CMO REPORT

FROM THE DESK OF
Amy Tucker, MD, MHCM, Chief Medical Officer, Upstate University Hospital
Associate Dean for Clinical Affairs, College of Medicine

UPSTATE UNIVERSITY HOSPITAL

November 20, 2023

Welcome, Dr. Courtney Maxey-Jones!

By Jennifer Carey

Please welcome Dr. Courtney Maxey-Jones, originally from central New York and is triple board certified in anesthesiology, perioperative TEE, and critical care.

Dr. Maxey-Jones spent the last 6 years as a cardiac anesthesiologist and intensivist as well as medical director for ECMO and mechanical support at St. Joseph's. Her area of interest is cardiogenic shock and acute mechanical circulatory support as well as perioperative care of cardiac surgical patients.

Dr. Maxey- Jones went to medical school at NYU, completed her residency at Massachusetts General Hospital, and fellowship at University of Cincinnati. Dr. Maxey-Jones will be covering the CCU on a rotational basis.

Please contact Dr. Maxey-Jones at 315-271-0077 with any patient-related issues. Please feel free to share this email with other faculty and staff as appropriate.

Welcome, Dr. Mohamed Ismail Aly!

By Dr. Robert Cooney

It is my pleasure to share with you that Dr. Mohamed Ismail Aly, MB Bch (Hon), MSc MRCS (Ed), MD (Res), FRCSEd (Plast), a burn and plastic surgeon, joined the SUNY Upstate Department of Surgery as an Assistant Professor this month.

Dr. Aly obtained his medical degree from Ain Shams University Medical School in Cairo, Egypt. He performed his surgical training in General Surgery and Plastic Surgery in Scotland and England. He is certified as a Fellow in the Royal College of Surgeons in Plastic Surgery and completed a critical care and burn surgery fellowship at the University of Texas Medical Branch in 2016. He was a practicing burn and plastic surgeon in the UK for six years. He comes to us after completing a fellowship in microvascular breast reconstruction breast and lymphatic surgery at the Beth Israel Deaconess Medical Center in Boston, MA.

Please join me in welcoming Dr. Mohamed Aly to Upstate. His practice will include acute burns, reconstructive burn surgery, general reconstructive microsurgery with emphasis on breast and lymphatic reconstruction.
We are excited to have him here and look forward to growing plastic surgery services here to meet the reconstructive needs of our patients in the CNY region.

Congratulations, Dr. Satish Krishnamurthy!

By Dr. Matthew Glidden

Dr. Satish Krishnamurthy will serve as the new Quality Director for the Department of Neurosurgery effective September 28, 2023. Please join me in congratulating him. We would like to thank Dr. Walter Hall for his dedicated service as the Quality Director for the last four years.

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Pyrophosphate Scintigraphy (PYP) Scan for Diagnosis of Cardiac Amyloidosis

By Cynthia Taub, MD

I am pleased to inform you that the Upstate Nuclear Medicine Division has worked tirelessly to set up processes for the performance of Technetium-99m pyrophosphate scintigraphy (PYP) scans. Outpatient scans will likely start in the mid-November. IMT/EPIC is working on the inpatient process.

The order has been built in EPIC and the exam name is *NM CARDIAC AMYLOID IMAGING 78803*
The IMG code for ordering providers is: IMG1051184

Background information: Cardiac transthyretin amyloidosis (ATTR) is an underdiagnosed disease that can lead to significant morbidity and mortality for patients. In recent years, technetium-99m pyrophosphate scintigraphy (PYP) imaging has become a **standard of care** diagnostic tool to help clinicians identify this disease. With newly emerging therapies for ATTR cardiomyopathy, it is critical to identify patients who are eligible for therapy as early as possible.

American Society of Nuclear Cardiology's recommendations for patient selection:

- Individuals with heart failure and unexplained increase in left ventricular wall thickness.
- African Americans over the age of 60 years with heart failure, unexplained or with increased left ventricular wall thickness (>12 mm).
- Individuals over the age of 60 years with unexplained heart failure with preserved ejection fraction.
- Individuals, especially elderly males, with unexplained neuropathy, bilateral carpal tunnel syndrome or atrial arrhythmias in the absence of usual risk factors, and signs/symptoms of heart failure.
- Evaluation of cardiac involvement in individuals with known or suspected familial amyloidosis.
- Diagnosis of cardiac ATTR amyloidosis in individuals with CMR or echocardiography consistent with cardiac amyloidosis.
- Patients with suspected cardiac ATTR amyloidosis and contraindications to CMR such as renal insufficiency or an implantable cardiac device

Please discuss with cardiology when there is high clinical suspicion, and review echocardiographic images, before ordering PYP scan. A multidisciplinary team based educational program is being developed to provide more guidance for the diagnosis and treatment of ATTR/AL amyloidosis.

Congratulations on the terrific teamwork in making this happen! This is the first offering for our patients in the city of Syracuse.

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Alzheimer Therapeutics Program Committee

By the Upstate Neurodegenerative Disorders Center and Neurological Institute

Lecanemab (Leqembi), an anti-amyloid antibody, has received full approval for the treatment of Alzheimer's disease in patients with mild cognitive impairment or mild dementia, opening a new era on Alzheimer's treatment. Accurate diagnosis and staging, consideration of co-morbidities, access, safe administration, and monitoring are crucial for the proper use of this and future treatment options.

We have formed a multidisciplinary internal panel to evaluate newly approved and upcoming anti-amyloid therapeutics on a clinical, economic, and operational basis with a mission to implement them in our clinical practice safely and effectively. The committee includes clinicians, neuropsychologists, nurses, and administrators. We expect to begin administration of the FDA approved Lecanemab at the Neurological Institute Infusion Center in early winter.

Our committee is looking forward to working with the Upstate and Central New York Medical Community on this important mission.

Tinatin Chabrashvili, MD, PhD
Chair

Dragos Mihaila, MD
Co-Chair

Kalliopi Petropoulou, MD
Co-Chair

Revised Infiltration and Extravasation Policy & Procedures

By Anne Snowdon

The Infiltration and Extravasation policy and procedures were updated to follow Infusion Therapy Standards of Practice for care and management post event. As part of this quality improvement initiative, a treatment chart was created in collaboration with the pharmacy and identified providers, to ensure that a clear outline of provider involvement in management is also included in the procedure. Order sets have been created to also assist. Go live is 12/12/2023. Please see attached education. Please note that there are two presentations, one for adults and one for Pediatrics since they have different assessment techniques for nursing. For questions, please reach out to Anne Snowdon at snowdona@upstate.edu or 315-464-6690.

Clinical Documentation Improvement (CDI) Tip for November 2023

By the CDI Physician Advisory Group

Mortality Risk and Optimization: To assist in meeting organizational quality goals, the CDI Team provides a service to bridge the gap between clinical and ICD-10 coding language, ensuring accurate representations of severity of illness and mortality risk in patients at Upstate. Please review the attached CDI Tip of the Month for Adult and Pediatrics for common documentation opportunities that exist within your patient populations. Thank you for your current efforts in documentation improvement! Please contact the CDI Hotline at CDI@upstate.edu with questions.

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SUNY Upstate Medical University - Complimentary Membership of the Healthcare Financial Management Association (HFMA)

By Sarah Spindler

We're excited to announce that SUNY Upstate Medical University is now an enterprise member organization of the Healthcare Financial Management Association (HFMA). As a result, complimentary HFMA membership is available to you and your colleagues across our organization for the next three years. By partnering with HFMA, our organization wants to ensure you have continuous access to the association's industry-leading content, accredited education, and career development resources such as:

Exclusive HFMA Member Content

- Receive HFMA's monthly flagship print publication, *hfm* magazine
- Download talent management and career development tools
- View industry regulatory updates, special reports, comment letters, and fact sheets
- Access several HFMA online Newsletters and online HFMA Community

HFMA Member Education

- Attend any live HFMA webinar covering timely industry topics (also available on demand)
- Get unlimited access to on-demand training courseware
- Understand how the industry works with the HFMA Business of Health Care® Online Program
- Learn engagement tools with HFMA's Patient Financial Communications Training Program
- Earn a certification and become credentialed as a leader in the industry

HFMA Local Chapter Membership

- Make strong connections with others in your local geographic area facing similar demands

Want to Learn More? Visit HFMA Website

You should have received an email confirmation from memberservices@hfma.org with your registration information and additional information on how to access the exclusive resources, education, and local HFMA Chapter networking opportunities available with your membership.

If you're already an HFMA member, you will not need to re-join. Your existing individual membership record will be converted by HFMA to an enterprise membership, so you can immediately access the additional benefits available to you as an Enterprise member.

Need Help? Contact HFMA's Enterprise Member Services Team at **esmember@hfma.org**.
We hope you'll take advantage of everything your HFMA Enterprise Membership can offer you.

Please also feel free to reach out to Sarah Spindler, your local HFMA Empire NY contact.

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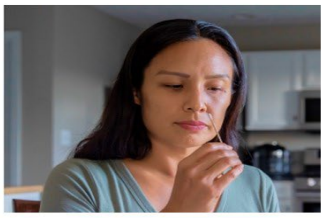
FREE At-Home COVID Tests

Get **4 FREE** At-Home COVID-19 Tests at:

COVID.gov - Free at-home COVID-19 tests

Or By Calling: 1-800-232-0233



Exceptional Teacher Recipient for November 2023

By Dr. Lawrence Chin

Mashaal Dhir, MD, an associate professor of Surgery at Upstate Medical University, is the November 2023 recipient of the Exceptional Moments in Teaching recognition.

The Norton College of Medicine recognizes exceptional teachers with the monthly "Exceptional Moments in Teaching" program. Honorees are selected via student assessments from courses and clerkships. Recognized teachers – including medical faculty, residents, nurses and other educators – are those who challenge students and provide an exceptional learning experience.

Comments from Dr. Dhir's students:

"Dr. Dhir taught me about the agony that we might face one day when the disease is beyond our capability to treat. Dr. Dhir was performing a Whipple procedure on a patient, and as he continued, he realized that he may have to abort the operation due to the advanced disease process and prior treatments that made the operation technically difficult, if not impossible. As I watched, I could see the agony in Dr. Dhir as he weighed his choices. He explained the pending decision to the resident and myself, asked colleagues in the OR for a second opinion, and tried his best to continue the operation. But the choice became clear, even to me as a medical student. I think what made Dr. Dhir an exceptional teacher was that it would have been very easy to lose composure, and not explain to the trainees in detail about his thought process. And yet even with this immense pressure, Dr. Dhir maintained his professionalism, and expressed humility at this terrible disease that he could not treat. Being right there as he made this impossible decision, perhaps I will be able to emulate Dr. Dhir if I am ever faced with such a choice."

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"Dr. Dhir is an all-around great person to be around. He provided lots of excellent teaching points. Super friendly with patients even when giving challenging and sad diagnoses. Skilled surgeon and always very nice to students. I appreciate Dr. Dhir and his hard work for all his patients."

Coffee with the CMO

Please join me for "Coffee with the CMO" on Tuesday, November 28, at 7:30 am, in Classroom A&B (CC0256) at Upstate Community Hospital. The format is Q&A. Coffee and breakfast snacks will be provided. Mark your calendar and email Darcy DiBiase, Primary Care Liaison, at DiBiaseD@upstate.edu to reserve your spot!

Welcome New Clinicians!

Please join me in offering a warm welcome to the following new clinicians at Upstate Medical University:

ANESTHESIOLOGY
Courtney Maxey-Jones, MD

EMERGENCY MEDICINE
Jeremy Joslin, MD
Lindsey Permell, NP

GERIATRICS
Jacey Pudney, MD

MEDICINE
Rachel Carnicelli, NP
Muhammad Habib, MBBS
Jill Hopkins, NP
Arlee Logan, NP
Mallory Masiello, PA

NEUROLOGY
Mariana Ames, NP
Jade Cassalia, NP
Kathryn Hess, NP
Kaitlyn LaChance, NP
Abby LaClair, PA
Mina Michael, MD

NEUROLOGY (cont.)
Nathanial Stahl, PA

OB/GYN
Nicholas Baranco, MD
Miriam Bernstein, MD
Megan Riddick, NP

ORTHOPEDICS
Eric Bellinger, MD

OTOLARYNGOLOGY
Juan Grafton, NP

PEDIATRICS
Athena D'Amico, NP
Olivia Meyers, PA
Heather Ross, MD
Michele Spring, MD

PHYSICAL MEDICINE & REHAB
Jordan Adler, MD
Veronica Reyor, DO

PSYCHIATRY
Janelle Allanson, NP
Andrew Carroll, MSW
Annemarie Cristino, LCSW
Sandrene Forbes, NP
Lisa Harrell-Delamater, PhD
Shelyagh Kennedy, NP
Joseph Strayhorn, MD

RADIOLOGY
Dmitriy Bakrukov, MD
Bamidele Otemuyiwa, MD
Melissa Protigal, MD
James Sherwood, MD
Carl Tack, MD

SURGERY
Matthew Garner, MD
Mohamed Ismail Ali, MBBCH
Gregory Marakovits, PA
Olivia McEachron, NP
Nicole Voudren, NP
Yifan Zheng, MD

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Outstanding Physician Comments

Comments from grateful patients receiving care on the units and clinics at Upstate:

Adult Hematology Oncology: **Dr. Merima Ramovic-Zobic** and **Dr. Anna Shapiro** showed genuine care and interest in my condition and in using their knowledge and expertise and working with me to keep me informed and answer questions or concerns I've had (and might still have) regarding my condition and care. Thank you **Dr. Mashaal Dhir**, **Dr. Tomas Mujo**, **Dr. Rahul Seth**, and **Dr. Thomas VanderMeer**. All gave me longevity! **Dr. Rahul Seth** is stellar in leading this outstanding team. He leads through his undeniable dedication to patients, commitment to his mission, and positive example of wonderful ethics. Thank you. I'm blessed to be supported by him and his staff. **Dr. Rahul Seth** is a standout in his field. I feel secure that my future is in excellent hands throughout this process and have the utmost confidence in the level of care I am receiving. I can't even begin to express my gratitude and appreciation of his expertise and the quality of care I have received since I have begun this phase of my treatment and it far exceeds any expectations I had and is second to none! Thank you! Excellent care from **Dr. Stephen Graziano** and **Dr. Michael Archer**.

Community Campus – Virtual: **Dr. Walter Hall** answered all my questions as he always does and explained my medical condition thoroughly.

Dental Service: **Dr. Janice Bach** is so amazing at what she does. I feel so connected to her and **Dr. Steven Blatt**. She has listened to me and gotten to know me and my family and my life. Every visit I make has been an excellent one. She is truly an amazing human being.

Community Campus ED: **Dr. Thomas Lavoie** – outstanding and caring. **Dr. Rose Solomon** was the doctor who treated me. She was compassionate, truly cared about me and my reason for the visit. She was funny and took real pride in helping me get better. In today's world, empathy and compassion are rare to find and **Dr. Rose Solomon** treated me with empathy and compassion and not as an inconvenience in her day. I was very grateful she was the one who treated me.

Family Medicine: **Dr. Rahila Iftikhar** was attentive to my presence and concerns. **Dr. Rupali Singla** was very thorough and listened well. **Dr. Rupali Singla** is an excellent doctor!

Family Medicine at Community: **Dr. Kyrsten Wallace** – knowledgeable and sensitive. **Dr. Kyrsten Wallace** has always been very friendly and seems genuinely concerns for a patient's med situation, whatever it may be.

GYNONC MI: **Dr. W Douglas Bunn**, my hero, very down to earth, talks to you so you know how things are, surgery, chemo, all well explained and taken care of. Friendly as well, couldn't have been in better hands. All his staff are more than caring and pleasant also. **Dr. W Douglas Bunn** is great! **Dr. W Douglas Bunn** and all of the staff are excellent. **Dr. W Douglas Bunn** was very nice and made me feel less anxious about my situation. **Dr. Mary Cunningham** listened attentively to all I had to say.

HEMONC CC: **Dr. Seung Shin Hahn** – caring and informative. **Dr. Bernard Poiesz** is great. He is efficient, quick, and always explains things well.

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Joslin Center for Diabetes: **Dr. Jason Sloane** is awesome. I've been to 3 different endocrinologists and none of them measured up to **Dr. Jason Sloane.** **Dr. Jason Sloane** is a very caring doctor and listens to your concerns about regulating your diabetes. **Dr. Jason Sloane** answered all my questions and was a very good listener. He expressed concern for all my problems. He offered suggestions for care for the problems. He is very caring. **Dr. Jason Sloane** is very knowledgeable and has a wonderful rapport. He truly cares for his patients. **Dr. Jason Sloane** is the best doctor I have ever had. **Dr. Jason Sloane** is very caring, knowledgeable, and always listens to your concerns. He does his very best to address those concerns. You're very fortunate to have him on your team. He is definitely worth my travel time from Utica, New York. **Dr. Jason Sloane** is by far the most compassionate physician assisting me with medical needs. **Dr. Jason Sloane** is very empathetic to the challenges I face. He actively listens and offers viable choices.

Joslin Pediatric Center: **Dr. Nisha Patel** was great with us and our son. I was very impressed. Thank you so much for your kindness. **Dr. Nisha Patel** was amazing!

Multidisciplinary Programs Cancer Center: **Dr. Jason Wallen** provided a detailed description of the procedure that will take place for my condition and after care. **Dr. Thomas VanderMeer** did an excellent job in explaining to me and to my family exactly the "whats" and "whys" of my situation and the course that I would be looking at going forward. He answered all of our questions and did not seem to be in a hurry to end the visit. We all appreciated the time he gave us. All the staff that met with us were gracious, sincere, and informative. Thank you!

Neurology CC: **Dr. Victoria Titoff** was shocked and surprised when she called my home after she learned I was unhappy about the problems I was having obtaining the medication she had prescribed. She handled the problem personally.
Pediatric Multispecialty Clinic: **Dr. Zafer Soultan** is AMAZING!! Very caring and professional!!

Peds Neph, Rheum, Integrative Med: **Dr. Anjali Sura** was very thorough and very kind. Didn't make us feel rushed at all during the appointment.

Pulmonology Clinic: **Dr. Sumendra Joshi** listens to my issues and concerns. **Dr. Ahmed Shawkat** explained everything and was very helpful.

Rheumatology Clinic: **Dr. Jianghong Yu** is always very professional and listens to what I have to say. She is usually on time, and I don't have to wait very long. I'm very happy with her as my provider.

SUNY Upstate – Virtual: We can't say anything bad about **Dr. Gennady Bratslavsky**. The man is wonderful and goes above and beyond. **Dr. Anuradha Duleep** is very caring and takes her time asking questions and explaining things. **Dr. Anthony Feghali** – I would recommend him all the way. He explains everything so that you could understand and if there is something you can't he is patient with you and explains it in another way. **Dr. Oleg Shapiro** is direct and explains details so that I understand I feel very confident in him as a doctor.

Surgery – UH: **Dr. Anthony Feghali** was amazing throughout the entire process. A huge THANK YOU to him and his team for saving my life!! I will forever be thankful!!

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Surgery – UH LL022: I really like **Dr. Kristina Go** and value her opinion. **Dr. Michael Luca** was great! Spent required time and was very thorough.

UHCC – Neurology: **Dr. Sara Ali** – so good to me, doesn't just go to work, takes care of people and it shows in her mannerisms and how she treated me. Thank you! **Dr. Deborah Bradshaw's** answers were very impressive and responsive to my questions. Dr. Anuradha Duleep is an outstanding physician. She is the best doctor I have on my team. She is extremely empathetic and shows a high concern for her patient's needs. I would highly recommend her to my friends and family. I wish all my care providers were like **Dr. Anuradha Duleep**. **Dr. Shahram Izadyar** makes me very comfortable and reassures me regarding my neurological surgery, history, and future. **Dr. Shahram Izadyar** always impresses me! **Dr. Kimberly Laxton** was, in my opinion, a professional who was able to convey her knowledge of my situation in a manner that both my husband and myself easily understood. She listened to me and also asked questions of me that brought pertinent information to mind. She was reassuring in her assessment of my situation but also advised that I should have another test in a year for comparison. I have been to three other neurologists for my husband and **Dr. Kimberly Laxton** was by far the very, very best. **Dr. Kimberly Laxton** showed outstanding care and consideration. **Dr. Carlos Muniz** – attentive and concerned for my son's well-being. **Dr. Victoria Titoff** is always an absolute pleasure to see. I'm so glad that she allows me to ask questions, voice concerns, and participate actively in my epilepsy care. She is an absolute joy. Thank you so much.

University Cardiology: **Dr. Robert Carhart** does an outstanding job of training all who work with him. **Dr. Robert Carhart** was very thorough. **Dr. Hani Kozman** listens, thinks, and then responds. Easy to understand.

University Center for Vision Care: **Dr. Samuel Alpert** – thorough, professional, friendly, and concerned about my eye care. I appreciate this very much especially since my eye conditions require necessary regular follow ups. It is reassuring to have **Dr. Samuel Alpert** staying on top of my eye conditions! **Dr. Katherine Liegel** asked precise questions to help us to understand her problems. **Dr. Stephen Merriam** was very attentive and knowledgeable. **Dr. Stephen Merriam** is an outstanding medical professional. He epitomizes the professionalism we all strive for in our work. **Dr. Stephen Merriam** patiently listened to me and carefully addressed my problem. **Dr. Robert Swan** is one of the most caring physicians I have ever had contact with. He explains things thoroughly and doesn't make you feel rushed. I would absolutely recommend **Dr. Robert Swan** to friends and family.

University Geriatricians: **Dr. Andrea Berg** and staff are extremely kind and compassionate. We feel we are head with our concerns and concerns are addressed.

University Internists: **Dr. Tingyin Chee** was very nice and gave me very good assistance. **Dr. Kaushik Govindaraju** – exceptional! **Dr. Kaushik Govindaraju** is the BEST!! **Dr. Catherine White** got top ratings from me. **Dr. Catherine White** is considerate, respectful, and knowledgeable. I feel safe and well cared for by her. As a retired nurse who has worked with many physicians in my career, I am very impressed by **Dr. Catherine White**. She is kind, caring, considerate, and knowledgeable. She included me and my concerns in my follow up care needs.

University Pediatric and Adolescent Center: **Dr. Jessica Mayer** was fantastic. She spent a very long time listening to all our concerns and histories. Thank you! **Dr. Karen Teelin** treats us with respect and answered all our questions in terms we could understand.

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Upstate Brain & Spine Center: Thank you, **Dr. Timothy Beutler**, for what you did for me. **Dr. Timothy Beutler** is amazing, he addresses my every concern and goes over and beyond for my care plan. I'm very appreciative of him especially when he comes in and speaks to me directly about my care. He is a great doctor. **Dr. Ali Hazama** was very polite, explained things to my husband and I so we could understand, took his time, and was very thorough and caring. I have already recommended him to other people. **Dr. Satish Krishnamurthy** was patient, listening, thorough, and very kind.

Upstate Pediatrics: **Dr. Jaclyn Sisskind** is the best. She always actively listens and addresses our concerns. We are so thankful she is our pediatrician.

Vascular Surgery at Community: **Dr. Palma Shaw** gave me excellent care and concern. **Dr. Scott Surowiec** seemed to take a reasonable approach to the issue. **Dr. Scott Surowiec** walked downstairs to the scanning room with us – just very helpful overall.

11E: **Dr. Allyson Zakrzewski** and all of the physicians involved in her care did a great job.

11G: **Dr. Emil Azer** was wonderful with my son's care!

12E: **Dr. Olamide Ajagbe** was AMAZING! **Dr. Olamide Ajagbe** advocated for us to try the MRI 'milk drink' instead of with anesthesia and IT WORKED!! She was so kind and caring. Great doctor!

Have a safe and happy Thanksgiving holiday! We are grateful for all you do!

Best,
Amy

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CDI Tip of the Month – Adult Mortality Risk Adjustment

Mortality risk adjustment is most often based on conditions and circumstances present at hospital admission (POA). Conditions commonly affecting mortality risk adjustment:

DNR	Cannot be captured without DNR order placed in Epic and complete with co-signature (when required)
Coagulopathies	Consider **thrombotic disorders** (ie: primary or acquired hypercoagulability or hypercoagulable states) and **bleeding disorders** (ie: due to liver disease/failure, cancer, shock, trauma, hypoperfusion, etc). Please document when bleeding is enhanced or complicated by anticoagulant, antiplatelet, or antithrombotic medications.
Pulmonary Hypertension	Consider documenting when identified on Echo or CT, or presumed present due to chronic underlying conditions – OSA, COPD, Heart Failure, Class 3 Obesity
Thrombocytopenia	May be acute or chronic, consider documenting when monitoring labs and patient is, or is at risk for, bleeding due to low platelet counts (<150) and link to underlying cause, when known
Brain Edema & Brain Compression	'Midline shift', 'mass effect', and 'ventriculomegaly' are radiology findings and do not translate to ICD-10 codes.
Fluid & Electrolyte Disorders	Dehydration, hyper/hypovolemia, hyper/hyponatremia, hyper/hypokalemia, acute acidosis, alkalosis are common and heavily weighted diagnoses that contribute to mortality risk adjustment
Malnutrition, Cachexia & Failure to Thrive	Not required to be identified by a dietician and providers may utilize any diagnostic criteria. Document condition responsible as well as treatment provided and response to treatment.
Impaired Mobility & Chronic Fatigue	Consider when patients have acute or chronic conditions that are impairing function, they are getting PT/OT in hospital, recommended for or discharged to STR, new or baseline requirement of assistive ambulation devices. Relate to underlying cause, if known.
Hypoalbuminemia	Consider when serum albumin is below normal and not dilutional, related to acute or chronic medical conditions (ie: sepsis, heart failure, cancer, malnutrition, etc.)
Hyper/Hypocalcemia	Consider when serum or ionized calcium is high or low, related to acute or chronic medical conditions

Ensuring documentation is both present and complete for any of the above scenarios will help mitigate query volume and optimize mortality risk in all patients.

CDI@upstate.edu
November 2023

Adult Infiltration & Extravasation

"New" Treatment Chart

Policy CM E-05

GO LIVE 12/12/23

Victoria Casper, MSN, RN, CNML- Clinical Educator

New October 2023

Outcomes

Recognize

- Recognize risk factors associated with IV medication infiltrations

Identify

- Identify nursing actions for treatment of IV medication infiltration/extravasation following policy

Learn

- Learn to assess & document medication infiltration/extravasation utilizing appropriate scale based on patient age

Definitions

Phlebitis

Inflammation of the walls of the veins

Extravasation/Infiltration

Unintentional leakage of IV fluid out of blood vessel into surrounding tissue

Vesicant

Agent that has potential to cause blistering, severe tissue injury, or necrosis when extravasated/infiltrated

Irritant

Agent that causes phlebitis with or without inflammation, but does not cause tissue necrosis

Flare

Local, non-painful, possibly allergic reaction often accompanied by reddening along vein

Patient Infiltration Risk Factors

- Infants & elderly
- Obesity
- Altered mental status or sedated and unable to communicate the onset of pain
- Radiation therapy at IV site or repeated IV therapy
- Infusion of chemically irritating or vesicant medication
- Multiple venipunctures with difficult peripheral access
- Comorbidities-Peripheral Vascular Disease, Diabetes, Lupus, Raynaud's Disease
- Obstructed venous drainage following axillary surgery or radical mastectomy

Standard IV Assessment

1. **Continuous infusion** - Assess prior to infusion & at least every - one (1) hour after infusion begins

2. **Saline Lock**-every shift

**Pre-infusion assessments must be completed prior to the start of any infusion

Know what type of IV catheter was inserted in your patient?

Infiltration areas will vary based on type of catheter

Peripheral Catheters:

Typically, ≤ 3 inches

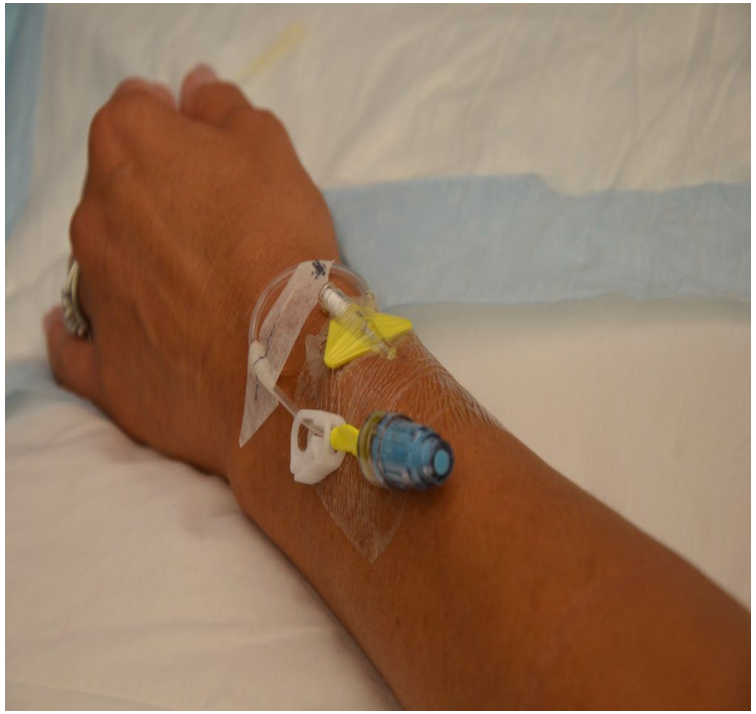
Extravasation/Infiltration will occur locally at the insertion site

Midline Catheters:

Typically, 3-8 inches in length and typically terminate at or near the axillary line.

Extravasation/Infiltration will occur near the axilla

Use Touch, Look, Compare
"TLC" Method for IV assessment



- Ask patient if any pain @ site
- Visualize site look for redness, skin discoloration, leaking fluid
- Assess site using touch, look, compare "TLC" – educate patient & family

TOUCH

TOUCH & VALIDATE SITE IS WARM,SOFT, DRY

LOOK

UNCOVER SITE & VISUALIZE

COMPARE

COMPARE SITE TO OTHER EXTREMIETY, CONFIRM SAME SIZE

MANAGEMENT OF INFILTRATION/ EXTRAVASATION

1. Immediately **STOP** the infusion
2. Attempt to aspirate for blood return/medication retrieval (except IV contrast) - **DO NOT FLUSH**
3. Determine etiology – chemical, mechanical, infectious, post infusion
4. **Do not remove CATHETER,** reference infiltration/extravasation management chart (policy CM E-05). Timing of removal will depend on plan of care/intervention
5. Assess area distal to vascular access device for capillary refill, sensation and motor function "CSM Checks"
6. IV catheter **must** be kept in place until treatment plan established. Consult pharmacy as needed.
7. If medication/pharmacological intervention **IS NOT** required per infiltration management chart, nurse may remove IV catheter
8. If medication/pharmacological intervention **IS** required per infiltration management chart, nurse will ensure medical provider is notified. **DO NOT** remove IV catheter

    *Provider orders medication required per infiltration management chart using order set

    *Nurse administers medication (Ideally administer within 1 hour of event)

10. Contact the provider to assess the patient to activate the established treatment plan for **known vesicant or extravasation grade level 3 or higher**
11. Measure and document infiltration/extravasation and add an LDA in EPIC.

Infiltration/Extravasation Management Treatment Chart "example"

Medication Extravasation Treatment Chart

Table 1: Vesicant Agents and Extravasation Management

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments	pH	mOsmol/L
Acyclovir **(Irritant at concentrations >7 mg/mL)**	Hyaluronidase	Hyaluronidase: May consider for refractory cases in addition to supportive management (Stefanos 2023). Intradermal or SUBQ: Inject a total of 1 mL (15 units/mL) as five separate 0.2 mL injections (using a tuberculin syringe) around the site of extravasation; if IV catheter remains in place, administer intravenously through the infiltrated catheter; may repeat in 30 to 60 minutes if no resolution (Fox 2017, Stefanos 2023).	Apply dry warm compresses (Stefanos 2023)	Irritant with vesicant-like properties	Alkaline agents	pH: 10.5 to 11.6 (reconstituted solution) pH: 10.85 to 11.5 (solution for injection)	7 mg/mL osmolality 278 mOsm/kg in D5W and 299 mOsm/kg in NS. 10 mg/mL D5W 316 mOsm/kg NS 342 mOsm/kg 5 mg/mL D5W 289 mOsm/kg NS 316 mOsm/kg

Click on link

NEW Management of Drug Extravasation CHART 20231019.xlsx

When can IV catheter be removed?

1. Pharmacologic intervention “antidote” is ordered by provider-

****Nurse administers antidote; IV catheter may be removed**

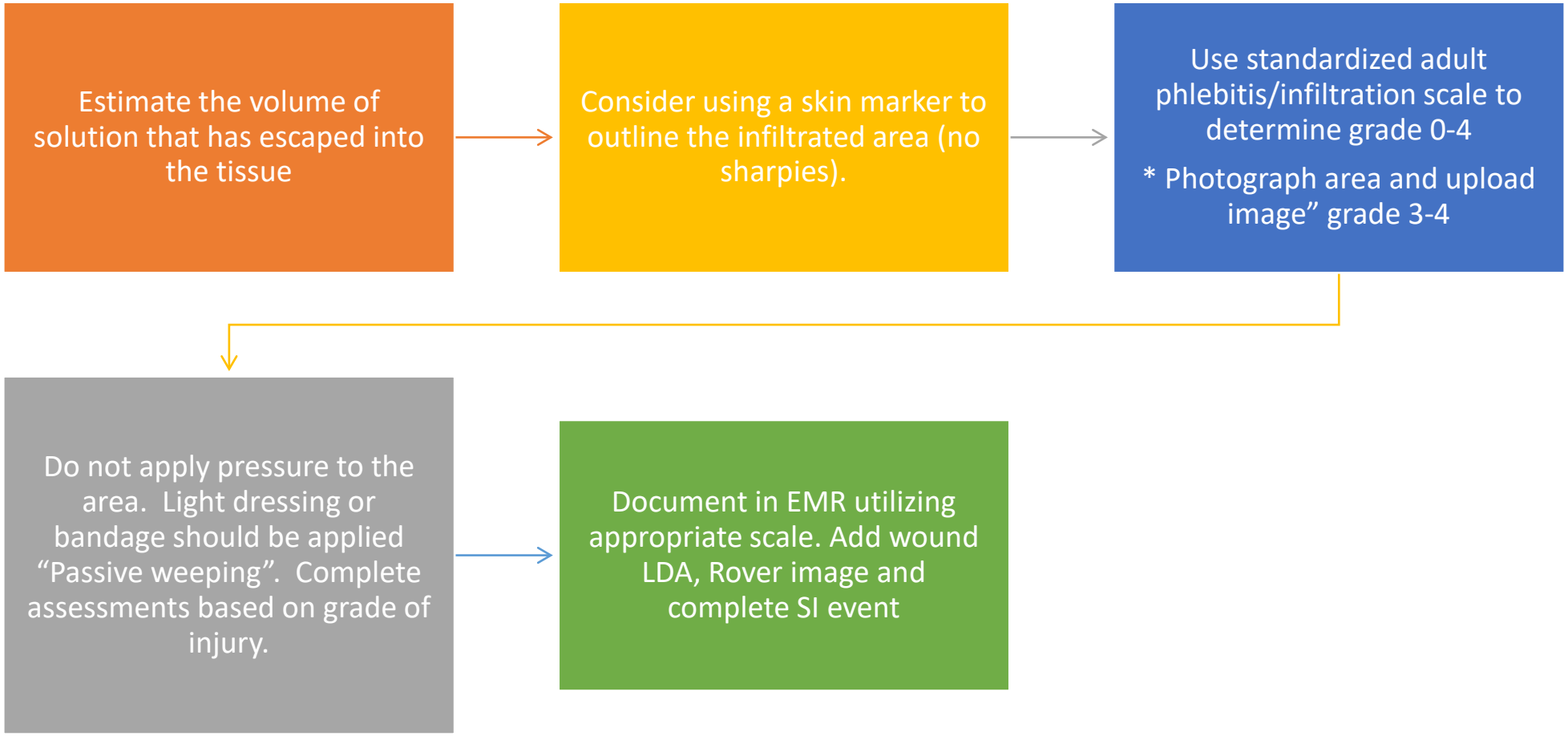
2. Pharmacologic intervention is not required-

****Remove IV catheter**

Site Management

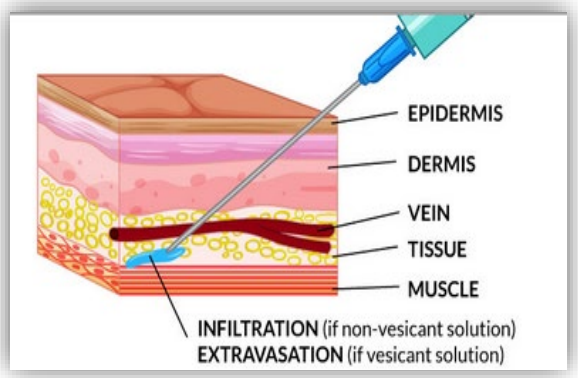
- Administer antidote per medical provider order based on infiltration/extravasation treatment chart - consult pharmacy as needed
- Remove IV catheter as appropriate. Allow passive weeping while applying light dressing or bandage to site. Avoid excessive pressure which can cause further damage
- Elevate limb when possible and complete CSM checks
- Follow orders for hot or cold compresses (Avoid wet compresses)
- Do not use affected limb for subsequent vascular access until resolved
- Consider analgesic support for pain
- Assess site based on infiltration grade 0-4 (refer to policy)
- Any signs of infection or complication notify provider
- Document in EMR & Create wound LDA
- SA Event should be completed

Measure the size of the infiltration/ extravasation



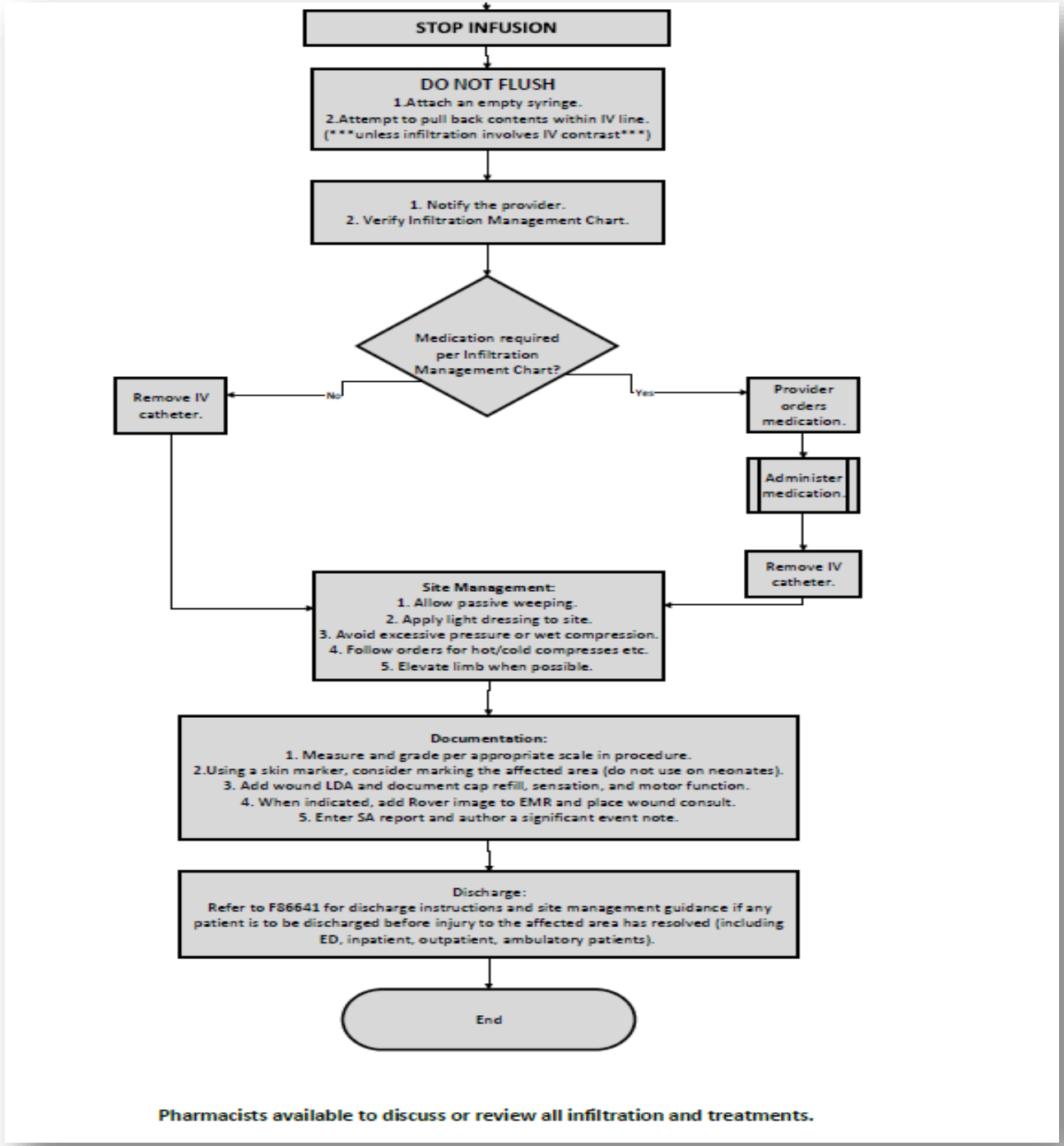
“Adult” Infiltration/Extravasation scale

Grade	Clinical Criteria	Action
0	• No symptoms= no infiltration	Monitor IV infuse using TLC (Touch, Look, Compare), Q1 hour if infusing or Q8 hours if saline lock
1	• Skin blanched, cool to touch, with or without pain • **Edema less than 1 inch in any direction**	Assess site Q4 hours until resolved
2	• Skin blanched, cool to touch, with or without pain • **Edema 1 to 6 inches in any direction**	Assess site Q4 hours until resolved
3	• Skin blanched, translucent, cool to touch • Mild to moderate pain • **Gross edema greater than 6 inches in any direction** • Normal/decreased perfusion, possible numbness	Assess site Q1 hour until Grade 2 then Q4 hours until resolved. Consider outlining the area using a skin marker to assess progression (NO sharpies) Photograph site and document in EMR Consider Burn or Wound Consult
4	• Skin blanched, translucent, skin is tight, leaking • Skin discolored, bruised and swollen • Moderate to severe pain • **Gross edema greater than 6 inches in any direction** • Deep pitting tissue edema, circulatory impairment • Infiltration of any amount of blood product, irritant, or vessicant	Assess site Q1 hour until Grade 2 then Q4 hours until resolved. Consider outlining the area using a skin marker to assess progression (NO sharpies) Photograph site and document in EMR Consider Burn or Wound Consult



Algorithm CM E-05

https://upstate.ellucid.com/documents/view/3707



Case Study #1:

A 55-year-old patient, admitted to hospital for treatment of endocarditis. Vancomycin 2 grams every 12 hours was ordered. Upon assessment during the infusion, the nurse notes pain, redness and swelling at IV site. What are next steps?

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments
Vancomycin	Hyaluronidase	Hyaluronidase: Intradermal or SUBQ: Inject a total of 1 to 1.7 mL (15 units/mL) as five separate 0.2 to 0.3 mL injections (using a 25-gauge needle) into area of extravasation at the leading edge in a clockwise manner (MacCara 1983; Reynolds 2014; Zenk 1981).	Stop infusion immediately and disconnect (leave needle/cannula in place); gently aspirate extravasated solution (do NOT flush the line); initiate hyaluronidase antidote; remove needle/cannula; apply dry cold compresses (Hurst 2004; Reynolds 2014); elevate extremity.	Vesicant; ensure proper needle or catheter placement prior to and during IV infusion. Avoid extravasation.	RISK-VESICANT. Elevate Extremity.Thermal compress recommendations Primary - Warm 13,50, Secondary - Cold 56

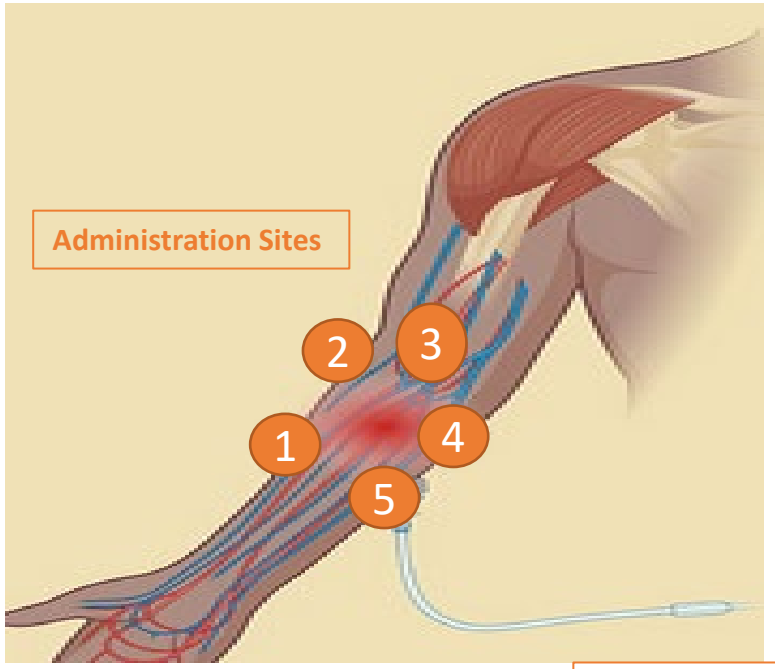
Follow medical provider orders

1. Stop infusion
2. Do **NOT** remove IV catheter
3. Do not flush line, attach empty syringe, attempt to aspirate fluid (except IV contrast)
4. Reference infiltration/extravasation management chart for antidote
5. Notify medical provider so orders can be placed in EPIC
6. Administer medication Hyaluronidase Intradermal or SQ. Consult pharmacy prn
7. Remove IV catheter
8. Elevate; Apply dry cold compresses
9. Complete neurovascular “CSM” checks
10. Monitor and document per policy
11. Enter SA event for tracking

How to administer hyaluronidase?

"Administer five small (0.2ml-0.3ml)subcutaneous injections around the extravasation site" -Lexi Comp

25-gauge 1 ml



Cleanse area with antiseptic and change needle with each injection

Do Not Remove IV catheter

Case Study #2:

A 40-year-old patient is admitted to hospital for treatment of advanced metastatic breast cancer. Doxorubicin infusions have been ordered. Upon assessment during the infusion, the nurse notes pain, redness and swelling at IV site. What are next steps?

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments
DOXOrubicin (Conventional)	Dexrazoxane or topical DMSO	Adults: Dexrazoxane 1,000 mg/m^2 (maximum dose: 2,000 mg) IV (administer in a large vein remote from site of extravasation) over 1 to 2 hours days 1 and 2, then 500 mg/m^2 (maximum dose: 1,000 mg) IV over 1 to 2 hours day 3; begin within 6 hours after extravasation (Mouridsen 2007; Pérez Fidalgo 2012). Note: Reduce dexrazoxane dose by 50% in patients with moderate to severe renal impairment (CrCl <40 mL/min). Pediatrics and Adults: DMSO: Apply topically to a region covering twice the affected area every 8 hours for 7 days; begin within 10 minutes of extravasation; do not cover with a dressing (Pérez Fidalgo 2012)	Apply dry cold compress for 20 minutes 4 times/day for 1 to 2 days (Pérez Fidalgo 2012). Withhold cooling for 15 minutes before and after dexrazoxane.	If using dexrazoxane, do not use DMSO. Administer dexrazoxane through a large vein remote from area of the extravasation.	RISK-VESICANT. Elevate Extremity.

Follow medical provider orders

1. Stop infusion
2. Do **NOT** remove IV catheter
3. Do not flush line, attach empty syringe, attempt to aspirate fluid (except IV contrast)
4. Reference infiltration/extravasation management chart for antidote
5. Notify medical provider so orders can be placed in EPIC
6. Administer medication Dexrazoxane IV or topical DMSO. Consult pharmacy prn
7. Remove IV catheter
8. Elevate; Apply dry cold compresses for 20 mins 4x/day 1-2 days
9. Complete neurovascular “CSM checks”
10. Monitor and document per policy
11. Enter SA event for tracking

Case Study #3:

An 85-year-old patient is admitted to hospital for treatment of congestive heart failure. A dobutamine infusion has been ordered to increase cardiac output. Upon assessment during the infusion, the nurse notes pain, redness and swelling at IV site. What are next steps?

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments
Dobutamine	Phentolamine	Phentolamine: May be considered for severe cases (eg, when local tissue concentration is high) in addition to supportive management. Dilute 5 to 10 mg in 10 to 20 mL NS and administer into extravasation site as soon as possible after extravasation; may readminister if patient remains symptomatic (Reynolds 2014) ***Alternatives to phentolamine (due to shortage):*** Nitroglycerin topical 2% ointment (based on limited data) Adults: Apply a 1-inch strip to the site of ischemia; may repeat every 8 hours as necessary (Reynolds 2014)	Apply dry warm compresses (Hurst 2004; Reynolds 2014)		Normal perfusion of the area may be seen within 10 minutes. Repeated injection may be necessary if hypoperfusion is still present or if vasoconstriction is extending to a greater area.

Follow medical provider orders

1. Stop infusion
2. Do **NOT** remove IV catheter
3. Do not flush line, attach empty syringe, attempt to aspirate fluid (except IV contrast)
4. Reference infiltration/extravasation management chart for antidote
5. Notify medical provider so orders can be placed in EPIC
6. Administer medication Phentolamine IV. Consult pharmacy prn
7. Remove IV catheter
8. Elevate; Apply dry warm compresses
9. Complete neurovascular “CSM checks”
10. Monitor and document per policy
11. Enter SA event for tracking

Documentation:
"Pre- Assessment IV site"

Nurses must document on the MAR, a pre-assessment of the IV site prior to all IV infusions

dextrose 5 % and 0.2 % NaCl 1,000 mL with potassium chloride 10 mEq infusion 50 mL/hr : Intravenous : Continuous

Order Information

Frequency: Continuous
Route: Intravenous
Ordered Infusion Rate: 50 mL/hr
Order Start Time: Today 10/20/23 at 1330
Order End Time: 11/19/23 at 1329
References: Lexi-Drugs
Linked Line: Peripheral Nerve Block Catheter 09/20/23 (This Admin)

Recent Actions
10/20
1330

Administration Details

Action	Date	Time	Comment
New Bag	10/20/2023	1333	

Route: Intravenous
Site:
Rate: 50 mL/hr

Mixture Components

Component	Type	Amount
dextrose 5 % and 0.2 % NaCl 5-0.2 % Soln	Base	1,000 mL
potassium chloride 2 MEQ/ML Soln	Additives	10 mEq

Pump Information

Associate Pump

Associated Flowsheet Rows

Time taken: 10/20/2023 1333 Responsible

If no new assessment is needed, check the box to link flowsh s to the previous assessment. Use Al

IV SIte Assessment

IV site within normal limits Yes No

Pre- assessment

Report Viewer

Administration Information

dextrose 5 % and 0.2 % NaCl 1,000 mL with potassium chloride 10 mEq infusion

Action	Reason	Dose/Rate	Route	Site	Linked Line	Action Time	Recorded Time
New Bag	N/A	50 mL/hr	Intravenous		Peripheral Nerve Block Catheter 09/20/23	10/20/23 1333	10/20/23 1334

Administering User: Matthew Pikarsky

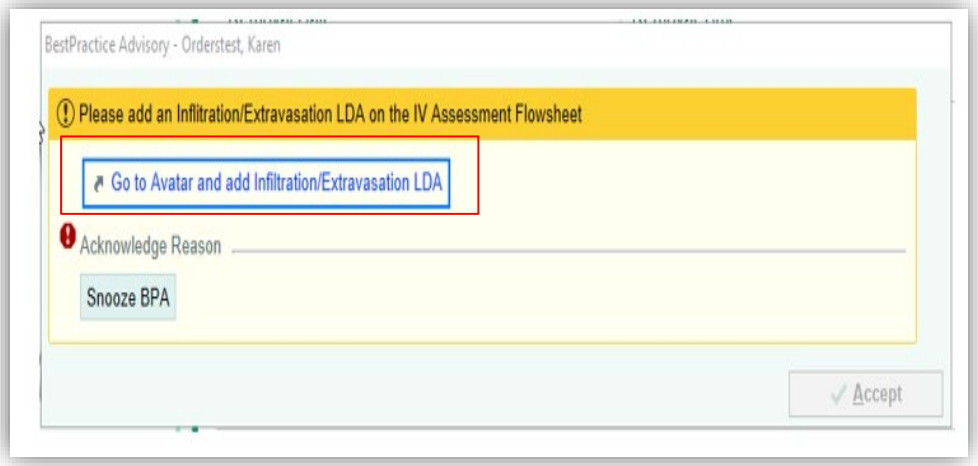
Associated Flowsheet Data

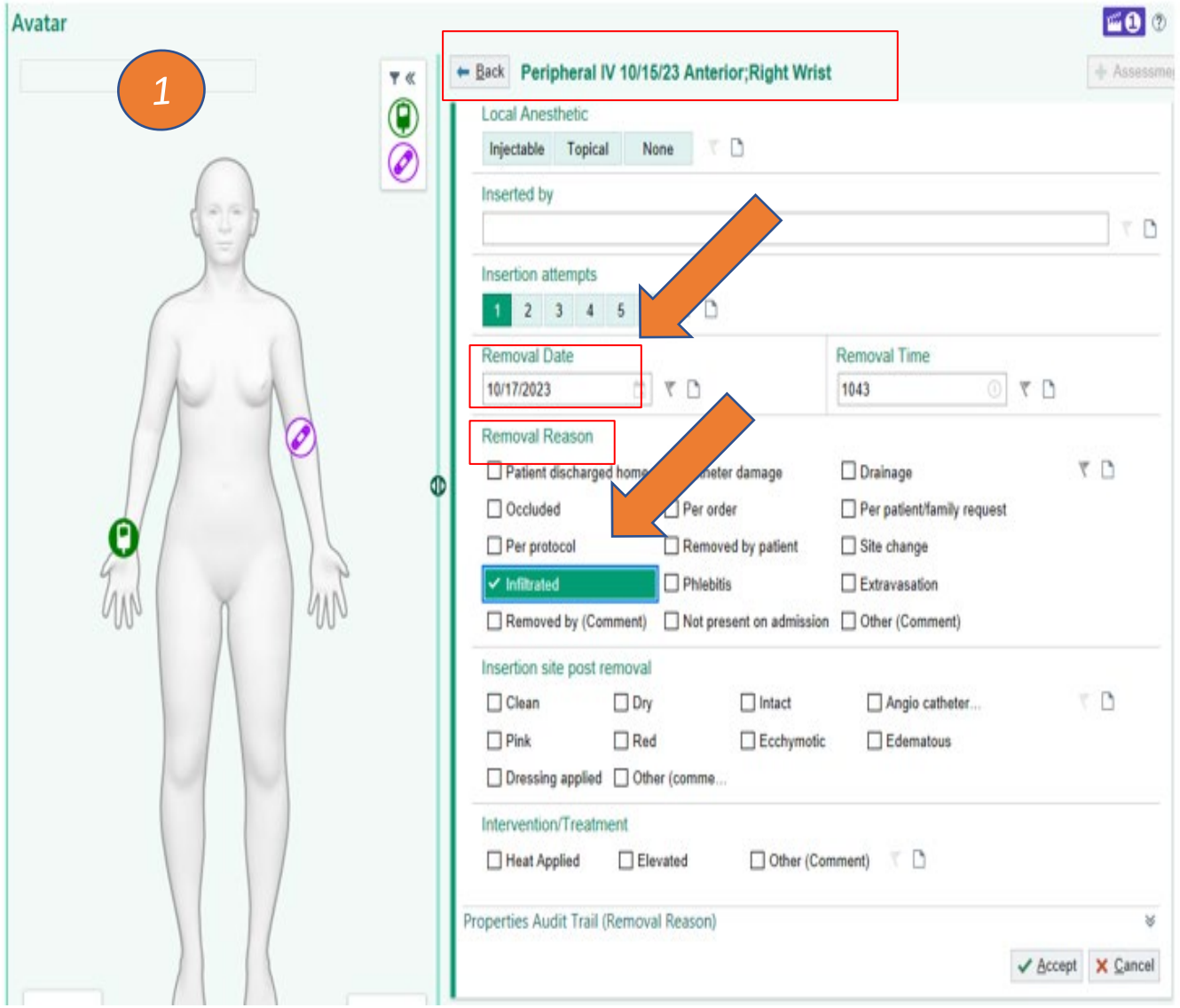
IV site within normal limits	Yes	10/20/23 1333

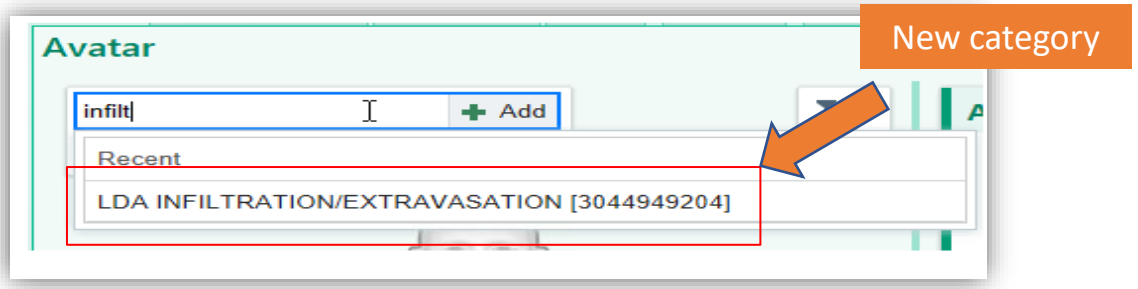
Documentation: Infiltration/Extravasation "Steps"

1. Remove infiltrated/extravasated line
   - BPA will fire to add LDA if infiltrate/extravasation chosen as reason for removal
2. Search Avatar for infiltration/extravasation screen
   - Add LDA and document properties
3. Complete initial LDA assessment
4. Complete adult assessments using grade 0-4 following appendix "A" for adults

"BPA"






Avatar
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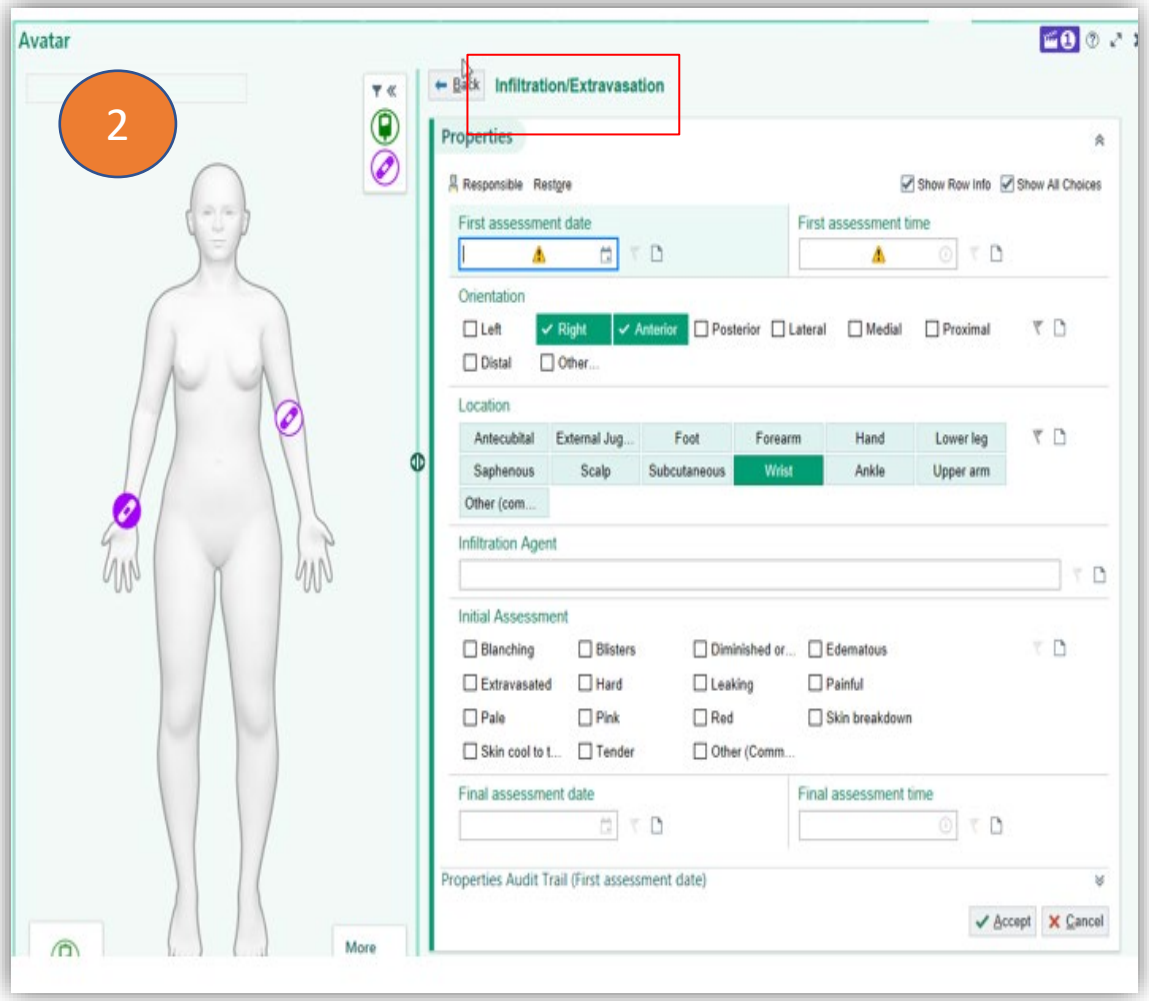
Add
Recent
LDA INFILTRATION/EXTRAVASATION [3044949204]
New category


2
Avatar
Back
Infiltration/Extravasation
Properties
Responsible
Restore
Show Row Info
Show All Choices
First assessment date
First assessment time
Orientation
Left
Right
Anterior
Posterior
Lateral
Medial
Proximal
Distal
Other...
Location
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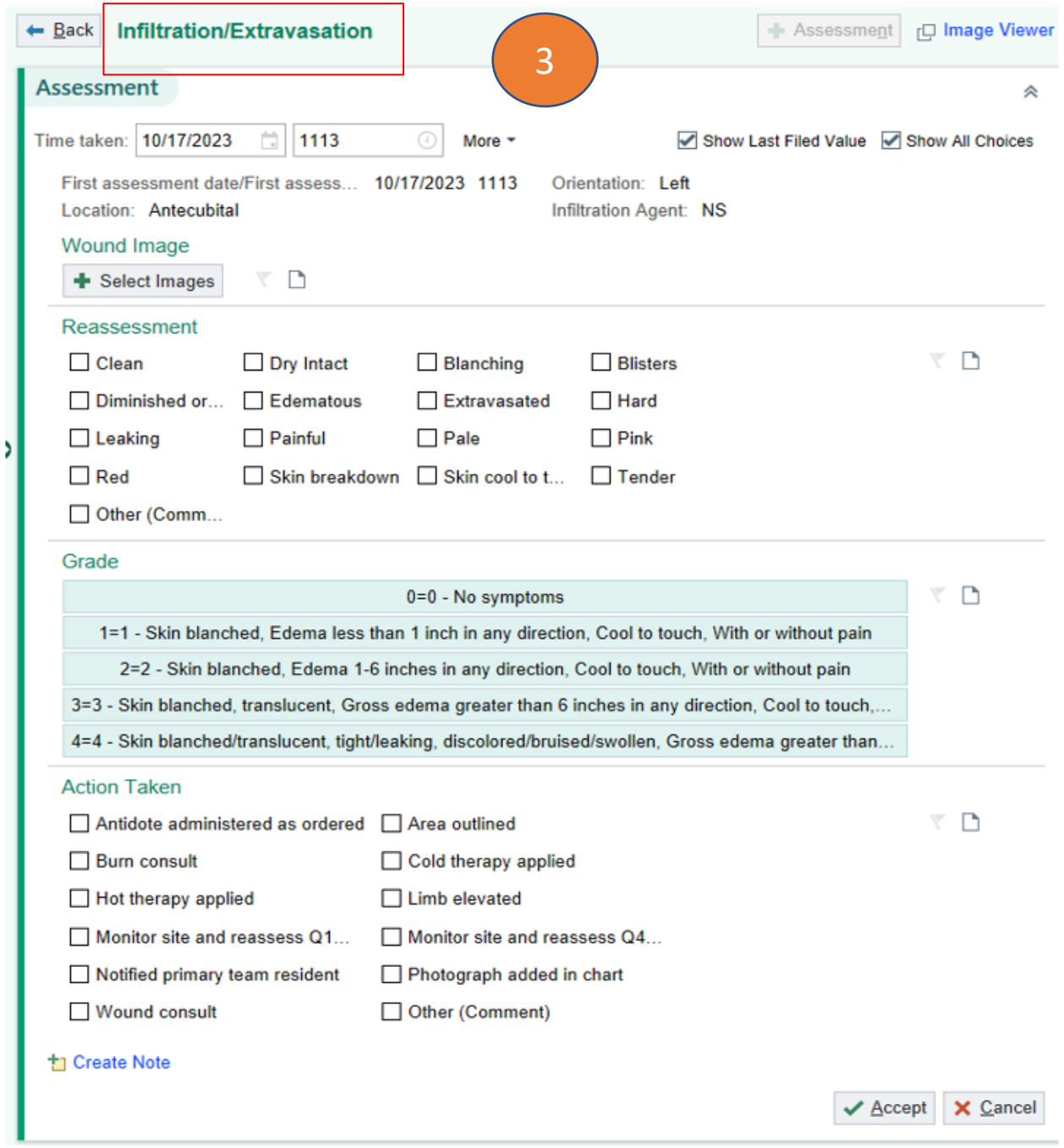
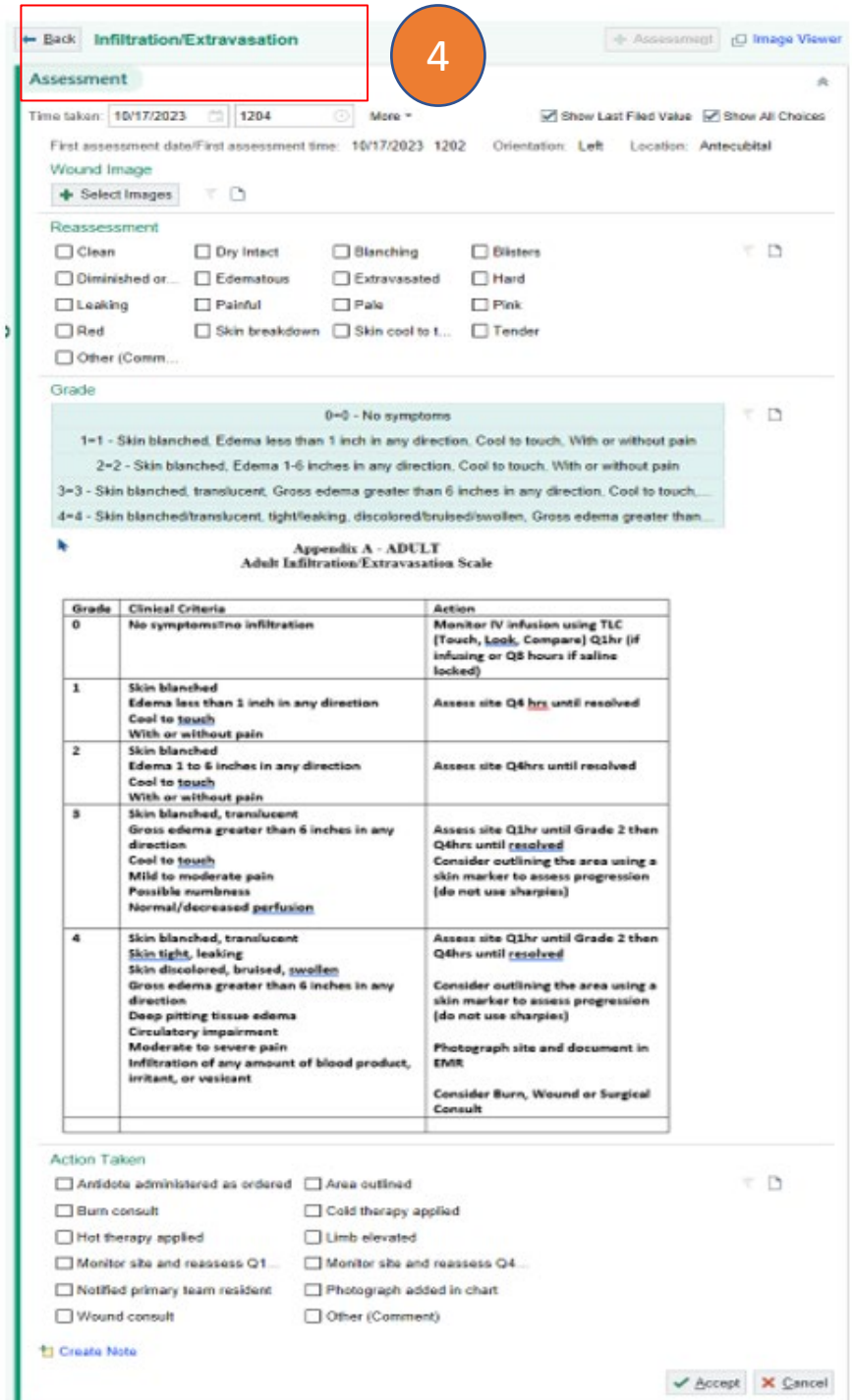
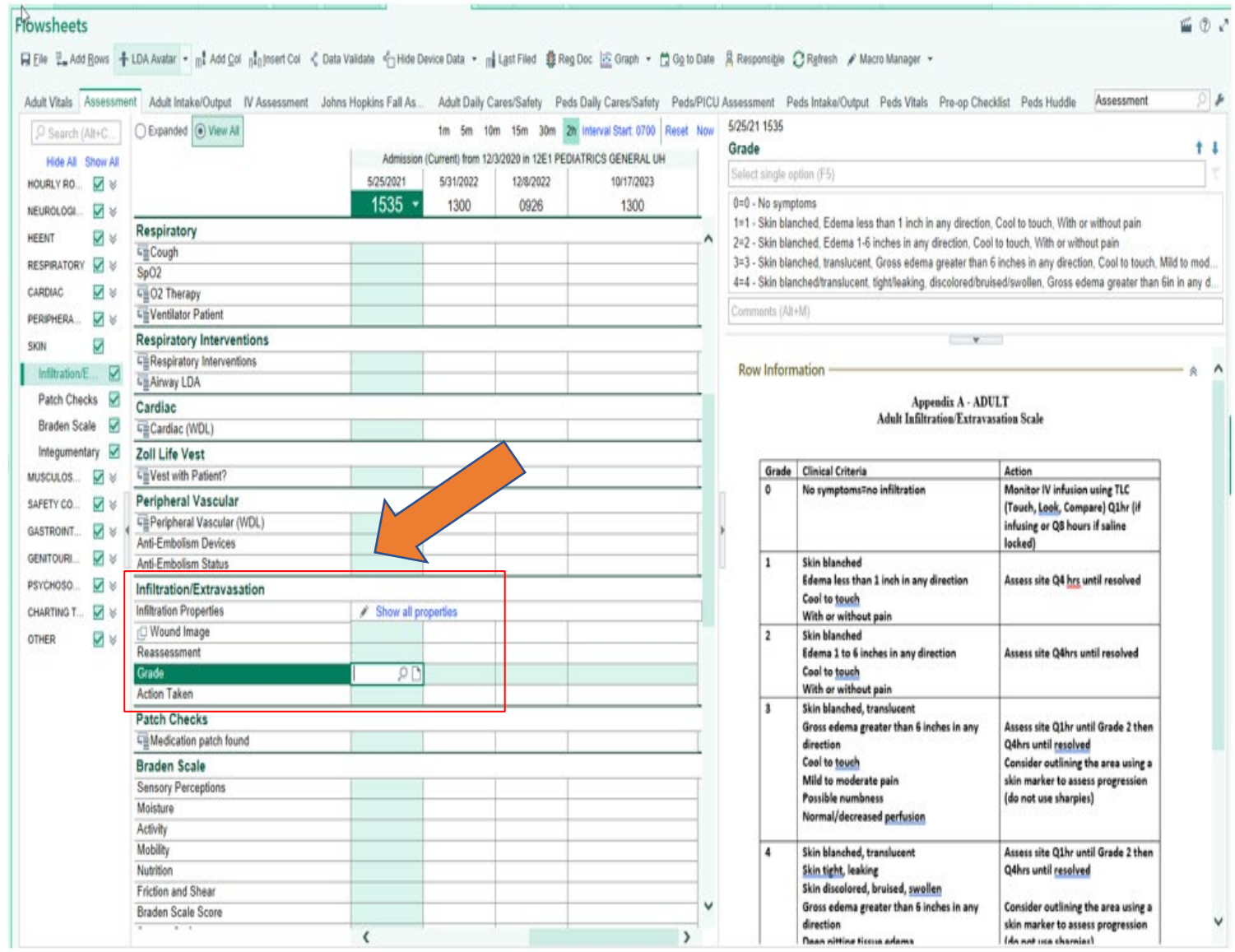
External Jug...
Foot
Forearm
Hand
Lower leg
Saphenous
Scalp
Subcutaneous
Wrist
Ankle
Upper arm
Other (com...
Infiltration Agent
Initial Assessment
Blanching
Blisters
Diminished or...
Edematous
Extravasated
Hard
Leaking
Painful
Pale
Pink
Red
Skin breakdown
Skin cool to t...
Tender
Other (Comm...
Final assessment date
Final assessment time
Properties Audit Trail (First assessment date)
Accept
Cancel
More


Back
Infiltration/Extravasation
3
Assessment
Image Viewer
Assessment
Time taken: 10/17/2023 1113
More
Show Last Filed Value
Show All Choices
First assessment date/First assess... 10/17/2023 1113
Orientation: Left
Location: Antecubital
Infiltration Agent: NS
Wound Image
Select Images
Reassessment
Clean
Dry Intact
Blanching
Blisters
Diminished or...
Edematous
Extravasated
Hard
Leaking
Painful
Pale
Pink
Red
Skin breakdown
Skin cool to t...
Tender
Other (Comm...
Grade
0=0 - No symptoms
1=1 - Skin blanched, Edema less than 1 inch in any direction, Cool to touch, With or without pain
2=2 - Skin blanched, Edema 1-6 inches in any direction, Cool to touch, With or without pain
3=3 - Skin blanched, translucent, Gross edema greater than 6 inches in any direction, Cool to touch,...
4=4 - Skin blanched/translucent, tight/leaking, discolored/bruised/swollen, Gross edema greater than...
Action Taken
Antidote administered as ordered
Area outlined
Burn consult
Cold therapy applied
Hot therapy applied
Limb elevated
Monitor site and reassess Q1...
Monitor site and reassess Q4...
Notified primary team resident
Photograph added in chart
Wound consult
Other (Comment)
Create Note
Accept
Cancel

Adult Assessment and Flowsheet

4





Reassessment of Site

- Reassessment of site is dependent on grade

Grade	Clinical Criteria	Action
0	• No symptoms= no infiltration	Monitor IV infuse using TLC (Touch, Look, Compare), Q1 hour if infusing or Q8 hours if saline lock
1	• Skin blanched, cool to touch, with or without pain • **Edema less than 1 inch in any direction**	Assess site Q4 hours until resolved
2	• Skin blanched, cool to touch, with or without pain • **Edema 1 to 6 inches in any direction**	Assess site Q4 hours until resolved
3	• Skin blanched, translucent, cool to touch • Mild to moderate pain • **Gross edema greater than 6 inches in any direction** • Normal/decreased perfusion, possible numbness	Assess site Q1 hour until Grade 2 then Q4 hours until resolved. Consider outlining the area using a skin marker to assess progression (NO sharpies) Photograph site and document in EMR Consider Burn or Wound Consult
4	• Skin blanched, translucent, skin is tight, leaking • Skin discolored, bruised and swollen • Moderate to severe pain • **Gross edema greater than 6 inches in any direction** • Deep pitting tissue edema, circulatory impairment • Infiltration of any amount of blood product, irritant, or vessicant	Assess site Q1 hour until Grade 2 then Q4 hours until resolved. Consider outlining the area using a skin marker to assess progression (NO sharpies) Photograph site and document in EMR Consider Burn or Wound Consult

Provider Responsibilities/interventions

Use order set for pharmacological interventions & supportive measures. Consult Pharmacy as needed

Consider analgesic support

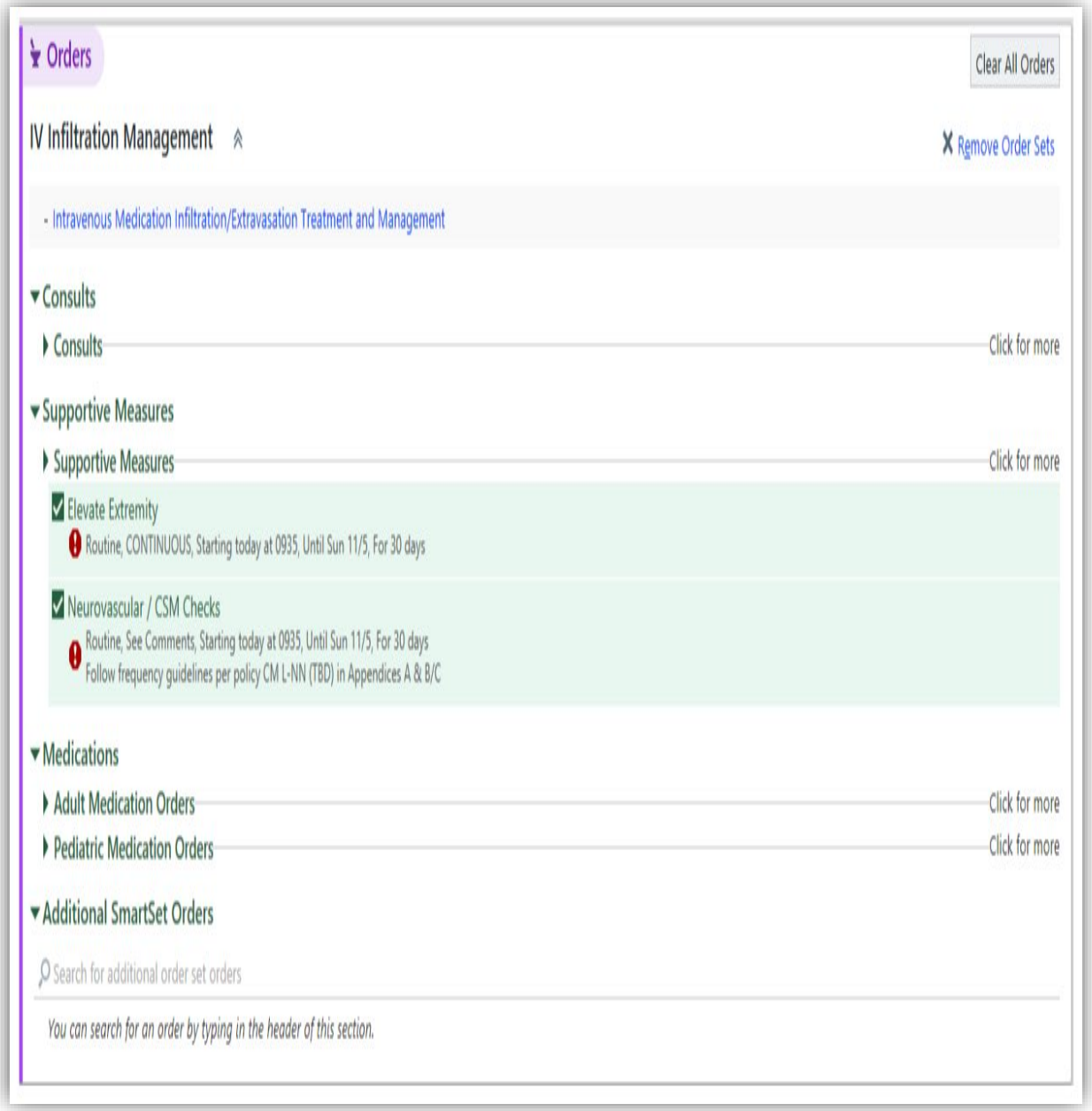
Consider surgical consultation if severe extravasation injury is suspected

Determine provider/team re-assessment. Document in notes & place on EMR problem list

Order Sets

“IV Infiltration Management”

- Medications- antidote and analgesia support
- Supportive Measures
- Consults



Discharge Instructions:
Infiltration/Extravasation "Inpatient or Outpatient"

Clear instructions at discharge must be given on where and when to seek medical care

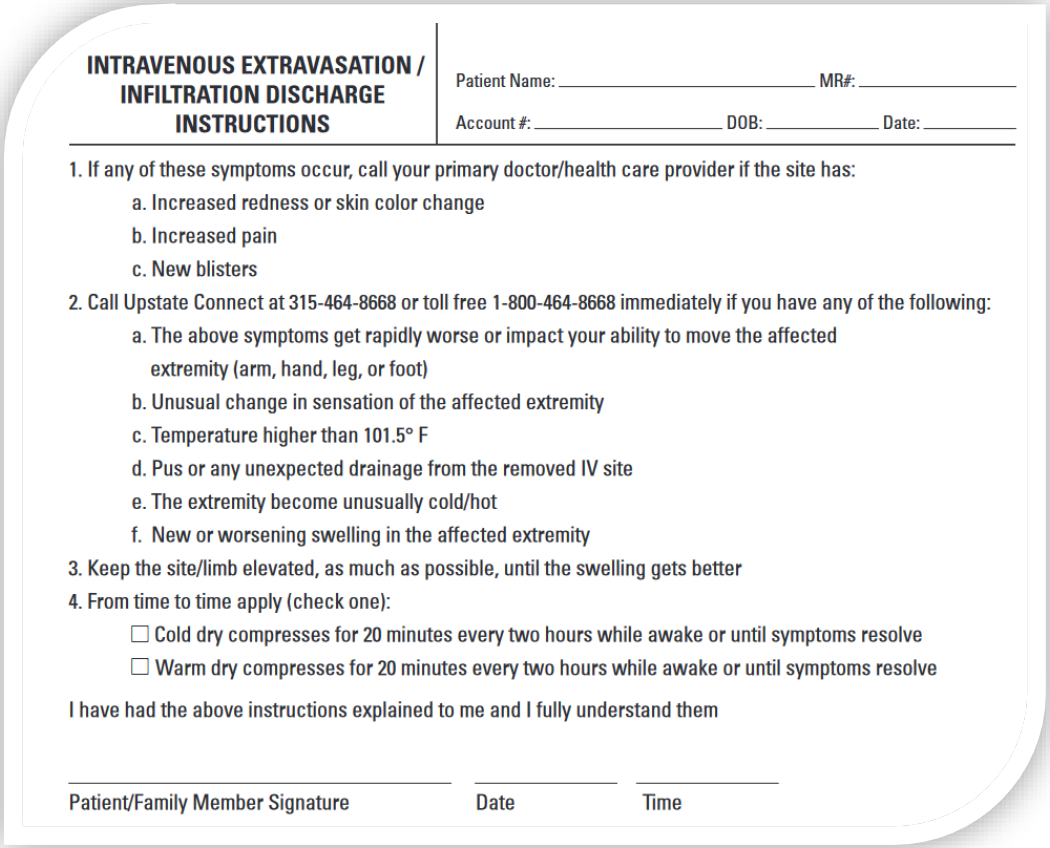
Worsening symptoms include – development of paresthesia, increased pain, diminished range of motion and new skin ulcer or blistering

INPATIENTS: Active LDA for infiltration/extravasation @ discharge then extravasation/infiltration information (F84199) will AUTOMATICALLY be added to the AVS for review at discharge.

OUTPATIENT RADIOLOGY: Contrast medium infiltration/extravasation during testing then extravasation/infiltration information (f86641) will be reviewed with the patient at discharge.

Discharge Instructions Forms:

Active LDA for extravasation/infiltration @ discharge then instructions will print with AVS (Form- F84199)



INTRAVENOUS EXTRAVASATION / INFILTRATION DISCHARGE INSTRUCTIONS

Patient Name: _____ MR#: _____

Account #: _____ DOB: _____ Date: _____

1. If any of these symptoms occur, call your primary doctor/health care provider if the site has:
   a. Increased redness or skin color change
   b. Increased pain
   c. New blisters
2. Call Upstate Connect at 315-464-8668 or toll free 1-800-464-8668 immediately if you have any of the following:
   a. The above symptoms get rapidly worse or impact your ability to move the affected extremity (arm, hand, leg, or foot)
   b. Unusual change in sensation of the affected extremity
   c. Temperature higher than 101.5° F
   d. Pus or any unexpected drainage from the removed IV site
   e. The extremity become unusually cold/hot
   f. New or worsening swelling in the affected extremity
3. Keep the site/limb elevated, as much as possible, until the swelling gets better
4. From time to time apply (check one):
   ☐ Cold dry compresses for 20 minutes every two hours while awake or until symptoms resolve
   ☐ Warm dry compresses for 20 minutes every two hours while awake or until symptoms resolve

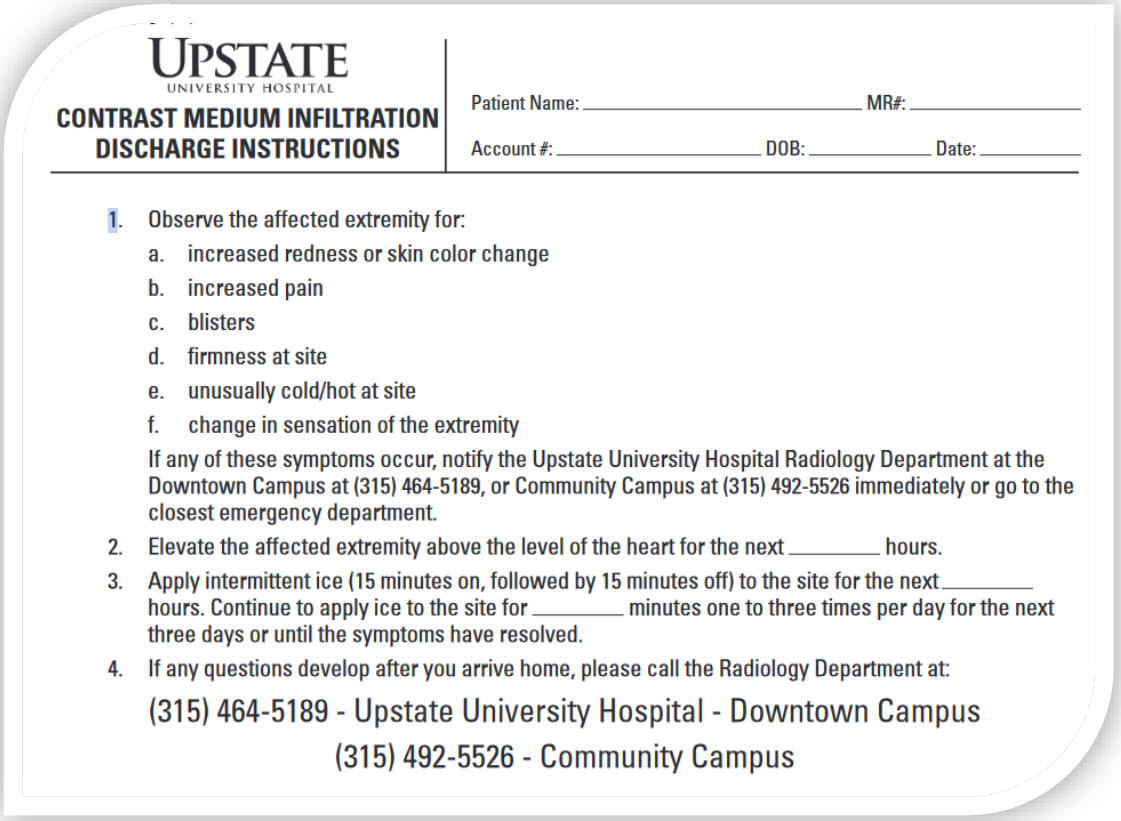
I have had the above instructions explained to me and I fully understand them

_____ _____ _____

Patient/Family Member Signature Date Time

Contrast medium extravasation/infiltration in Radiology then print discharge instructions

(Form -F86641)



UPSTATE UNIVERSITY HOSPITAL

CONTRAST MEDIUM INFILTRATION DISCHARGE INSTRUCTIONS

Patient Name: _____ MR#: _____

Account #: _____ DOB: _____ Date: _____

1. Observe the affected extremity for:
   a. increased redness or skin color change
   b. increased pain
   c. blisters
   d. firmness at site
   e. unusually cold/hot at site
   f. change in sensation of the extremity

   If any of these symptoms occur, notify the Upstate University Hospital Radiology Department at the Downtown Campus at (315) 464-5189, or Community Campus at (315) 492-5526 immediately or go to the closest emergency department.
2. Elevate the affected extremity above the level of the heart for the next _____ hours.
3. Apply intermittent ice (15 minutes on, followed by 15 minutes off) to the site for the next _____ hours. Continue to apply ice to the site for _____ minutes one to three times per day for the next three days or until the symptoms have resolved.
4. If any questions develop after you arrive home, please call the Radiology Department at:

(315) 464-5189 - Upstate University Hospital - Downtown Campus

(315) 492-5526 - Community Campus

Nursing Resources

Intravenous Medication Infiltration/Extravasation Treatment Policy CM-E 05

- https://upstate.ellucid.com/documents/view/3707

Lexicomp Education

- http://online.lexi.com.eu1.proxy.openathens.net/lco/action/doc/retrieve/docid/patch_f/4111?cesid=2yPlUPcAJrz&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dextravasation%2Bmanagement%26t%3Dname%26acs%3Dtrue%26acq%3Dextravasat

Contrast Medium Infiltration Discharge Instructions

(Form #F86641)

- https://upstate.ellucid.com/documents/view/2885

Intravenous Extravasation/Infiltration Discharge Instructions

(Form # F84199)

- https://upstate.ellucid.com/documents/view/12161

References

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Questions
Contact

- Anne Snowdon

snowdona@upstate.edu

Pediatric Infiltration & Extravasation Management

Policy CM E-05

GO LIVE 12/12/23

Victoria Casper, MSN, RN, CNML- Clinical Educator

New October 2023

Objectives

Recognize

- Recognize risk factors associated with IV medication infiltrations

Identify

- Identify nursing actions for treatment of IV medication infiltration/extravasation following policy

Learn

- Learn to assess & document medication infiltration/extravasation utilizing appropriate scale based on patient age

Definitions

Phlebitis

Inflammation of the walls of the veins

Extravasation/Infiltration

Unintentional leakage of IV fluid out of blood vessel into surrounding tissue

Vesicant

Agent that has potential to cause blistering, severe tissue injury, or necrosis when extravasated/infiltrated

Irritant

Agent that causes phlebitis with or without inflammation, but does not cause tissue necrosis

Flare

Local, non-painful, possibly allergic reaction often accompanied by reddening along vein

Patient Infiltration Risk Factors

- Infants or children who may not be able to communicate pain
- Obesity
- Altered mental status or sedated
- Radiation therapy at IV site or repeated IV therapy
- Infusion of chemically irritating or vesicant medication
- Multiple venipunctures with difficult peripheral access
- Comorbidities-Peripheral Vascular Disease, Diabetes, Lupus, Raynaud's Disease

Standard IV Assessment

1. **Continuous infusion** - Assess prior to infusion & at least every - one (1) hour after infusion begins

2. **Saline Lock**-every 8 hours

**The site must be assessed prior to the start of any infusion

Know what type of IV catheter was inserted in your patient?

Infiltration areas will vary based on type of catheter

Peripheral Catheters:

Typically, ≤ 3 inches

Extravasation/Infiltration will occur locally at the insertion site

Midline Catheters:

Typically, 3-8 inches in length and typically terminate at or near the axillary line.

Extravasation/Infiltration will occur near the axilla

Use Touch, Look, Compare "TLC" Method for IV assessment

TOUCH

IV SHOULD FEEL SOFT, WARM, DRY, PAIN FREE

LOOK

UNCOVER SITE &

VISUALIZE FOR DRYNESS AND WITHOUT SWELLING OR SKIN DISCOLORATION

COMPARE

COMPARE SITE TO CONFIRM SAME SIZE AS OTHER EXTREMITY

- Educate families that IV site will be checked every hour while fluid is infusing, even at night when they are asleep

Management of Infiltration/Extravasation

1. Immediately **STOP** the infusion
2. Attempt to aspirate for blood return/medication retrieval (except IV contrast) - **DO NOT FLUSH**
3. **Do not remove CATHETER,** reference infiltration management chart (per policy). Timing of removal will depend on plan of care/intervention
4. Assess area distal to vascular access device for capillary refill, sensation and motor function "CSM Checks"
5. Check the Extravasation/Infiltration Medication Management Chart in EPIC (example on next slide) to determine if pharmacological intervention (ie. antidote) is needed.
6. If pharmacological intervention **IS NOT** required per infiltration management chart, nurse may remove IV catheter
7. If pharmacological intervention **IS** required per infiltration management chart, nurse will notify provider.

    *Provider orders antidote required per chart

    *Nurse administers antidote into infiltration via catheter

10. Contact the provider to assess the patient to activate the established treatment plan for **known vesicant or extravasation grade level 3 or higher**
11. Measure and document infiltration/extravasation and add an LDA in EPIC.

Infiltration/Extravasation Management Treatment Chart "Sample"

Medication Extravasation Treatment Chart

Table 1: Vesicant Agents and Extravasation Management

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments	pH	mOsmol/L
Acyclovir **(Irritant at concentrations >7 mg/mL)**	Hyaluronidase	Hyaluronidase: May consider for refractory cases in addition to supportive management (Stefanos 2023). Intradermal or SUBQ: Inject a total of 1 mL (15 units/mL) as five separate 0.2 mL injections (using a tuberculin syringe) around the site of extravasation; if IV catheter remains in place, administer intravenously through the infiltrated catheter; may repeat in 30 to 60 minutes if no resolution (Fox 2017, Stefanos 2023). Antidote administration doses are standard (not based on age)	Apply dry warm compresses (Stefanos 2023)	Irritant with vesicant-like properties	Alkaline agents	pH: 10.5 to 11.6 (reconstituted solution) pH: 10.85 to 11.5 (solution for injection)	7 mg/mL osmolality 278 mOsm/kg in D5W and 299 mOsm/kg in NS. 10 mg/mL D5W 316 mOsm/kg NS 342 mOsm/kg 5 mg/mL D5W 289 mOsm/kg NS 316 mOsm/kg

Click on link

NEW Management of Drug Extravasation CHART 20231019.xlsx

Site Management

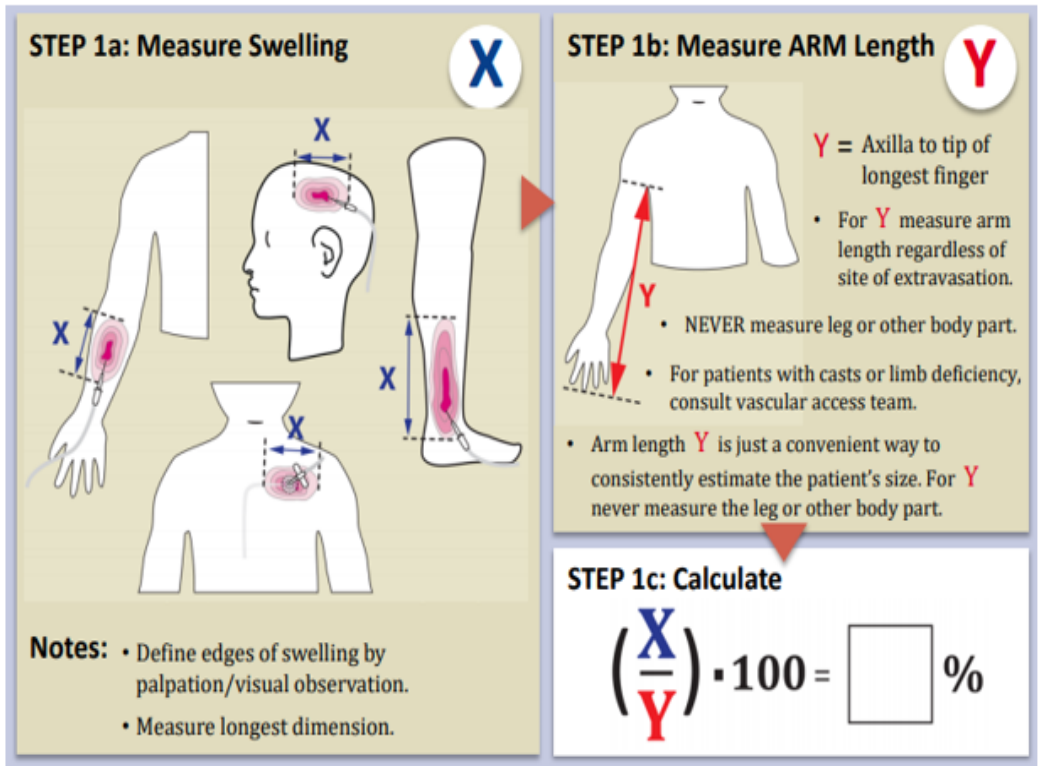
- Administer antidote per MD order based on infiltration/extravasation treatment chart - consult pharmacy as needed
- Notify clinical leader or charge nurse
- Remove IV catheter as appropriate. Allow passive weeping while applying light dressing or bandage to site. Avoid excessive pressure which can cause further damage
- Elevate limb when possible and complete CSM checks
- Follow orders for hot or cold compresses (Avoid wet compresses)
- Do not use affected limb for subsequent vascular access until resolved
- Consider analgesic support for pain
- Assess site based on infiltration grade (refer to policy)
- Any signs of infection or complication notify provider
- Document in EMR & Create wound LDA
- SA Event should be completed

Pediatric Infiltration/Extravasation Measurement

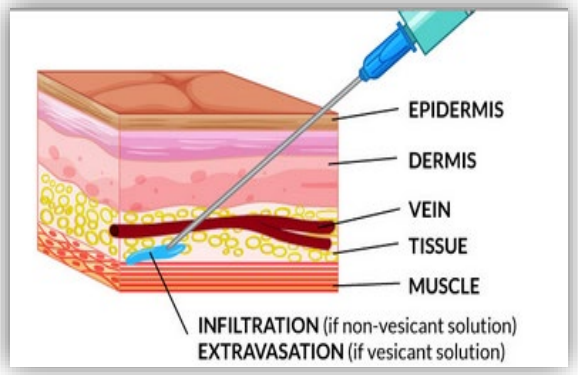
Pediatric Infiltration/Extravasation Measurement and Management

1. **Measure the size of the infiltrate by using the Pediatric PIV Infiltration Scale for grading and actions.**
   a. **Define edges of swelling by palpation/visual observation**
   b. **X (cm) = Measure maximum dimension (length or width) of site swelling**
   c. **Y (cm) = Measure tip of longest finger to anterior/inferior skin fold of axilla with limb arm as straight as possible (regardless of infiltration site). For patients with limb deletions, malformation or contractures, use an estimated length measurement of the extremity.**
   d. **Calculate percentage (X/Y) * 100 = _____%**

2. **Reassess site depending on grade and document in EMR until site resolved**



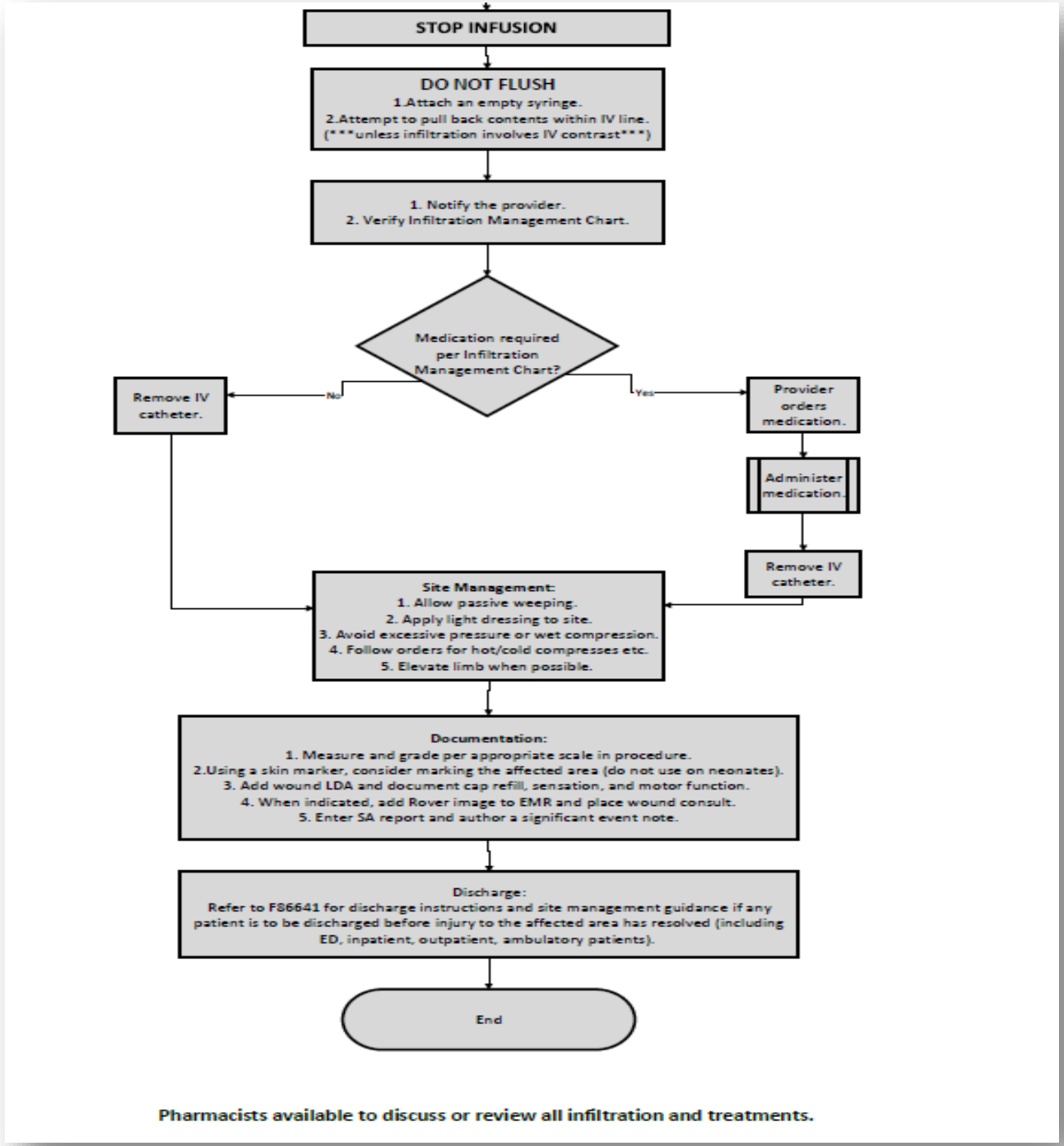
Pediatric Infiltration Scale



Pediatric PIV Infiltration ScaleGrade	Characteristics	Action
0	• No symptoms • Flushes with ease	• TLC (Touch, Look, Compare) Q1hr if infusing or Q8 hours if saline locked
1	• Localized swelling (1%-10%) • Flushes with difficulty • Pain at site	• Assess site Q4 hrs until resolved
2	• Slight swelling at site (up to ¼ of the extremity above or below site, or 10-25% of the extremity above or below site) • Presence of redness • Pain at the site	• Assess site Q4hrs until resolved
3	• Moderate swelling at site (¼ to ½ of the extremity above or below site, or 25%-50% of the extremity above or below site) • Pain at site • Skin cool to touch • Blanching • Diminished pulse below site	• Assess site Q1hr until Grade 2 (10-25% of extremity) then Q4hrs until resolved • Consider outlining the area using a skin marker to assess progression (do not use skin markers on neonates) • Consider Burn or Wound Consult
4	• Severe swelling at site (more than ½ of extremity above or below site, or more than 50% of the extremity above or below site) • Infiltration of blood products irritants, and/or vesicants (any amount of swelling) • Skin cool to touch • Blanching • Skin breakdown/necrosis • Blistering • Diminished or absent pulse • Pain at site • Capillary refill >4 seconds	• Assess site Q1hr until Grade 2 (10-25% of extremity) then Q4hrs until resolved • Consider outlining the area using a skin marker to assess progression (do not use skin markers on neonates) • Photograph site and document in EMR • Consider Burn or Wound Consult

Algorithm CM E-05

https://upstate.ellucid.com/documents/view/3707



Case Study #1:

A 3-month-old patient is admitted to hospital for treatment of hypoglycemia. A continuous IV infusion of Dextrose 10% was ordered. Upon assessment of the IV site during the infusion, the nurse notes pain, redness and swelling at IV site. What are next steps?

Extravasated Medication	Preferred Antidote	Antidote Administration	Supportive Management	Comments	Additional Comments
Dextrose (>10% to 50%)	Hyaluronidase	Hyaluronidase: **Dextrose 10% to <50%**: Intradermal or SubQ: Inject a total of 1 to 1.7 mL (15 units/mL) as five separate 0.2 to 0.3 mL injections (using a 25-gauge needle) into area of extravasation at the leading edge in a clockwise manner (MacCara 1983; Reynolds 2014; Zenk 1981) **Dextrose 50%**: Injection of a total of 1 mL (150 units/mL) as five separate 0.2 mL injections administered along the leading edge of erythema has been used successfully (Wiegand 2010)	Apply dry cold compresses (Hurst 2014; Reynolds 2014)	Dextrose 10% may be an irritant. Concentrated IV dextrose (>10%) may be an irritant or a vesicant; higher concentration (higher osmolarity) is associated with a higher risk.	RISK-IRRITANT @ (Concentrations 10%) ; VESICANT @ (concentrations >10%). Elevate Extremity.

Follow medical provider order

1. Stop infusion
2. Do **NOT** remove IV catheter
3. Do not flush line, attach empty syringe, attempt to aspirate fluid
4. Reference infiltration/extravasation management chart for antidote
5. Notify medical provider hyaluronidase order
6. Administer medication
7. Remove IV catheter
8. Elevate; Apply dry cold compresses
9. Complete neurovascular “CSM” checks
10. Measure site to determine % of infiltration
11. Monitor and document per policy
12. Enter SA event for tracking

How to administer hyaluronidase?

"Administer 4-5 small subcutaneous injections around the extravasation site" *-Lexi Comp*

Use 25g, 27g, or 30g needle

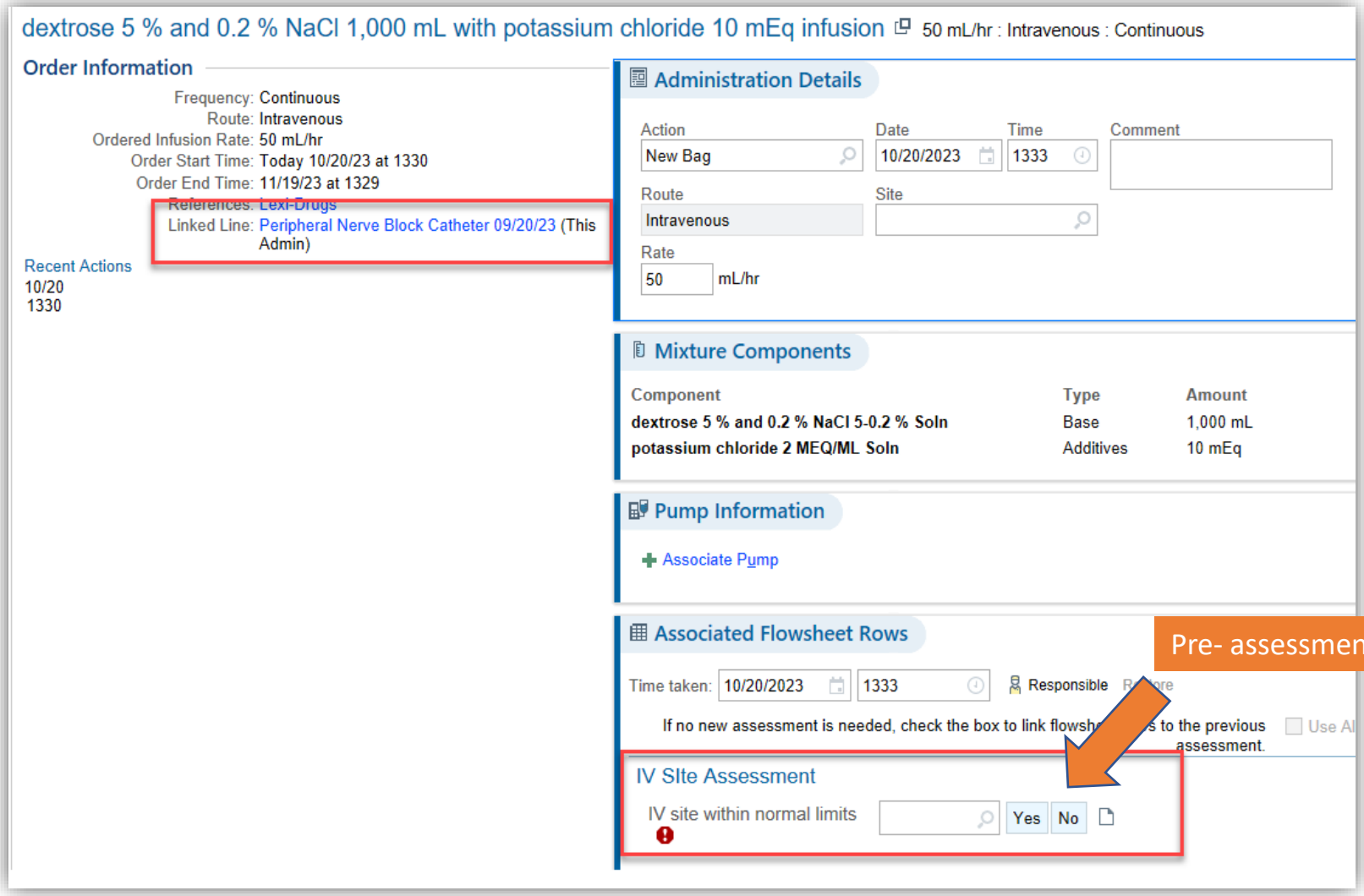
Cleanse area with antiseptic and change needle with each injection

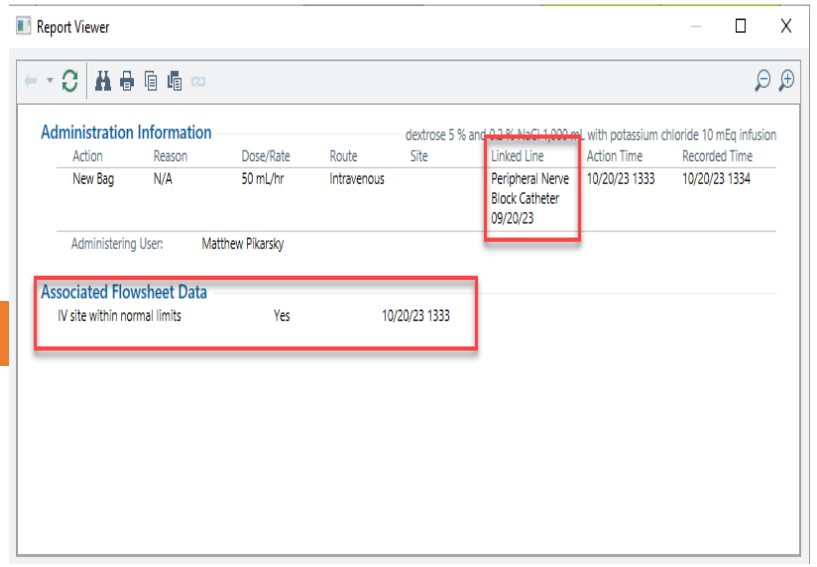
Do Not Remove IV catheter

Documentation:

“Pre- Assessment IV site on MAR”

Nurses must document on the MAR, a pre-assessment of the IV site prior to all IV infusions

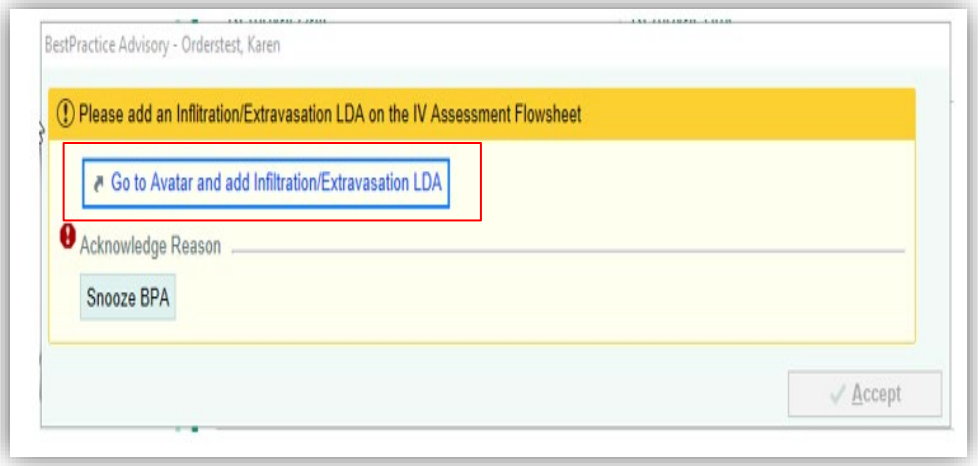


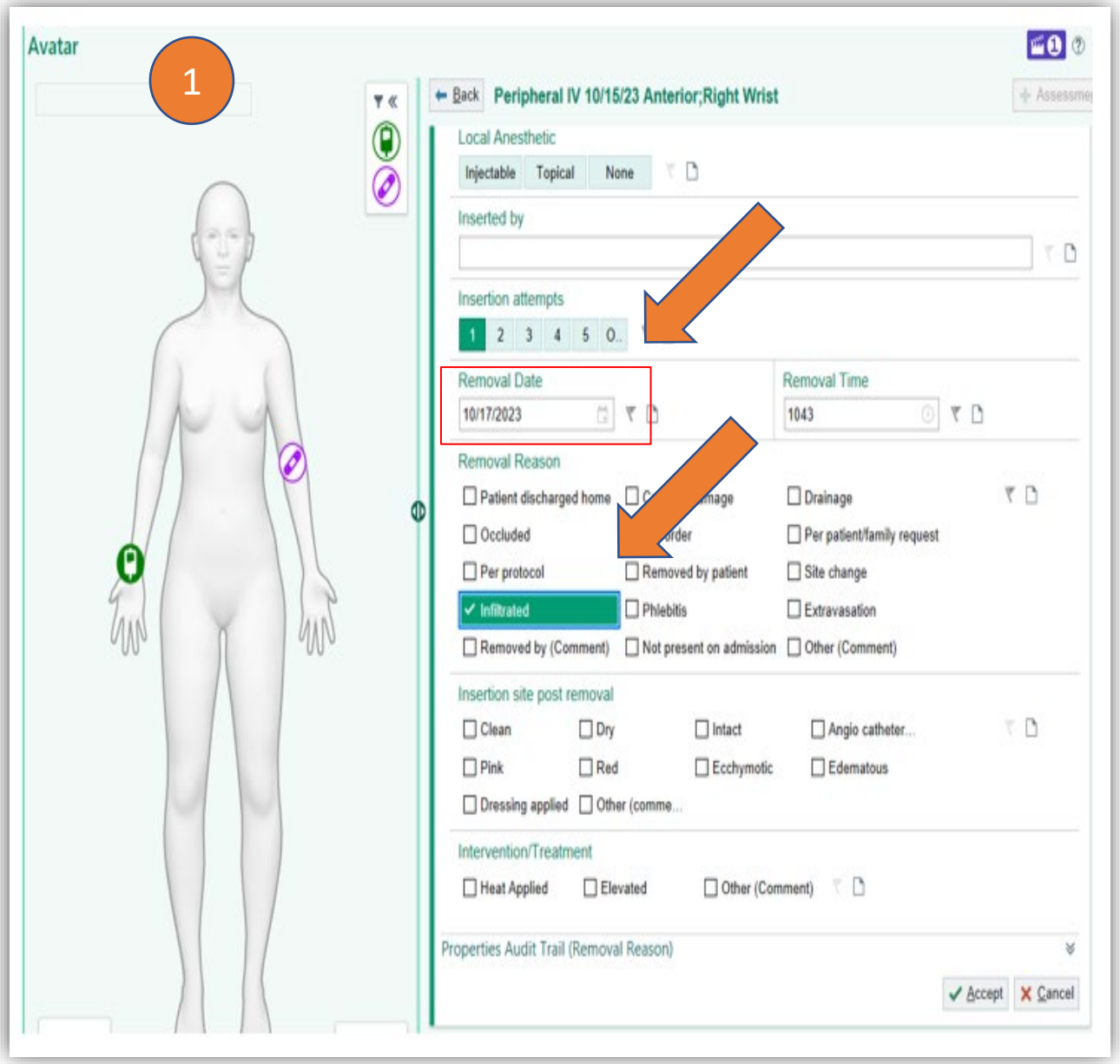


Documentation: Infiltration/Extravasation @ IV site "Steps"

1. Remove infiltrated/extravasated line
- BPA will fire to add LDA
2. Search Avatar for infiltration/extravasation screen
- Add LDA and document properties
3. Complete initial LDA assessment
4. Complete Pediatric Assessments using grade "0-4" following Appendix B for Pediatrics

"BPA"





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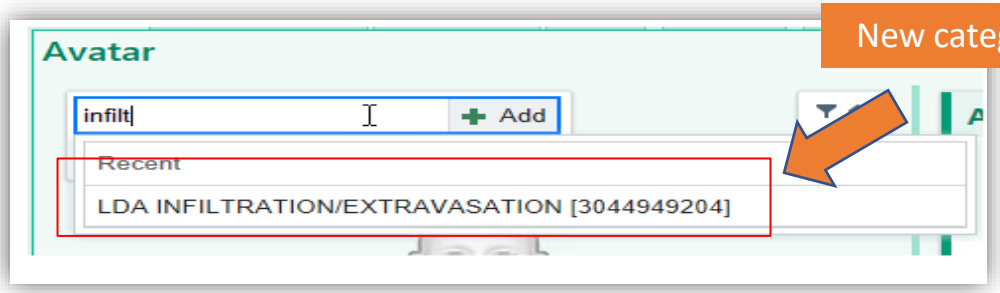
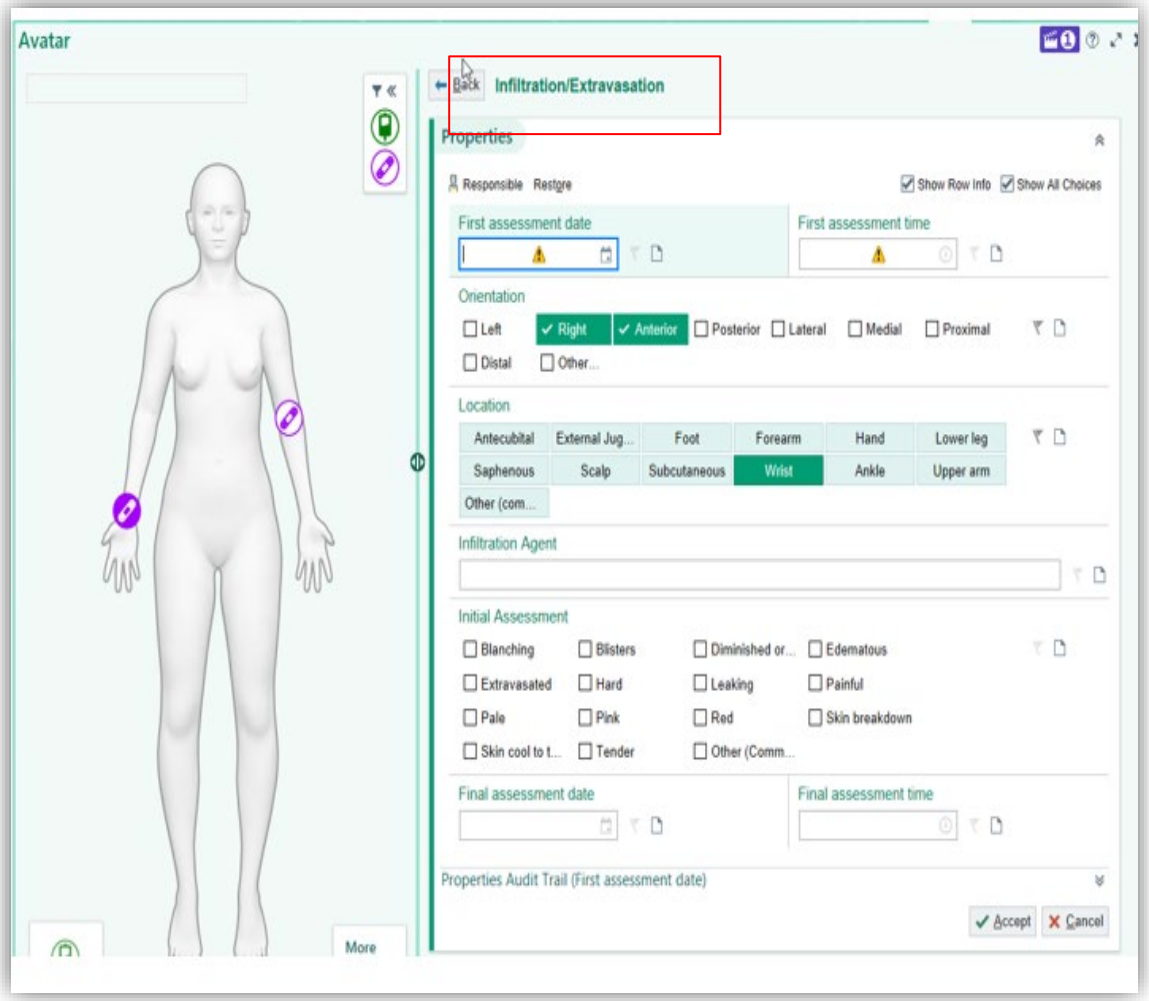


New category



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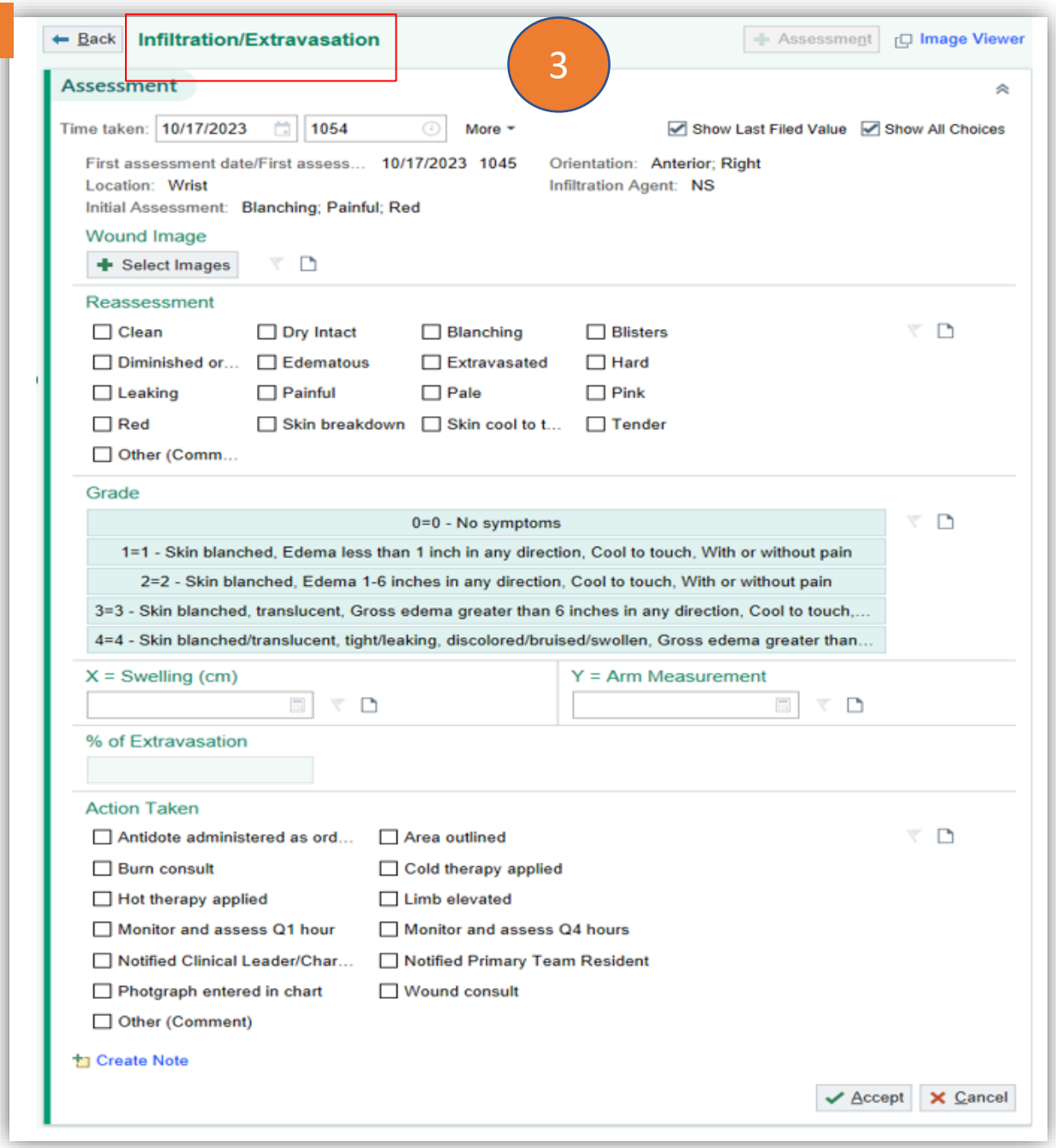
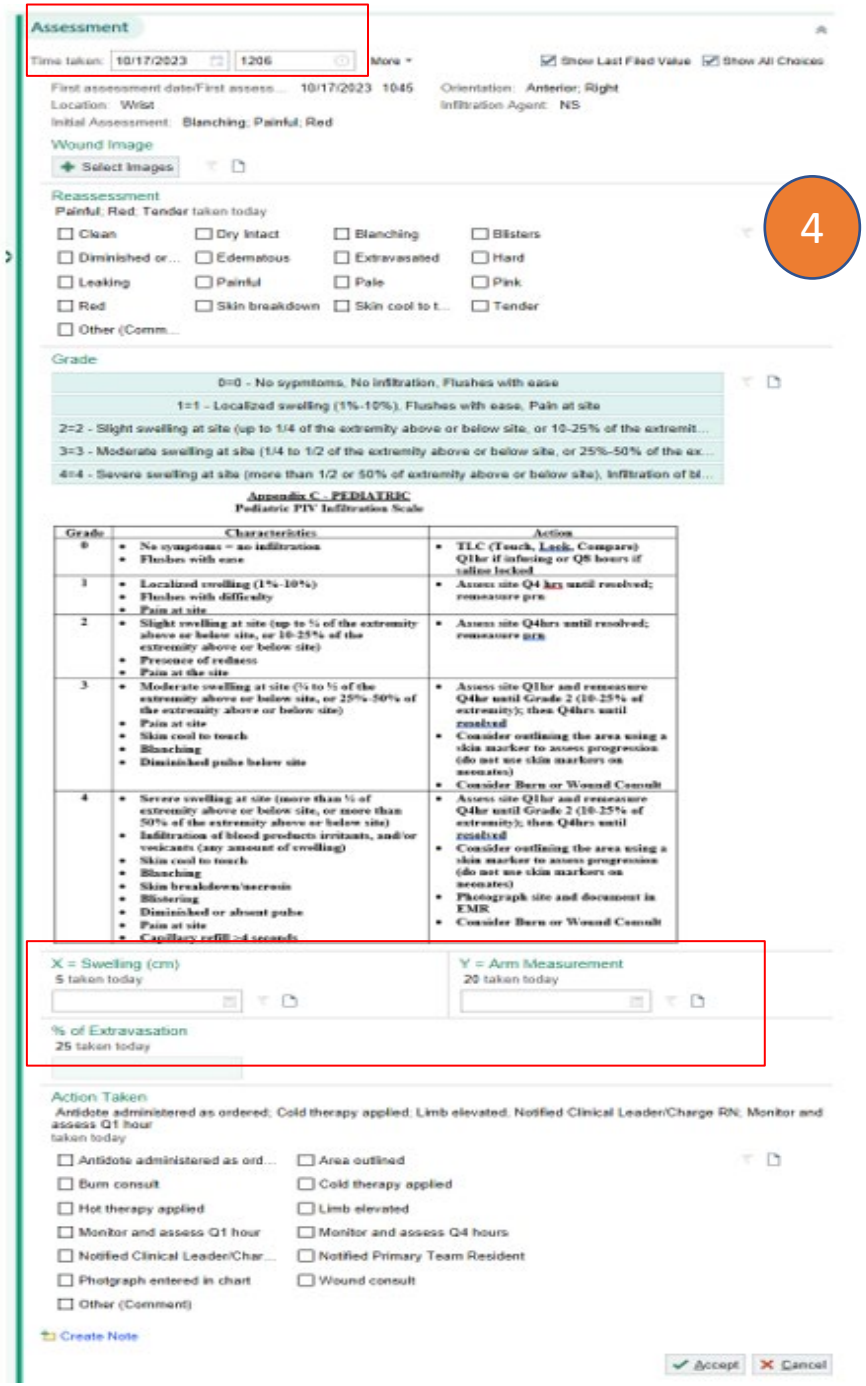
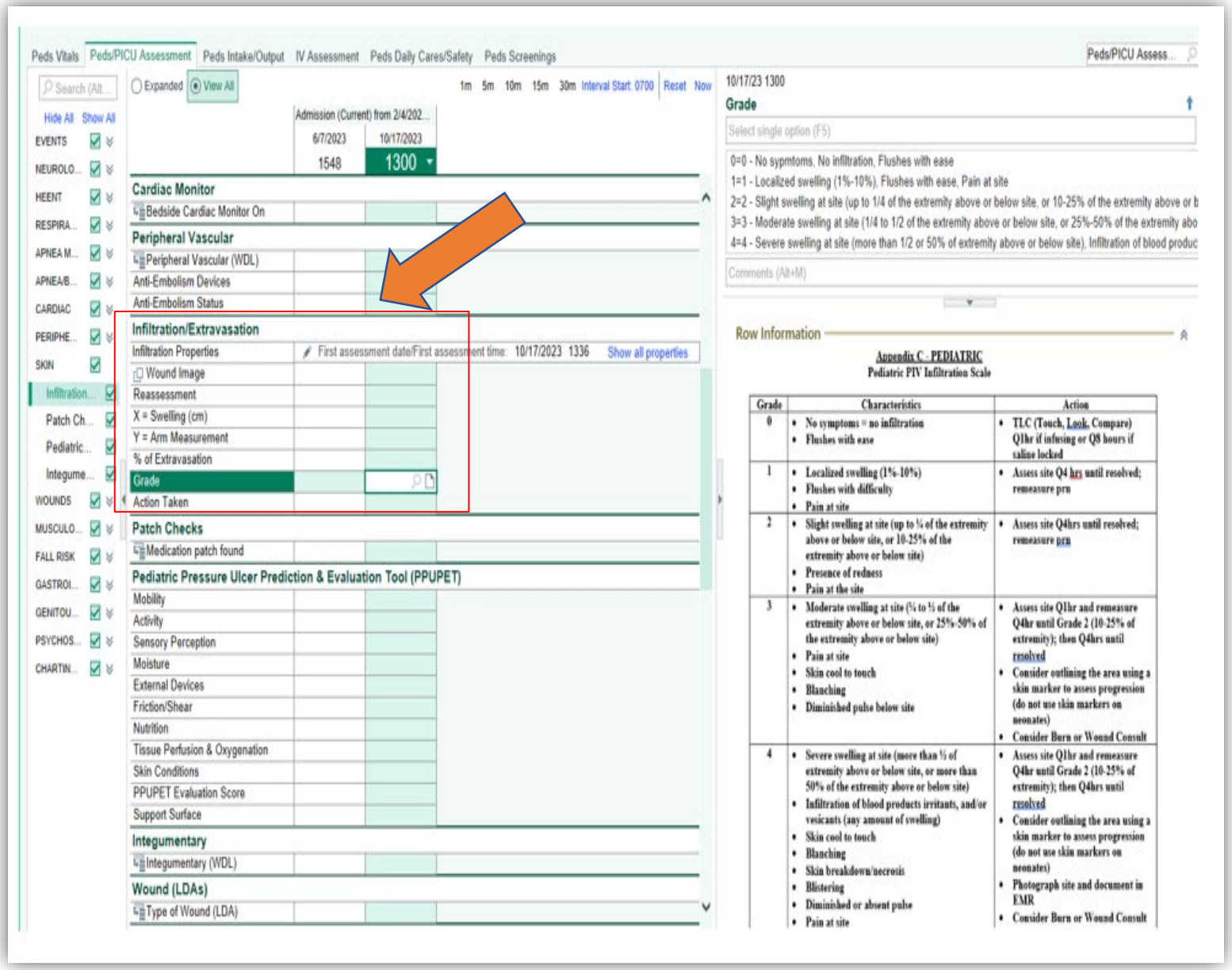


Assessment and Flowsheet

4





Reassessment of Site

- Reassessment of site is dependent on grade

Pediatric PIV Infiltration ScaleGrade	Characteristics	Action
0	• No symptoms • Flushes with ease	• TLC (Touch, Look, Compare) Q1hr if infusing or Q8 hours if saline locked
1	• Localized swelling (1%-10%) • Flushes with difficulty • Pain at site	• Assess site Q4 hrs until resolved
2	• Slight swelling at site (up to ¼ of the extremity above or below site, or 10-25% of the extremity above or below site) • Presence of redness • Pain at the site	• Assess site Q4hrs until resolved
3	• Moderate swelling at site (¼ to ½ of the extremity above or below site, or 25%-50% of the extremity above or below site) • Pain at site • Skin cool to touch • Blanching • Diminished pulse below site	• Assess site Q1hr until Grade 2 (10-25% of extremity) then Q4hrs until resolved • Consider outlining the area using a skin marker to assess progression (do not use skin markers on neonates) • Consider Burn or Wound Consult
4	• Severe swelling at site (more than ½ of extremity above or below site, or more than 50% of the extremity above or below site) • Infiltration of blood products irritants, and/or vesicants (any amount of swelling) • Skin cool to touch • Blanching • Skin breakdown/necrosis • Blistering • Diminished or absent pulse • Pain at site • Capillary refill >4 seconds	• Assess site Q1hr until Grade 2 (10-25% of extremity) then Q4hrs until resolved • Consider outlining the area using a skin marker to assess progression (do not use skin markers on neonates) • Photograph site and document in EMR • Consider Burn or Wound Consult

Discharge Instructions:
Infiltration/Extravasation “Inpatient or Outpatient”

Clear instructions at discharge must be given on where and when to seek medical care

Worsening symptoms include – development of paresthesia, increased pain, diminished range of motion and new skin ulcer or blistering

INPATIENTS: Active LDA for infiltration/extravasation @ discharge then extravasation/infiltration information (F84199) will AUTOMATICALLY be added to the AVS for review at discharge.

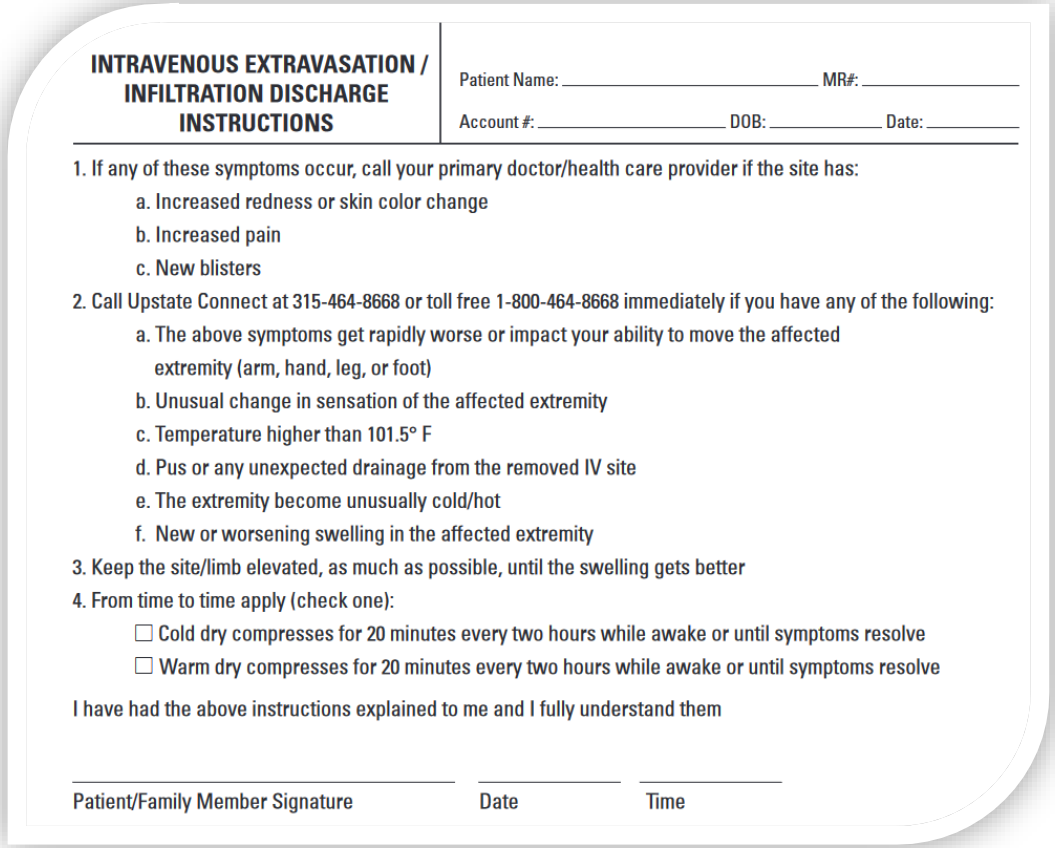
OUTPATIENT RADIOLOGY: Contrast medium infiltration/extravasation during testing then extravasation/infiltration information (f86641) will be reviewed with the patient at discharge.

Discharge Instructions Forms:

Active LDA for extravasation/infiltration @ discharge then instructions will print with AVS (Form- F84199)

Contrast medium extravasation/infiltration in Radiology then print discharge instructions

(Form -F86641)



INTRAVENOUS EXTRAVASATION / INFILTRATION DISCHARGE INSTRUCTIONS

Patient Name: _____ MR#: _____

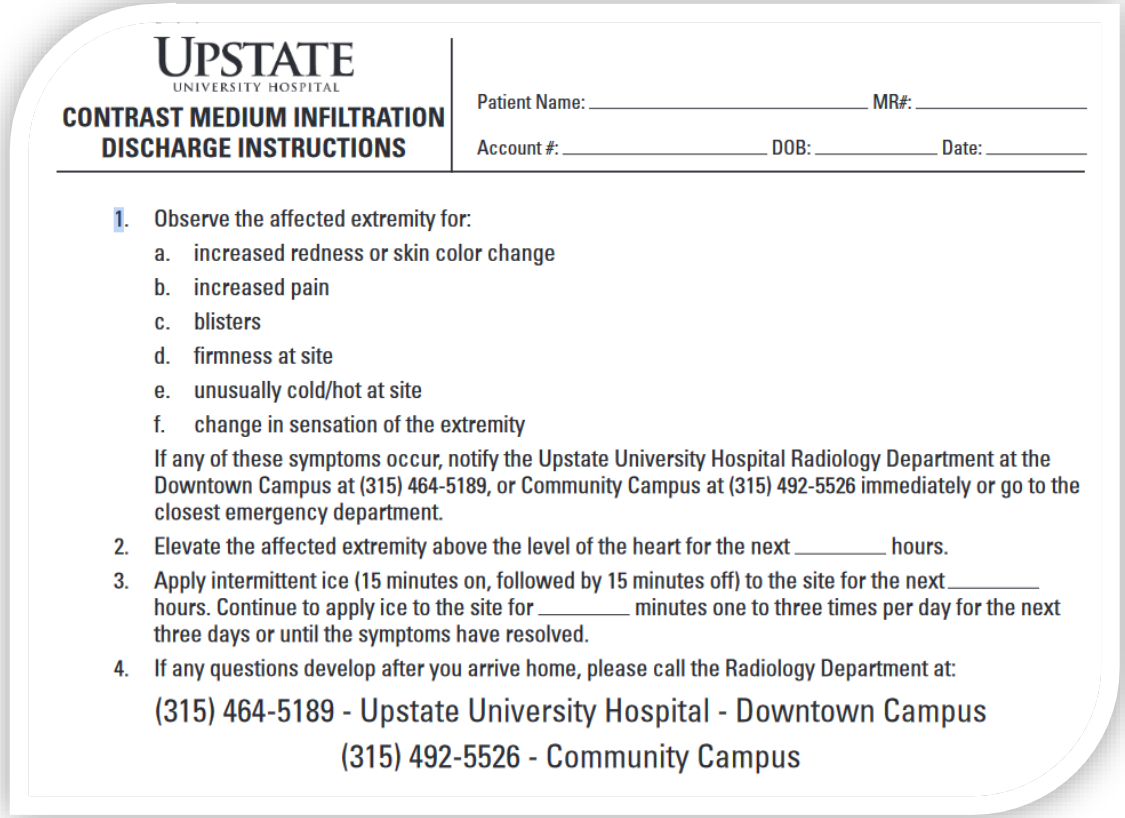
Account #: _____ DOB: _____ Date: _____

1. If any of these symptoms occur, call your primary doctor/health care provider if the site has:
   a. Increased redness or skin color change
   b. Increased pain
   c. New blisters
2. Call Upstate Connect at 315-464-8668 or toll free 1-800-464-8668 immediately if you have any of the following:
   a. The above symptoms get rapidly worse or impact your ability to move the affected extremity (arm, hand, leg, or foot)
   b. Unusual change in sensation of the affected extremity
   c. Temperature higher than 101.5° F
   d. Pus or any unexpected drainage from the removed IV site
   e. The extremity become unusually cold/hot
   f. New or worsening swelling in the affected extremity
3. Keep the site/limb elevated, as much as possible, until the swelling gets better
4. From time to time apply (check one):
   ☐ Cold dry compresses for 20 minutes every two hours while awake or until symptoms resolve
   ☐ Warm dry compresses for 20 minutes every two hours while awake or until symptoms resolve

I have had the above instructions explained to me and I fully understand them

_____ _____ _____

Patient/Family Member Signature Date Time



UPSTATE UNIVERSITY HOSPITAL

CONTRAST MEDIUM INFILTRATION DISCHARGE INSTRUCTIONS

Patient Name: _____ MR#: _____

Account #: _____ DOB: _____ Date: _____

1. Observe the affected extremity for:
   a. increased redness or skin color change
   b. increased pain
   c. blisters
   d. firmness at site
   e. unusually cold/hot at site
   f. change in sensation of the extremity

   If any of these symptoms occur, notify the Upstate University Hospital Radiology Department at the Downtown Campus at (315) 464-5189, or Community Campus at (315) 492-5526 immediately or go to the closest emergency department.
2. Elevate the affected extremity above the level of the heart for the next _____ hours.
3. Apply intermittent ice (15 minutes on, followed by 15 minutes off) to the site for the next _____ hours. Continue to apply ice to the site for _____ minutes one to three times per day for the next three days or until the symptoms have resolved.
4. If any questions develop after you arrive home, please call the Radiology Department at:

(315) 464-5189 - Upstate University Hospital - Downtown Campus

(315) 492-5526 - Community Campus

Nursing Resources

Intravenous Medication Infiltration/Extravasation Treatment Policy CM-E 05

- https://upstate.ellucid.com/documents/view/3707

Lexicomp Education

- http://online.lexi.com.eu1.proxy.openathens.net/lco/action/doc/retrieve/docid/patch_f/4111?cesid=2yPlUPcAJrz&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dextravasation%2Bmanagement%26t%3Dname%26acs%3Dtrue%26acq%3Dextravasat

Contrast Medium Infiltration Discharge Instructions

(Form #F86641)

- https://upstate.ellucid.com/documents/view/2885

Intravenous Extravasation/Infiltration Discharge Instructions

(Form # F84199)

- https://upstate.ellucid.com/documents/view/12161

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- **Simona, R. (2012). A Pediatric Peripheral Intravenous Infiltration Assessment Tool. Journal of Infusion Nursing, 35(4), 243-248.**
- **Solutions for Patient Safety (2021). Peripheral IV Infiltrations and Extravasation (PIVIE) Prevention Bundle 1.0. Retrieved July 26, 2021 from https://portal.solutionsforpatientsafety.org/HAC/pivie/Document%20Library1/PIVIE_Bundle_SPS.pdf**
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Questions? Contact

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- Anne Snowdon

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UPSTATE
MEDICAL UNIVERSITY

ALAN AND MARLENE NORTON
COLLEGE OF MEDICINE

EXCEPTIONAL MOMENTS IN TEACHING

Mashaal Dhir, MD, an associate professor of Surgery at Upstate Medical University, is the **November 2023** recipient of the **Exceptional Moments in Teaching recognition.**

COMMENTS FROM DR. DHIR'S STUDENTS:

"Dr. Dhir taught me about the agony that we might face one day when the disease is beyond our capability to treat. Dr. Dhir was performing a Whipple procedure on a patient, and as he continued, he realized that he may have to abort the operation due to the advanced disease process and prior treatments that made the operation technically difficult, if not impossible. As I watched, I could see the agony in Dr. Dhir as he weighed his choices. He explained the pending decision to the resident and myself, asked colleagues in the OR for a second opinion, and tried his best to continue the operation. But the choice became clear, even to me as a medical student. I think what made Dr. Dhir an exceptional teacher was that it would have been very easy to lose composure, and not explain to the trainees in detail about his thought process. And yet even with this immense pressure, Dr. Dhir maintained his professionalism, and expressed humility at this terrible disease that he could not treat. Being right there as he made this impossible decision, perhaps I will be able to emulate Dr. Dhir if I am ever faced with such a choice."

"Dr. Dhir is an all-around great person to be around. He provided lots of excellent teaching points. Super friendly with patients even when giving challenging and sad diagnoses. Skilled surgeon and always very nice to students. I appreciate Dr. Dhir and his hard work for all his patients."

The Norton College of Medicine recognizes exceptional teachers with the monthly "Exceptional Moments in Teaching" program. Honorees are selected via student assessments from courses and clerkships. Recognized teachers—including medical faculty, residents, nurses and other educators—are those who challenge students and provide an exceptional learning experience.

UPSTATE
UNIVERSITY HOSPITAL

CDI Tip of the Month – Pediatric Optimization

The key to reflecting the severity of illness (SOI) within the pediatric population is providing documentation related to diagnoses. Common diagnoses that impact pediatric optimization of SOI include:

Sepsis	Consider when patients meet SIRS criteria and have source of infection – this can be viral or bacterial – rather than documentation of SIRS and infection. If SIRS are not related to the infection, please specify the cause in your notes to clarify.
Acute Respiratory Failure	Consider when patients receive supplemental oxygen at minimum of 3 liters with an underlying pathology – this could be pulmonary or cardiac related, sepsis, neurologic related, etc. 'Acute respiratory distress' is a symptom that does not clearly reflect the severity of illness, especially when children are receiving oxygen or respiratory support.
Disorders of Fluid & Electrolytes	Consider when patients have acute or chronic electrolyte abnormalities – especially acute metabolic acidosis – and link to underlying cause.
Infection Manifestations	Specify site or manifestation of viral or bacterial infections – ie: viral pneumonia, bacterial pneumonia, bronchiolitis, pharyngitis, etc.
Malnutrition	Co-signature of the Dietician's note is sufficient to code a malnutrition diagnosis. Best practice is to ensure provider documentation reflects etiology of the condition, treatment provided, and response to treatment.
Chronic Conditions	Chronic conditions, especially behavioral or psychiatric in nature (ie: Autism, Tourettes, etc.), are relevant to hospitalizations in that special considerations may be made or treatment may be tailored to meet individual needs. Document the chronic conditions in the Assessment and Plan, noting contribution to medical complexity or decision making.

Ensuring documentation is both present and complete will help mitigate query volume and optimize severity of illness in all pediatric patients.

CDI@upstate.edu
November 2023