10 mL/min	iHD	CRRT	PD
Tobramycin (IV)	Refer to policy HW843: Management of Vancomycin / Aminoglycoside Therapy in Adults					
Trimethoprim / Sulfamethoxazole (IV/PO) *AdjBW, AdjBW if obese	*dose based on Trimethoprim (TMP): SS tablet = 80 mg TMP, DS tablet = 160mg TMP					
	eGFR > 30	*eGFR 15-30*	*eGFR < 15*			
-UTI	1 DS PO q12h	1 DS PO q24h	Not recommended	1 SS PO 3x/week after HD	Insufficient data	Insufficient data
-SSTI	1-2 DS PO q12h	1 DS PO q12-24h				
-PJP pneumonia, stenotrophomonas	5 mg/kg IV q6-8h 2 DS PO q8h	5 mg/kg IV q12h 2 DS PO q12h	5 mg/kg IV q24h 1 DS PO q12-24h Consider alternative	5 mg/kg IV q24h 2 DS PO q24h administer after HD	15 mg/kg/day IV divided q8-12h	
-PJP and/or toxoplasma prophylaxis	1 SS/DS PO q24h Alt: 1 DS 3x/week	1 SS q24h Alt: 1 DS 3x/week	1/2 SS q24h Consider alternative	1 SS PO 3x/week after HD	Insufficient data	
Valganciclovir (PO)	*eGFR > 60*	*eGFR 40-59*	*eGFR 25-39*	*eGFR 10-24*	*eGFR <10 or HD*	
-Induction	900 mg q12h	450 mg q12h	450 mg q24h	450 mg q48h	200 mg 3x/week after HD consider Ganciclovir	Insufficient data
-Maintenance	900 mg q24h	450 mg q24h	450 mg q48h	450 mg 2x/week	100 mg 3x/week after HD consider Ganciclovir	
Vancomycin (IV)	Refer to policy HW843: Management of Vancomycin / Aminoglycoside Therapy in Adults					
Voriconazole (IV/PO) *IBW, AdjBW if obese	400 mg PO q12h x 2 doses, followed by 200mg q12h 6 mg/kg IV q12h x 2 doses, followed by 4mg/kg q12h Note: IV voriconazole in *eGFR* < 50 mL/min can result in intravenous vehicle (cyclodextrin) accumulation, PO voriconazole is recommended in these patients			No dose adjustment	No dose adjustment	No dose adjustment

† Limited data exist to support PK/PD target attainment at this dose however, safety data is limited. Caution for seizure and other ADE.
‡ For species specific endocarditis dosing recommendations and procedural prophylaxis criteria, please refer to the AHA Endocarditis Guidelines.
▲Sulbactam is among the most efficacious studied agents against Acinetobacter spp. and may be prescribed, as ampicillin/sulbactam, in patients regardless of reported susceptibilities (though often in combination with other agents). Sulbactam targets in normal renal function range from 1 g q3-4h or ampicillin/sulbactam 3g q3-4h as the formulation is 2:1 ampicillin to sulbactam. Please consider Infectious Diseases consult for Acinetobacter spp. treatment in patients with normal or impaired renal function.
ǂ Consider measuring peak serum flucytosine levels for prolonged therapy, target 30-80 mcg/mL, level should be drawn 2-hours post-dose after a minimum of 3-5 doses to reach steady state concentrations.

In serious infections or use of antimicrobials approaching MIC breakpoints, consider continuous infusion dosing for time dependent antimicrobials such as penicillin, cephalosporin, carbapenem, and monobactam classes.

Figure 1 AKI Criteria

Stage	RIFLE	AKIN	KDIGO
Stage 1/ Risk	SCr 1.5x baseline (within 7 days) **or** GFR decrease >25%	SCr 1.5–2.0x baseline (within 7 days) **or** ≥0.3 mg/dl increase (within 48 h)	SCr 1.5–1.9x baseline (within 7 days) **or** ≥0.3 mg/dl increase (within 48 h)
Urine Output <0.5 ml/kg/h x 6 h			
Stage 2/ Injury	SCr 2x baseline **or** GFR decrease >50%	SCr 2–3x baseline	SCr 2.0–2.9x baseline
Urine Output <0.5 ml/kg/h x 12 h			
Stage 3/ Failure	SCr 3x baseline **or** GFR decrease 75% **or** Cr ≥4 (*with acute rise ≥0.5 mg/dl*)	SCr >3x baseline **or** SCr ≥4 (*with acute rise ≥0.5 mg/dl*) **or** initiation of KRT	SCr 3x baseline **or** increase in Cr ≥4 *(with ≥0.3 mg/dl increase within 48 h or 1.5x baseline)* **or** initiation of KRT
Urine Output <0.3 ml/kg/h x 24 h **or** anuria x 12 h			
Loss	Complete loss of kidney function >4 weeks		
ESRD	End-stage kidney disease (>3 months)		

Appendix A: Non-GFR Determinants on eGFR Accuracy and Suggested Use of Serum creatinine, Cystatin C or Both in Calculating eGFR

	Serum creatinine	Cystatin C	Serum creatinine and cystatin C
Factors affecting the biomarker	**Body habitus and changes in muscle mass:** Eating disorder Extreme sports/ body builder Spinal cord injury/ paraplegia/ quadriplegia Above-knee amputation **Diet and lifestyle:** High protein/ keto/ creatin supplement diet Vegetarian diet **Medications** Steroid use Broad spectrum antibiotics Tubular secretion inhibition (tyrosine kinase inhibitors, probenecid, NSAID, TMP, cimetidine)	**Diet and lifestyle:** Smoking	**Body habitus and changes in muscle mass:** Clase III obesity **Diet and lifestyle:** Malnutrition **Diseases states:** Chronic illness other than chronic kidney disease (cirrhosis, heart failure, HIV, muscle wasting diseases, catabolic consumption diseases) Critical illness
Suggested eGFR Equations	2012 CKD-EPIcys$_{BSAadj}$	*2021 CKD-EPI eGFRcr$_{BSAadj}$	*2021 CKD-EPIcr-cys$_{BSAadj}$

*If cystatin C orderable in a timely manner

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
Housewide

	Document No: 861	Page 1 of 4
Title: Inpatient Pharmacy Order Entry Review and Verification Process	**Effective Date:** 12/23/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. **SCOPE**

1.1 Areas where medication orders are reviewed and verified prior to administration by RUHS – Medical Center staff, including but not limited to inpatients, operating rooms, and emergency departments.

2. DEFINITIONS

2.1 Intravenous (IV): situated, performed, or occurring within or entering by way of a vein.

2.2 Pediatric: Less than 18 years of age.

2.3 Childbearing age: Women from menses to menopause: approximately 12-55 years old.

3. POLICY

3.1 All medication orders must be complete and accurate as defined in the RUHS – Medical Center policy HW 802 Medication Orders.

3.2 All medication orders will be reviewed by a pharmacist for appropriateness based on age, weight, and prescribed indication.

3.3 All pediatric medication orders must include the patient's current weight in kilogram (kg) and appropriate dosing parameters, when available and clinically relevant.

3.4 Pregnancy test must be reviewed and requested for all medication orders with drug-associated risks in pregnancy, lactation, and females of childbearing age or reproductive potential.

3.5 All medication orders must be reviewed and approved by the pharmacist prior to administration, except in urgent situations (when delay would harm the patient) or when the licensed independent practitioner is immediately available.

3.6 Appropriate drug information references should be used during the medication order review and entry.

3.7 The previous orders of injectable narcotics and benzodiazepine will be discontinued upon placement of new therapeutic duplicate orders.

3.8 All concerns, issues, or questions must be clarified with the prescriber before dispensing.

3.9 For Antihemophilic Factor [Recombinant] (ADVATE®) Antithrombin III, Coagulation Factor IX, Prothrombin PCC, pharmacist will change the dose, within +/- 10% of ordered dose, to match the product(s) being dispensed.

3.10 Behavior Health Inpatient Pharmacy is open from 8:00 AM to 6:30PM, 7 days a week, including holidays. Main Hospital Pharmacy will verify all orders from Behavior Health 6:30PM to 8AM daily

4. PROCEDURE

4.1 All medication orders must be reviewed for the following:

a. Age
b. Sex
c. Diagnosis
d. Dosing
e. Allergies and/or sensitivities
f. Current Medications, and medication taken prior to admission (if available)
g. Height and weight (when necessary)
h. Pregnancy and lactation information (when necessary)
i. Laboratory results (when necessary)
j. Therapeutic duplications and drug-drug interactions
k. Other contraindications or warnings
l. Other pertinent information as clinically indicated
m. All concerns, issues, and questions must be clarified with the prescriber before dispensing

4.2 Pediatric Medication Orders

In addition to Section 4.1:

a. The pharmacist shall review to ensure accurate pediatric dosing for all pediatric orders with respect to indication, age-specific recommendations, and/or weight-based dosing recommendations.

b. Neonates require gestational age (GA) for many medications. The pharmacist shall obtain gestational age for neonates, when dosing information is specified according to GA.

c. Pediatric patients generally require weight-based dosing, however each case must be evaluated individually and the dose should not exceed the maximum adult dose.

d. IV syringes are preferred for pediatric IV solutions for volumes up to 50 mL (reference the Pediatric IV Compounding Manual)

e. IV piggybacks must be used for volumes greater than 50 mL.

f. Tablets and capsules may only be used when appropriate for the age and ability of the child to swallow.

4.3 Dual Verification of Pediatric Orders

a. Dual or Double verification is a hard-stop safety feature in the electronic record that does not allow for dispensing of the order until double verification is completed

b. Neonatal (NICU) Medication Orders – will undergo double verification by Pharmacists

c. Select Pediatric Medication Orders – will undergo double verification:

i. Aminoglycosides: gentamicin, tobramycin, amikacin

ii. Vancomycin

iii. TPN – total parenteral nutrition

4.4 Medication Orders with High Risk of Harm in Pregnancy

a. In addition to section 4.1, the pharmacist shall verify orders for appropriateness, lack of ambiguity, and safe use in the patient.

b. If pregnancy status or test is not documented, the prescribing provider will be contacted. The discussion between the prescriber and pharmacist should be documented in the medical record including the evaluation of the circumstances, rationale for ordering the medication, and/or potential alternative pharmacotherapy for the patient.

4.5 Use of Pre-printed Orders/Order-sets

a. Use of the order sets are encouraged when available

4.6 Remote Order Review and Entry

a. A prescriber, prescriber's authorized agent, or a pharmacist employed by RUHS may electronically enter a prescription or an order into the hospital's electronic health record from any location outside of the pharmacy or hospital.

b. Pharmacists performing remote order review and verification shall access the hospital's electronic health record (EHR) and pharmacy systems using secure connections. Access must occur through health system-approved technologies that comply with institutional security standards and privacy regulations.

c. All above sections of this policy are still applicable and will be adhered to in instances of remote order review and entry.

d. The health system shall maintain a complete record of all medications reviewed and verified by pharmacists.

5. REFERENCES

5.1 The Joint Commission Standards MM.04.01.01 and MM.05.01.01 - Effective date March 30, 2025.

5.2 RUHS – Medical Center Policy HW 802 Medication Orders

5.3 California Code of Regulations, Division 17, Title 16. 1793.1 Duties of a Pharmacist; 1761 Erroneous or Uncertain Prescriptions

5.4 *Lexi-Drugs*. UpToDate Lexidrug. UpToDate Inc. https://online.lexi.com.

5.5 US Pregnancy and Lactation Labeling Final Rule. Food and Drug Administration Website. Available at: **http://www.fda.gov**.

5.6 California Code of Regulations,
Division 2, Chapter 9, Article 4 Section 4071.1 Requirements for Prescriptions

Document History

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6/10/2025	PRC	Y	Add 3.10 and 4.6- BoP 4071.1 for remote order review and entry
7/7/2025	P&T		
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RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER, COMMUNITY HEALTH CENTERS, and HOSPITAL BASED CLINICS

	Document No: 873	Page 1 of 14
Title: Cleaning and Disinfecting Sterile Compounding Areas	**Effective Date:** 12/23/2025	☒ **RUHS – Community Health Centers** ☒ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By:  Jennifer Cruikshank CEO/Hospital Director		☐ **Policy** ☒ **Procedure** ☐ **Guideline**

1. SCOPE

1.1 Describes the procedures for cleaning and disinfecting compounding areas where Compounded Sterile Preparations (CSP) are prepared within Riverside University Health Systems (RUHS).

1.2 Surfaces in classified areas and segregated compounding areas are potential sources of microbial contamination. To reduce the risk of contact contamination, surfaces within classified areas used to prepare CSPs are cleaned, disinfected, and have sporicidal disinfectants applied according to the processes and frequencies described in this document.

2. DEFINITIONS

2.1 Cleaning: Removing organic and inorganic materials (e.g., dirt, debris, microbes, and residual drugs or chemicals) form surfaces with the use of a cleaning agent and manual or mechanical action.

2.2 Disinfecting: Using a chemical or physical agent on surfaces to destroy microorganisms including fungi, viruses, and bacteria.

2.3 Classified area: An area that maintains an air quality classification based on the ISO standards.

2.4 Cleaning agent: An agent for the removal of residues (e.g., dirt, debris, microbes, and residual drugs or chemicals) from surfaces.

2.5 Compounding area: The area where compounding is occurring (i.e., a cleanroom suite or inside the perimeter of the SCA).

2.6 Garb: Items such as gloves, garments (e.g., gowns), shoe covers, head and facial hair covers, masks, and other items designed to reduce particle-shedding from personnel and minimize the risk of contamination of CSP(s).

2.7 Sterile 70% isopropyl alcohol (sIPA): A staple in day-to-day compounding activities and plays a critical role in sanitizing and reducing the bioburden on gloved hands, surfaces, and materials through both chemical application and physical wiping. sIPA, however, is not a cleaning or disinfecting agent. While it does have some disinfectant properties, it does not possess the broad-spectrum coverage of cleaning, disinfecting, or sporicidal agents and requires a lengthy (and impractical) contact time to truly convey bactericidal or fungicidal activity.

2.8 Low-lint wiper: A wiper exhibiting few, if any, fibers or other contamination, visible without magnification, which is separate from, or easily removed from, the wiper material in a dry condition.

2.9 One-step disinfectant cleaner: A product with an EPA-registered (or equivalent) claim that it can clean and disinfect a nonporous surface in the presence of light to moderate organic soiling without a separate cleaning step.

2.10 Pass-through: An enclosure with sealed doors on both sides that should be interlocked. The pass-through is positioned between two spaces for the purpose of minimizing particulate transfer while moving materials from one space to another.

2.11 Primary engineering control (PEC): A device or zone that provides an ISO Class 5 air quality environment for sterile compounding.

2.12 Secondary engineering control (SEC): The area where the PEC is placed (e.g., a cleanroom suite or an SCA). It incorporates specific design and operational parameters required to minimize the risk of contamination within the compounding area.

2.13 Segregated compounding area (SCA): A designated, unclassified space, area, or room with a defined perimeter that contains a PEC and is suitable for preparation of Category 1 CSPs only.

2.14 Sporicidal disinfectant: A chemical or physical agent that destroys bacterial and fungal spores when used in sufficient concentration for a specified contact time. It is expected to kill all vegetative microorganisms

2.15 Triple clean: consists of two separate and distinct applications of an approved one-step disinfectant cleaner (allowing for full wet contact time between applications) followed by a separate application of an approved sporicidal disinfectant; remove cleaning agent residue with sIPA.

3. POLICY

3.1 Cleaning and disinfecting of all surfaces inside compounding areas, including sinks, as well as the application of a sporicidal disinfectant occur on a regular basis and at a minimum frequency as specified in *USP <797> Pharmacecutical Compounding – Sterile Preparations 2022* and according to this policy (see Section 5.1).

3.2 Surfaces in compounding areas are cleaned prior to being disinfected with an EPA-registered (or equivalent outside of the US) agent. An EPA-registered (or equivalent) one-step disinfectant cleaner is an appropriate alternative that allows for both processes to occur in one step.

3.3 Sporicidal disinfecting agents are EPA-registered (or equivalent outside of the US) and allow for cleaning, disinfecting, and sporicidal activity concurrently in a single step.

3.4 Manufacturer's directions or published data for the minimum wet contact time is followed for each of the cleaning, disinfecting, and sporicidal agents used to ensure the agents have full microbial destroying action.

3.5 If compounding (and cleaning) is not performed each day, cleaning and disinfecting is completed before reinitiating compounding.

3.6 Cleaning and sanitizing are repeated when spills occur and when surfaces are visibly soiled.

3.7 All personnel involved in cleaning and disinfecting of classified compounding and segregated compounding areas receive training and demonstrate competency in Hand Hygiene and Garbing initially and at least annually. Refresher training is provided as needed and when changes in procedures or agents occur.

- Primary engineering controls (PECs) are cleaned by trained and qualified compounding personnel only.
- Secondary engineering controls (SECs) or classified compounding areas can be cleaned by trained and qualified compounding personnel and/or internal or external contracted cleaning service who comply with all aspects of this policy.

3.8 All cleaning and disinfecting activities are performed by appropriately garbed personnel using facility-approved agents and procedures including frequency, method, and location of cleaning activity.

3.9 Sterile cleaning agents are used to clean the interior of, and all equipment housed inside of PECs. Sterile cleaning agents are used to clean SECs.

3.10 Cleaning agents and supplies used in PECs and SECs are assigned an expiration date once opened or prepared; expiration dates are clearly and permanently written on the bottle, container, or wrapping of the supply and do not exceed manufacturer expiration dates or recommended "in-use" dates.

Cleaning Agent or Supply	**Location Used**	**Expiration Date*** (from initial puncture, use, or preparation)
Ready-to-Use (RTU) STERILE Cleaning, Disinfecting, and Sporicidal Agents (e.g.,TB1-3300™ Sterile Disinfectant, PeridoxRTU® 32 Sterile)	Inside PECs	15 Days
RTU Nonsterile Cleaning, Disinfecting, and Sporicidal Agents (e.g., PREemptRTU, PeridoxRTU)	All surfaces in SECs; Exterior of PECs	30 Days
STERILE Premoistened or Low-Lint Dry Wipes	Inside PECs	15 Days
Nonsterile Premoistened or Low-Lint Dry Wipes	All surfaces in SECs; Exterior of PECs	30 Days
Sterile 70% Isopropyl Alcohol	All surfaces in SECs; Exterior of PECs	7 days

***Consult the manufacturer for dates for specified products in use at your facility or define a more conservative expiration date.**

3.11 Safety Data Sheets (SDSs) are retained for all cleaning supplies, included in training of cleaning personnel, and are readily retrievable by all compounding staff members.

4. ROLES AND RESPONSIBILITEIS

4.1 Designated Person(s) (DP):

- Ensures cleaning staff receives appropriate training and maintains current cleaning and related competencies.
- Oversees selection of appropriate EPA-registered cleaning, disinfecting, and sporical agents and ensures staff understands and adheres to appropriate dwell times for each agent.
- Ensures the organization or facility maintains a current SDS for each cleaning agent in a readily retrievable format and location and ensures cleaning personnel understand how to access and use the SDS in case of a spill or accident.
- Ensures appropriate qualification, supervision, and quality assurance of non-pharmacy personnel performing cleaning and disinfecting activities.

- Determines appropriate remedial cleaning requirements for ad hoc and out-of-specification occurrences up to and including a triple clean of effected compounding areas including the following circumstances:
  - Actionable environmental findings from total particle counts, viable air sampling, or surface sampling results and/or trends.
  - Scheduled and unscheduled power and/or airflow disruptions directly impacting sterile compounding area(s).
  - Certification of sterile compounding area(s).
  - New or major construction or maintenance work performed within or adjacent to the sterile compounding area(s).

4.2 Compounding personnel:

- Undergo training and demonstrate competency initially and at least once annually in skills and competencies related to cleaning and disinfecting.
- Adhere to all cleaning procedures including cleaning agent selection, frequency, method, and sequence of cleaning activities (i.e., cleanest to dirtiest).
- Ensure appropriate use of sterile 70% IPA before, during, and after the compounding process.
- Complete timely documentation of all cleaning activities performed.

4.3 Environmental Services (EVS) or contracted cleaning personnel:

- Undergo training and demonstrate competency initially and annually in skills and competencies related to cleaning and disinfecting.
  Complete all cleaning tasks as described in this policy, under the supervision of pharmacy personnel.
- Never clean the interior of any PEC and/or equipment housed within a PEC.

5. PROCEDURES

5.1 Frequency of Cleaning, Disinfection, and Application of Sporicidal Disinfectants – Adapted from *USP <797> 2022 Table 8.*

	Cleaning and Disinfecting		**Applying Sporicidal Disinfectant**	
	Frequency	**Who**	**Frequency**	**Who**
Inside PECs – including all surfaces, direct compounding area and work tray, and equipment used inside the PEC	Daily on days when compounding occurs and when surface contamination is known or suspected	Pharmacy Technician	Weekly to at least Monthly	Pharmacy Technician
Work Surfaces Outside of PEC	Daily on days when compounding occurs All “high touch” surfaces daily	Pharmacy Technician	Weekly to at least Monthly All surfaces including high touch and underneath of tables, chairs, and carts plus wheels	Pharmacy Technician
Pass Through(s) – all interior surfaces and external handles (Double Door Refrigerator)	Weekly to at least Monthly	Pharmacy Technician	Weekly to at least Monthly	Pharmacy Technician
Incubators	Weekly to at least Monthly	Pharmacist	None	N/A
Floors	Daily on days when compounding occurs	EVS	Weekly to at least Monthly.	EVS
Sinks	Daily on days when compounding occurs	EVS	Weekly to at least Monthly	EVS
Walls, Door(s), and Door Frame(s)	Weekly to at least Monthly	EVS	Weekly to at least Monthly	EVS
Ceilings of Sterile Suite	Weekly to at least Monthly	EVS	Weekly to at least Monthly	EVS

	Cleaning and Disinfecting		Applying Sporicidal Disinfectant	
	Frequency	**Who**	**Frequency**	**Who**
Storage Shelves and Bins	Weekly to at least Monthly	Pharmacy Technician	When visibly soiled or if surface contamination is known or suspected	Pharmacy Technician
Equipment Outside of the PEC(s)	Weekly to at least Monthly	Pharmacy Technician	Weekly to at least Monthly	Pharmacy Technician
Change Pre-filter on PEC(s)	Every 6 months or when appears dirty, clogged, or damaged.	Pharmacy technician or Pharmacist	n/a	

- Cleaning activities occur from cleanest to dirtiest areas.
- If cleaning and disinfecting are performed as separate steps, cleaning is performed prior to disinfecting.
- After the application of a disinfectant, cleaning agent, or sporicidal disinfectant, the agent is allowed to dwell, or maintain a wet contact time, for the minimum duration specified by the manufacturer or published data to ensure full bactericidal, fungicidal, virucidal, and/or sporicidal action.
- Daily cleaning and disinfecting occur on days when compounding occurs. If compounding does not occur for more than 24 hours (e.g., over a weekend or holiday):
  - Clean and disinfect the sink(s) before initiating hand hygiene and garbing
  - Complete daily cleaning and disinfecting prior to the start of compounding on the day compounding resumes
- Weekly to at least Monthly cleaning and application of sporicidal disinfectants occurs no more than every 30 days, whenever possible, to ensure a regular and consistent cleaning schedule and is completed as one continuous process or, at a minimum, is completed with 72 hours to minimize the risk of cross-contaminating already cleaned areas.
- Cleaning and disinfection of the inside of a PEC and any equipment housed and used inside a PEC occurs prior to and at the conclusion of daily and/or shift compounding.

5.2 Cleaning, Disinfecting, and Applying Sporicidal Disinfectants in the PEC

- If needed, remove visible particles, debris, or residue with an appropriate solution (e.g., Sterile Water for Injection or Sterile Water for Irrigation) using sterile, low-lint wipers.
- **For cleaning and disinfecting**: Use a sterile low-lint wiper and apply a sterile cleaning agent followed by a sterile disinfecting agent or apply an EPA-registered (or equivalent) one-step disinfectant cleaner to equipment and all interior surfaces of the PEC.
- **For application of a sporicidal disinfectant**: After cleaning and disinfecting, apply a sterile sporicidal disinfectant using a sterile low-lint wiper to all equipment, and interior surfaces, if the sporicidal disinfectant is an EPA-registered (or equivalent) one-step disinfectant sporicidal cleaner, separate cleaning and disinfecting steps are not required.
- Ensure the wet contact time specified by the manufacturer is achieved.

- After the application of cleaning, disinfecting, and/or sporicidal agent inside PEC, apply sIPA to equipment and all interior surfaces to remove residue.
- Allow the surface to dry completely before beginning compounding.

5.3 Use of Sterile 70% IPA inside of a PEC

- Do not spray cleaning solutions, including sIPA, inside of a PEC to avoid deteriorating the integrity of the HEPA filter. Wet a sterile low-lint wiper with the cleaning solution or sIPA and apply directly with mechanical/manual action to the interior hood surfaces and equipment.
- Apply sIPA to the horizontal work surface of each PEC and allow to dry before compounding:
  - Immediately before initiating compounding or a new compounding process.
  - At least every 30 minutes if the compounding process takes 30 minutes or less
  - After completing a compounding process if the process takes more than 30 minutes.

5.4 Change pre-filter on PECs every 6 months or when appears dirty, clogged or damaged.

5.5 Other Cleaning Considerations

- Clean high touch surfaces outside of PECs daily and all other surfaces plus the high touch surfaces monthly, including but not limited to:

High Touch Surfaces*	Other Surfaces
○ Horizontal work surfaces, tables, counters, or carts ○ Chair seats, arms, and backs ○ Keyboards/keypads, mouse, RF scanner, touch screen monitors or tablets ○ Telephones and other communication devices ○ Light switches, door handles or hands- free activator ○ Sink surfaces, drain, and faucet ○ Gowning bench and garb storage handles ○ Pass through handles	○ Exterior of PECs include the pre-filter grills ○ Legs, underside of horizontal surfaces, and feet/wheels of work surfaces, tables, counters, carts, chairs, or benches ○ Trash bins and hazardous waste disposal containers ○ Doorframes, window ledges, and other irregular surfaces

- Cleaning, disinfecting, and the application of a sporicidal agent does not take place while active compounding is occurring.
- Perform cleaning from cleanest to dirtiest areas (e.g. ISO 5, ISO 7, and then ISO 8 areas).
- For all sites, clean and disinfect as needed after spills and when surface contamination (e.g., splashes) is known or suspected.
- Replace all garb that has become visibly soiled or when the integrity is compromised (e.g., becomes moist or wet due to splashing of cleaning agents and/or perspiration) after cleaning and prior to resuming compounding duties; at a minimum, repeat hand hygiene and replace sterile gloves before returning to compounding.

5.6 Refer to USP <800> and related policies for decontamination steps if hazardous drugs are used.

See Appendix A: Cleaning Agents and Procedures for Non-HD and HD sterile compounding.

5.7 Remedial Cleaning for Out of Specification Conditions

- As directed by the Designated Person or designee, perform and document remedial cleaning on an as needed basis. Remedial cleaning ranges from cleaning and disinfection to application of a sporicidal disinfectant to triple cleaning effected compounding areas.
  - A **triple clean** consists of two separate and distinct applications of an approved one-step disinfectant cleaner (allowing for full wet contact time between applications) followed by a separate application of an approved sporicidal disinfectant; remove cleaning agent residue with sIPA.
- At a minimum, document purpose, date, and cleaning agent(s) used when conducting remedial cleaning. Ensure remedial cleaning documentation is retained and readily retrievable.

5.8 Selection and Use of Cleaning Agents

- Select and use cleaning and disinfecting agents with careful consideration of compatibilities, effectiveness, and user safety including, but not limited to, antimicrobial activity, inactivation by organic matter, residue, shelf life, preparation requirements of the agent, and suitability for surfaces being disinfected.
- Use of ready-to-use and one-step disinfectant cleaner solutions is preferred over those requiring dilution or separate cleaning and disinfection steps.
- Clean and disinfect sterile cleaning agent containers prior to introduction into the ISO 5 environment.
- Sterile cleaning and disinfecting supplies (e.g., closed containers of sterile wipers, bottles of 70% sterile IPA) can be used for up to 15 days once opened. Permanently and legibly write or label the expiration date on all cleaning supplies.
- Store opened packages of sterile wipes inside of the PEC; if removed from a PEC once opened, they are no longer considered sterile and can only be used in ISO Class 7 and 8 areas. Disinfect sterile cleaning solution bottles stored outside of a PEC prior to introduction and use inside of the PEC with sIPA.
- Use sterile cleaning and disinfecting agents in all classified areas including PECs and SECs.

5.9 Selection and Use of Cleaning Supplies and Tools

- Use sterile cleaning supplies and tools inside a PEC whenever possible; clean and disinfect prior to use (e.g., tool handles and holders).
- Dedicate and do not remove reusable cleaning tools (e.g. mop frames and handles) to specific classified areas or segregated compounding areas.
  - Use either dedicated mop frames in buffer and ante rooms or use the mop in the buffer room before use in the ante-area.
  - Dedicated mops and cleaning tools are used in hazardous areas.
  - Dispose of cleaning tools in a method that minimizes the chance of dispersing contaminants in the air.

- Cleaning and disinfecting supplies such as wipers, sponges, pads, and mop heads are made of low lint materials and, whenever possible are disposable.
  - Disposable cleaning supplies are discarded after use.

- Reusable cleaning tools are made of cleanable materials that are nonporous (excluding wood) are are cleaned and disinfected before and after each use.

5.10 Documentation of Cleaning

- Document all cleaning, disinfecting, and application of sporicidal disinfectants on cleaning log or electronically after completion of the task by the personnel performing the work. Detailed cleaning records are retained and readily accessible.

  See Appendix B: EVS cleaning log for Main IV room
  See Appendix C: EVS cleaning log for Infusion Center

6. REFERENCES

6.1 United States Pharmacopeial Convention, Inc. <797> Pharmaceutical Compounding-Sterile Preparations. 2022 version.

6.2 United States Pharmacopeial Convention, Inc. <800> Handling Hazardous Drugs in Health care Settings. 2019 version.

1. © 2022 Pharmacy OneSource, Inc. Accessed July 2023 https://aspnet.pharmacyonesource.com/Simplifi/references.

2. California Code of Regulation, Title 16, Article 4.5, Section 1736.9 (b)

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RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER, COMMUNITY HEALTH CENTERS, and HOSPITAL BASED CLINICS

Appendix A- CLEANING AGENTS AND PROCEDURES FOR NON-HD AND HD STERILE COMPOUNDING

NON-HD	HD
CLEANING AND DISINFECTING	DEACTIVATION/DECONTAMINATION, CLEANING AND DISINFECTING
Use correct designated cleaning and disinfecting solution -Cleaning and disinfecting agent: PREemptRTU, TB1-3300™ Sterile Disinfectant, -Disinfecting agent: sIPA, Sterile Pre-Saturated Wipper -Sporicidal agent: PeridoxRTU (3 Minutes), PeridoxRTU® 32 OZ Sterile (3 Minutes)	Use correct designated deactivating/decontaminating, cleaning, and disinfecting solution -Deactivation, decontamination: PeridoxRTU, PeridoxRTU® 32 OZ Sterile -Cleaning and disinfection: PeridoxRTU, PeridoxRTU® 32 OZ Sterile -Disinfecting: sIPA, Sterile Pre-Saturated Wipper -Sporicidal agent: PeridoxRTU (3 MINUTES), PeridoxRTU® 32 OZ Sterile (3 Minutes)
Document all cleaning activities.	Document all cleaning activities.
Use new wipes as needed throughout the cleaning process.	Use new wipes as needed throughout the cleaning process.
DAILY	
EVS -Use appropriate container and mop for type of surface to be cleaned (floor, work surface outside of PEC, etc.) - Mop floors using designated mop starting on the wall opposite the room entry door using even strokes toward the operator. -Move carts and rolling shelving to ensure that the entire floor surface is cleaned. - Clean all counters and easily cleanable work surfaces (i.e., the top of metro carts, top of stools). -Clean sink and all easily cleanable horizontal contact surfaces. -Empty trash.	**EVS** -Use appropriate container and mop for type of surface to be cleaned (floor, equipment outside of PEC, production bins, etc.) -Mop floors using designated mop starting on the wall opposite the room entry door using even strokes toward the operator. -Move carts and rolling shelving to ensure that the entire floor surface is cleaned. -Clean all counters and easily cleanable work surfaces (i.e., the top of metro carts, top of stools). -Clean sink and all easily cleanable horizontal contact surfaces. -Empty trash
Technician -At the beginning of each workday or shift, clean all ISO Class 5 devices and surfaces prior to compounding in the following order: walls, IV bars and work surface.	**Technician:** -At the beginning of each workday or shift, clean all ISO Class 5 devices and surfaces prior to compounding in the following order: walls, IV bars and work surface. -Remove visible particles, debris, or residue with an appropriate solution (e.g., *Sterile Water for Injection* or *Sterile Water for Irrigation*) using sterile, low-lint wipers.

-Remove visible particles, debris, or residue with an appropriate solution (e.g., *Sterile Water for Injection* or *Sterile Water for Irrigation*) using sterile, low-lint wipers. -Use a low-lint wiper, apply a TB1-3300™ Sterile Disinfectant to equipment and all interior surfaces of the PEC. -Use a sterile low-lint wiper, apply 70% sIPA to equipment and all interior surfaces in the PEC. -Allow the surface to dry completely before beginning compounding. -Remove all compounder components and clean all ISO Class 5 work areas as stated above at the end of each workday/shift.	- Deactivate/decontaminate hazardous drug before cleaning and disinfecting PEC with PeridoxRTU® 32 OZ Sterile. - Use a sterile low-lint wiper or lint free wipe soaked with 70% sIPA, to clean all equipment and all interior surface in the PEC. -Allows the surface to dry completely before compounding. -Remove all compounder components and cleans all ISO Class 5 work areas as stated above at the end of each workday/shift
WEEKLY (to at least Monthly) **Perform all daily cleaning activities in addition to weekly cleaning activities.**	
Apply sterile sporicidal agent (PeridoxRTU® 32 OZ Sterile) for 3 minutes on PECs, equipment inside, outside PECs, work surfaces outside PEC, floors, walls, doors, ceilings, storage shelving and bins. -Remove visible particles, debris, or residue with an appropriate solution (e.g., *Sterile Water for Injection* or *Sterile Water for Irrigation*) using sterile, low-lint wipers. - After cleaning and disinfecting, apply the sterile sporicidal agent using a low-lint wiper to all surfaces and the area underneath the work tray. - If the sporicidal agent is an EPA-registered (or equivalent) sterile one-step disinfectant sporicidal cleaner, separate cleaning and disinfecting steps are not required (e.g., PeridoxRTU® 32 OZ Sterile) - Ensure at least 3 minutes contact time. - Use a sterile pre-saturated IPA wiper to clean all interior surfaces, including underneath the work tray. - Allow the surface to dry completely before beginning compounding	Apply sterile sporicidal agent for 3 minutes on PECs, equipment inside, outside PECs, work surfaces outside PEC, floors, walls, doors, ceilings, storage shelving and bins. -Remove visible particles, debris, or residue with an appropriate solution (e.g., *Sterile Water for Injection* or *Sterile Water for Irrigation*) using sterile, low-lint wipers. - After cleaning and disinfecting apply the sporicidal agent using a sterile low-lint wiper to all surfaces and the area underneath the work tray. - If the sporicidal agent is an EPA-registered (or equivalent) sterile one-step disinfectant sporicidal cleaner, separate cleaning and disinfecting steps are not required (e.g., *PeridoxRTU*) - Ensure at least 3 minutes contact time. - Using a sterile pre-saturated IPA wiper to all interior surfaces, including underneath the work tray. - Allow the surface to dry completely before beginning compounding.
EVS: -Initiate and perform weekly cleaning on the designated day -Use appropriately container and mop for type of surface to be cleaned (floor, wall, door, door frame, equipment, etc.). -Buffer area: clean ceiling, followed by walls and ending with the floor. -Ante-area: clean ceiling and walls and ending with the floor. -Clean chairs, the interior and exterior of trash bins, as well as all other cleanable items.	**EVS**: -Initiate and perform weekly cleaning on the designated day. -Use appropriately container and mop for type of surface to be cleaned (floor, wall, ceiling, etc.). -Clean room: clean ceiling, followed by walls and ending with the floor -Outside area: clean ceiling, followed by walls and ending with the floor -Clean chairs, the interior and exterior of trash bins, as well as all other cleanable items. -Clean area carts beginning with the top and working down to the wheels.

-Clean area carts beginning with the top and working down to the wheels. Clean all vertical and horizontal surfaces including underside of shelves using a new wipe for each cart. - Wipe same cart surfaces using 70% sIPA to remove disinfectant residue. Allows carts to dry before replacing items on shelves. ****Use new wipes to clean the metal ledge trim above the floor in entire buffer and ante areas**	-Clean all vertical and horizontal surfaces including underside of shelves using a new wipe for each cart. -Wipe same cart surfaces using low-lint towels wetted with 70% sIPA to remove disinfectant residue. Allows carts to dry before replacing items on shelves. ****Use new wipes to clean the metal ledge trim above the floor in entire buffer and ante areas**
Technician: -Clean all bins/ storage containers removing the contents and using lint-free cloth soaked with the designated germicidal detergent, cleans the inside surface of the containers first followed by the exterior of the containers. Allows containers to dry. -Wipe same bins/storage containers with sterile 70% IPA on a lint-free towel to remove disinfectant residue and allows them to dry before replacing. - Clean Main IV room Pass-Through refrigerator: all interior surfaces and external handles (Double Door Refrigerator)	**Technician**: -Clean all bins/ storage containers removing the contents and using low lint or prewetted cloth soaked with the designated deactivating/decontaminating agents, then cleaning and disinfecting agent, clean the inside surface of the containers first followed by the exterior of the containers. Allows containers to dry. - Wipe same bins/storage containers with sterile 70% IPA on a link-free towel to remove disinfectant residue and allows them to dry before replacing.

Appendix B: RUHS -Medical Center -EVS Cleaning Log- MAIN IV ROOM
Month: _____Year_____

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
EVS staff Initial																															
Cleaning agent used DAILY	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Cleaning agent used WEEKLY																															

P: PREemptRTU

D: Peridox RTU - **Write 'D' in the 'Cleaning Agent Used Weekly' Section box above**

Week 1: Date_____ Staff: _____ Week 2: Date_____ Staff: _____ Week 3: Date_____ Staff: _____

Week 4: Date_____ Staff: _____ Week 5: Date_____ Staff: _____

- Cleaning and disinfecting agent: PREemptRTU (P)
- Disinfecting agent: 70% sIPA
- Sporicidal agent: PeridoxRTU (3 MIN)

- Daily Cleaning: Clean floor, all counters, easily cleanable work surfaces, sink and empty trash
- Weekly Cleaning: Clean ceiling, walls, floor, all counters, easily cleanable work surfaces, sink and empty trash

*Cleaning must be performed from the cleanest area to dirtiest e.g. first clean equipment in ISO Class 7 then clean equipment in ISO Class 8 area.
Buffer area: clean ceiling, followed by walls and ending with the floor.
Ante-area: clean ceiling and walls and ending with the floor.
Clean chairs and benches beginning from the top and working down, back, arm rests, underneath chair, legs, then wheels
Clean all vertical and horizontal surfaces, racks and shelves, tables, carts beginning from top working down underside surfaces, legs, then wheels using a new wipe for each cart.
- Clean High Touch and other surfaces: light switches, door handles or hands- free activators, sink surfaces, drain, and faucet, gowning bench, garb storage handles, double door refrigerator pass through handles, exterior of PECs include pre-filter grills, waste disposal containers, doorframes, window ledges, gown hooks, and other irregular surfaces.
- Remove trash then clean interior and exterior of trash bins, as well as all other cleanable items.

****Use new wipes to clean the metal ledge trim above the floor in entire buffer and ante areas****

Appendix C: RUHS -Medical Center -EVS Cleaning Log- Infusion Center

Month: _____ Year_____

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
EVS staff Initial																															
Cleaning agent used DAILY	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D
Cleaning agent used WEEKLY																															

P: PREemptRTU

D: Peridox RTU - **Please indicate and write 'D' in the 'Cleaning Agent Used Weekly' Section box above**

Week 1: Date_____ Staff: _____ Week 2: Date_____ Staff: _____ Week 3: Date_____ Staff: _____

Week 4: Date_____ Staff: _____ Week 5: Date_____ Staff: _____

Only use cleaning agents provided by Pharmacy Department:

Non-Hazardous:	**Hazardous:**
Cleaning and disinfecting agent: PREemptRTU (P) Disinfecting: 70% sIPA Sporicidal agent: Peridox RTU (3 min)	Deactivation, Decontamination: PeridoxRTU Cleaning and Disinfection: PeridoxRTU Disinfecting: 70% sIPA Sporicidal agent: Peridox RTU (3 min)

- Daily Cleaning- Use PREemptRTU **(P)**: exterior Non-HD hood, PeridoxRTU **(D)**: exterior HD hood - Clean floor, all counters, easily cleanable work surfaces, sink and empty trash.

- **Weekly Cleaning** – Use PeridoxRTU (D) for both exterior Non-HD hood and exterior HD hood – Clean ceiling, walls, floor, all counters, easily cleanable work surfaces, sink and empty trash.

- Cleaning must be performed from the cleanest area to dirtiest e.g. first clean equipment in clean room then equipment in outside area.

Clean room: clean ceiling, followed by walls and ending with the floor.

Outside area: clean ceiling and walls then floor.

****Use new wipes to clean the metal ledge trim above the floor in entire buffer and ante areas****

- Clean chairs and benches beginning from the top and working down, back, arm rests, underneath chair, legs, then wheels
- Clean all vertical and horizontal surfaces, shelves, tables, carts beginning from top working down underside surfaces, legs, then wheels using a new wipe for each cart.
- Clean High Touch and other surfaces: light switches, door handles or hands- free activators, sink surfaces, drain, and faucet, gowning bench, garb storage handles, exterior of PECs include pre-filter grills, , waste disposal containers, doorframes, window ledges, gown hooks, and other irregular surfaces
- Remove trash then clean interior and exterior of trash bins, as well as all other cleanable items.

RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
HOUSEWIDE

	Document No: 876	Page 1 of 10
Title: Management of Patients with Personal Insulin Pumps and/or Continuous Glucose Monitors during Hospitalization	**Effective Date:** 10/21/2025	☐ **RUHS – Community Health Centers** ☐ **RUHS – Hospital Based Clinics** ☒ **RUHS – Medical Center** ☐ **Departmental**
Approved By: Jennifer Cruikshank CEO/ Hospital Director		☐ **Policy** ☐ **Procedure** ☒ **Guideline**

1. SCOPE

1.1 This guideline applies to all patients over the age of 2 years, at the Riverside University Health System- Medical Center with self-administration of insulin via established insulin pump and/or continuous glucose monitor (CGM) excluding Hospital-Based Clinics and Arlington Campus.

2. DEFINITIONS

2.1 **Automated Insulin Delivery Insulin Pump** system is interfaced with CGM, which alters basal insulin delivery in response to trajectories and absolute concentrations of interstitial glucose. Importantly, patients will still need to bolus for carbohydrate intake and may need to administer correction dose of insulin.

2.2 **Basal Dose**: A continuous delivery of insulin via a self-administering insulin pump. This is the amount of insulin the patient requires to maintain a normal metabolic state when fasting. Rapid/short acting insulin is used.

2.3 **Bolus Dose:** Dose of insulin given at mealtimes and/or for correction/sliding scale coverage. Rapid/short acting insulin is used.

2.4 **Caregiver:** Parent or legal guardian who provides care for the patient at home.

2.5 **Continuous Glucose Monitors/ Sensor (CGM)** systems use a small "sensor" inserted subcutaneously to continuously measure glucose levels in interstitial fluid. Results from the sensor are transmitted to a "receiver" device (which at times can be a smart phone), which displays real-time glucose levels and glycemic trends.

2.6 **Inpatient Diabetes Team:** Including but not limited to an endocrinologist, physician assistant, nurse practitioner, diabetes team coordinator and diabetes nurse educators.

2.7 **Continuous Subcutaneous Insulin Infusion (CSII) / Insulin Pump:** An external continuous infusion device used to deliver a constant infusion of rapid-acting insulin (pre-set basal insulin rates) and patient-delivered pre-meal boluses and correction boluses of insulin to manage glycemic control.

2.8 **Infusion Site**: Site at which the tip of the catheter is inserted into the subcutaneous tissue.

2.9 **Point of Care Testing/ POCT**: (also called "finger-stick," "accu-check," "blood sugar check.") A bedside test done by using a hospital approved (multi-patient) glucometer.

2.10 **Primary Physician Team:** Physicians assigned to patient's medical care management.

3. GUIDELINES

3.1 The admitting provider evaluates if the patient or identified caregiver (significant other (SO), caregiver) is capable of self-management of the insulin pump and/or CGM system.

3.2 The patient's insulin pump settings (i.e., basal-bolus settings) may require adjustment during hospitalization to prevent, or at least minimize, hyper- and hypoglycemia, including but limited to:

a. Stress of illness, infection, surgery

b. Alterations in carbohydrate intake

c. Enteral or parenteral nutrition

d. Administration of medications that may alter glycemic control (e.g., steroids, pressors, octreotide, etc.)

3.3 Adjustments to the insulin pump settings are ordered by the provider or endocrinologist.

3.4 The patient/caregiver maintains and adjusts the settings for his/her insulin pump per provider or endocrinologist order.

3.5 If surgery is planned, the medical team and the patient will collaborate on the use of the insulin pump and/or CGM in perioperative period.

3.6 CGM is not FDA-approved to guide inpatient hospital therapy. However, when the CGM is alarming, the patient agrees to inform hospital staff and utilize only hospital approved glucometers for therapeutic intervention and clinical documentation in the electronic medical record (EMR).

4. PROCEDURE

Continuous Subcutaneous Insulin Infusion (CSII / Insulin) Pump

4.1 The provider will verify that the patient wishes to maintain control of their medical condition by continuing use of his/her insulin pump during the hospital stay and is able to participate in self-care.

4.2 The provider will confirm the patient's (or caregiver's) ability to manage the insulin pump including:

a. Fully alert and oriented to person, place, and time.

b. Manual dexterity to manage insulin pump and infusion set changes.

c. Visual acuity sufficient to properly read the pump screens and device buttons.

d. Ready access to patient's insulin pump supplies, provided by the patient or family/SO from home.

e. A signed agreement from the patient or caregiver for insulin pump management during admission. The signed form is to be placed in the patient's medical record and a copy given to the patient.

4.3 The provider will assess for potential contraindications to insulin pump management including:

a. Patient/caregiver unable to manage insulin pump due to change in patient's cognition, impaired level of consciousness, manual dexterity or visual limitations.

b. Behavioral/self-harm concerns (not an absolute contraindication; psychiatrist to determine).

c. Major psychiatric disturbance (not an absolute contraindication; provider to determine).

d. Lack of patient/caregiver–provided insulin pump supplies.

e. Medical conditions, such as DKA / HHS, critical illness.

f. Insulin pump malfunction.

g. Other reasons as determined by provider.

4.4 The provider will explain to the patient that the health care team reserves the right to remove the pump from the patient at any time during their stay if it is assessed that the patient is no longer able to manage his/her own care.

4.5 The provider will make an alternative insulin replacement plan (Basal-Bolus-Correction insulin regimen or insulin infusion order) and allow removal of the insulin pump from the patient in the event the insulin pump is discontinued.

4.6 Nurse to confirm patient-supplied insulin pump supplies are available to support pump use throughout the hospital stay as the hospital does NOT stock these supplies for insulin pumps. There should be enough supplies for scheduled changes and at least one unscheduled site change. These are to be kept at the patient's bedside.

4.7 Patient supplied insulin will not be used while hospitalized. The Provider can order a vial to be verified and supplied by the Pharmacy. Patient-supplied insulin may be used during hospitalization if authorized by the Provider, and Department of Pharmacy to verify the insulin.

4.8 Any patient-supplied insulin for personal insulin pump use during hospitalization must first be ordered by the provider, then verified and dispensed by a pharmacist. Approval for a non-formulary process will be dependent upon:

a. medical necessity AND

b. when the use of formulary alternatives is inappropriate for the specific patient AND

c. no significant interactions between the patient supplied insulin with other medications AND

d. the patient has the means to obtain and continue the patient supplied insulin while inpatient if needed, and on an outpatient basis.

4.9 Nursing will verify that a provider order exists in the patient's medical record for use of insulin pump in the hospital setting. The order must contain the following:

a. To leave insulin pump in place and continue current basal rates and other settings.

b. Manufacturer of insulin pump.

c. Generic and Brand name of insulin used in the pump as well as concentration.

d. Basal rate settings including hourly doses with start and stop time.

e. Bolus dose parameters for mealtime and correction insulin for off-target glucose readings.

f. For hybrid closed-loop (HCL) insulin pump systems only, an indication that the insulin pump is capable of "automated delivery mode" for basal insulin alterations and/or auto-boluses.

g. Target blood glucose ranges.

h. Hospital POC glucose testing with associated Hypoglycemia Management Orders.

i. Infusion site change at least every 72 hours.

   i. Infusion site may be changed sooner if inflammation, tenderness, redness, swelling, bleeding of site or blood glucose results greater that 250mg/dL for 2 consecutive readings at least 2 hours apart.

   ii. Point of care blood glucose testing one hour after infusion site change to assess insulin delivery /absorption.

j. Removal of insulin pump before radiological procedures unless the device manufacturer provides information supporting safe use. If the device cannot be temporarily stopped, see Appendix B for additional information for evaluation of risks and benefits.

k. Diet order for consistent carbohydrate.

l. Consultations as applicable per delivery network:

   i. Endocrinology

   ii. Diabetes Team RN

4.10 Nurse will document the presence of the insulin pump as well as the date of the last infusion set and site change on admission.

4.11 Nurse will communicate to the patient the POC glucose each time it's performed. Nurse will document in the MAR all patient-administered mealtime bolus and correction doses in real time, which will include the time of administration and the units of insulin given.

4.12 Nurse will assess and document the location and appearance of the infusion site for signs of inflammation or infection once a shift.

4.13 Nurse will notify the provider if:

a. Blood glucose targets are not consistently maintained.

b. Any concerns with patient's ability to self-manage their insulin pump.

c. Patient is unable to change infusion set due to lack of supplies or otherwise unable.

4.14 Provider to notify Radiology Department if patient is scheduled for any radiological procedure involving x-ray/fluoroscopy, CT scanning or MRI that the patient utilizes an insulin pump. See Appendix B for additional information.

a. Provider should order to remove the insulin pump prior to these radiological procedures.

   i. For imaging time less than an hour, the insulin pump may be temporarily disconnected from the patient with no alternate insulin therapy provided.

   ii. For imaging time greater than an hour the provider should consider ordering an alternate form of insulin therapy.

b. The insulin pump must be kept outside of the room where the diagnostic imaging procedure is being performed.

c. Infusion sets that contain a metal cannula must be removed by the patient prior to MRI.

4.15 If insulin pump is discontinued due to patient/caregiver inability to self-manage, unsupported Insulin, or other critical medical condition the following must occur:

a. Alternate insulin therapy must be immediately ordered (SC or infusion) and initiated.

b. Insulin pump must be disconnected from the patient.

c. Insulin pump will be either secured by staff per individual facility policy or sent home with a designated family member/SO.

Continuous Glucose Monitoring (CGM) System

4.16 The provider will confirm the patient's (or identified SO, Caregiver) ability and understanding for use of CGM in the hospital setting including:

a. Fully alert and oriented to person, place, and time.

b. Treatment decisions will be based on hospital point of care blood glucose meter results and not CGM values as CGM is not FDA approved for inpatient glycemic monitoring or management.

c. CGM results are for patient's own information only.

d. Manual dexterity to change sensor and calibrate as necessary.

e. Results from hospital POCT glucose may be used for CGM calibration (as indicated by manufacturer.)

f. A signed agreement from the patient/caregiver for CGM monitoring during admission. The signed form is to be placed in the patient's medical record and a copy given to the patient.

4.17 Nurse to confirm patient-supplied CGM supplies are available to support CGM use during admission as the hospital does NOT stock these supplies.

4.18 Nurse to assess CGM insertion site every shift and document site assessment in flowsheet in EMR.

4.19 Provider to notify Radiology Department (if/when scheduled for radiological procedures) that the patient is wearing a CGM. CGM manufacturers indicate that CGM must be removed by patient prior to CT scanning or MRI, and device should not be exposed to X-rays. See Appendix B for additional information.

4.20 Consultations as applicable per delivery network:

a. Endocrinology

b. Diabetes Team RN

4.21 If CGM must be removed because patient is undergoing diagnostic procedures and/or runs out of necessary supplies:

a. Sensor & transmitter must be physically removed from the patient.

b. CGM transmitter and receiver will remain with patient belongings or sent home with designated family member/SO.

Automated Insulin Delivery Insulin Infusion Pump

4.22 Automatic Mode (algorithm-regulated basal rates) is not appropriate in all clinical situations. Therefore, the provider will confirm the patient's ability to manage the insulin pump and the patient will agree to suspend the pairing of the insulin pump and CGM. The insulin pump will be set to "Manual Mode" and remain independent from the CGM during admission. This must be indicated in the Insulin Pump Order Set. Refer to section 3.6 and 4.9 (f.) above.

a. The insulin pump and CGM will be managed as independent equipment and in accordance with section 4 where applicable.

4.23 Examples of inappropriate use of automatic mode on admission include, but are not limited to:

a. High-dose steroid therapy

b. DKA, HHS or critical illness

c. Patient without sensor supplies available.

d. Any sensor issues or malfunctions

e. At the discretion of the provider

5. REFERENCES

5.1 American Diabetes Association (January 2025). Standards of Medical Care in Diabetes – 2025. The Journal of Clinical and Applied Research and Education, 48 (Supplement 1). Retrieved January 2025, from https://diabetesjournals.org/care/issue/48/Supplement_1

5.2 Draznin, B. MD, PhD (2016) Managing Diabetes and Hyperglycemia in the Hospital Setting: A clinician's Guide. Alexandria, VA: American Diabetes Association.

5.3 The Joint Commission Certification Disease Specific Manual, Comprehensive Certification Manual for Disease Specific Care Including Advanced Programs for DSC Certification

5.4 Riverside University Health System-Medical Center. (May 2025). *Drug Formulary and Non-Formulary Process*. (HW Policy 842).

5.5 Riverside University Health System-Medical Center (August 2023) *Patient's Personal Home Medication.* (HW 857)

6. ATTACHMENTS

6.1 Attachment A: Continuation of Patient Insulin Pump / CGM Use Agreement Form in the Hospital (Form #6)

6.2 Attachment B: Considerations on Insulin Pump / CGM

Document History:

Prior Release Dates: 8/6/18, 8/17/21, 6/18/2025, 6/18/2024	**Retire Date:** N/A
Document Owner: Diabetes Coordinator	**Replaces Policy:** N/A

Date Reviewed	**Reviewed By:**	**Revisions Made Y/N**	**Revision Description**
06/2/2025	Laura Macias, Diabetes Coordinator	Y	Updates to References, 4.7, 4.8, and 4.22 to align with new Insulin Pump Order Set and Medication Reconciliation Form
7/17/2025	Nursing P&P	N	
08/04/2025	P&T	N	
9/2/2025	PAC	N	Consent Calendar
10/9/2025	MEC	N	

Attachment 6.1

I, _____, am requesting to use my personal insulin pump and/or continuous glucose monitor (CGM) during my hospitalization. I understand that for my safety during this hospital stay, I must agree to each of the following conditions to use my insulin pump and/or CGM. If I feel that if I cannot agree to these conditions, I will need to discontinue the use of my insulin pump and/or CGM. If my insulin pump and/or CGM are discontinued, the medical care team will treat my diabetes with insulin injections.
Please read and initial each statement:

During my hospital stay:

1) _____ I will only use the basal infusion delivery method on my insulin pump, as prescribed.
If applicable, bolus and correction insulin **WILL NOT** be given through my pump.
Bolus and correction insulin may be given through subcutaneous injections by the nurse, based on the doctor/ endocrinologist order.

2) _____ I will review my insulin basal and/ or bolus rate(s) with my admitting nurse. I agree NOT to change the basal and/ or bolus settings by myself. I will make changes to my basal and/ or bolus settings with the Diabetes Team nurse supervision, when ordered from the doctor/ endocrinologist.

3) _____Any bolus or correction insulin dose I receive must be based on a reading from the hospital glucometer only. I agree to temporarily disrupt pairing of my insulin pump and CGM and enter the blood glucose results from the hospital approved glucometer into my insulin pump during my hospital admission. I will not use any other glucometer to measure my blood sugars.

4) _____The hospital glucometer blood glucose results (not my CGM) will be used to determine diabetes management during my hospital stay.

5) _____ It is my responsibility to provide all pump and/ or CGM supplies during my stay. The hospital will supply an insulin vial for my pump refill.

6) _____ I will report signs and symptoms of low blood sugar to my nurse.

7) _____ I will report any insulin pump and/or CGM problems to my nurse.

8) _____ My insulin pump and/or CGM will be discontinued if I cannot care for it myself for any reason or if deemed necessary by my primary care physician/ Diabetes Team. (Examples may include confusion or medications that may make me sleepy or less alert)

9) _____ My insulin pump and/or CGM may be discontinued for certain tests and procedures, including surgery, MRI, CT scans or X-rays.

10) _____ I have received training prior to my admission in the use of my personal insulin pump and/ or CGM. I understand assistance is available to me during my admission if I have difficulty restoring communication between my CGM and insulin pump before discharge.

11) _____ I will change the insulin pump insertion site and tubing at least every 72 hours in the presence of my bedside nurse or the Diabetes Team nurse. I will routinely check for kinked tubing or skin irritation.

12) _____ I will change the CGM insertion site at least every 7-14 days (based on model) in the presence of my bedside nurse or the Diabetes Team nurse. I will routinely check for skin irritation.

The manufacture and model of my insulin pump is: _____

The manufacture and model of my CGM is: _____

The doctor coordinating my diabetes care or my Certified Diabetes Care and Education Specialist:

Name: _____ Tel no.:_____

My signature indicates that I have read this agreement, understood it completely, and agree to be bound by its terms.

Patient/Legal Guardian (Print Name): _____

Patient's/Legal Guardian Signature: _____

Date: _____ Time: _____

Attachment 6.2

The insulin pump or CGM system are to be removed before any radiological procedure involving x-ray/fluoroscopy, CT scanning or MRI unless the device manufacturer provides information supporting safe use. If the device cannot be temporarily stopped, see the below for additional information for evaluation of risks and benefits.

Insulin Pump and CGM Systems during X-ray exams, CT scans and MRI

- The presence of an insulin pump or glucose monitor should not preclude medically indicated CT or X-ray imaging but device should be removed whenever possible.
- The probability that x-ray or CT scan irradiation causes a device malfunction, and an adverse event is extremely low and even less if the device is not in the region that is being imaged.
- No known adverse events during CT imaging of insulin pumps or glucose monitors are reported. Other electronic devices such as cardiac implantable electronic devices and neurostimulators have reported possible adverse events but there is little evidence that CT irradiation was the direct cause of these events.
- Standard MRI safety precautions should be followed prior to MRI. Many insulin pumps and glucose monitors are deemed MRI UNSAFE and MUST be removed as there is high potential for device damage and potential patient injury.

Recommendations for Physicians ordering CT scan or X-ray:

Advise patient/caregiver to remove device during exam. If the device can't be removed or patient/caregiver refuses, assess if imaging will cover the area over the insulin pump or CGM system and see if system can be safely moved, attached to a different location, turned off and for how long, or if alternative diabetes management is required.

Recommendations for Radiologists and X-ray/CT Radiologic Technologists:

1. Advise patient/caregiver to remove device and store it in control room during imaging procedure.
2. If patient/caregiver can't remove or refuses to remove device:
    a. Advise patient/caregiver that device damage is possible and ensure they understand potential risk of damage and agree to proceed with imaging.
    b. If system is tethered to a cannula and can be safely moved, work with the patient/caregiver to move it to avoid direct exposure to the primary x-ray beam.
    c. If the system cannot be safely moved, ask the patient/caregiver if it can be safely turned off during the exam. Set a timer and remind the patient/caregiver to turn their pump back on afterwards and to check it for proper function.
    d. If possible, avoid including the insulin pump or CGM system inside the scanning range. Confirm the required anatomic range with the supervising radiologist.
3. For CT and X-ray procedures where the medical device is located within the programmed scan range and cannot be safely moved or turned off, minimize direct x- ray exposure to the electronics of the infusion pump by following standard ALARA (as low as reasonably achievable) protocol.

Imaging exams that would involve scanning directly over the electronics of the device for more than several seconds (i.e. CT perfusion exams or interventional procedures such as CT fluoroscopy), require additional care and should not be performed unless the device can be safely relocated or turned off. If moving or turning the insulin pump or CGM system off is not possible and the scan is urgently needed, careful monitoring of the device during and after the procedure is required.