Altered Clinical Practices During Surge:

Resources for Adult and Pediatric Critical Care

Alberta Health Services
Inspiring solutions. Together.
Strategic Clinical Networks™

Disclaimer:
This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. AHS staff who require legal advice regarding copyright should contact the Corporate & Commercial Division within AHS Legal & Privacy for further assistance. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

Table of Contents

Contributors

July 9, 2020

This resource package has been prepared by the Critical Care Strategic Clinical Network (CC SCN) in partnership with the Provincial Critical Care Communicable Disease Group.

Contact

For more information, please contact:

Jeanna Morrissey
Manager
Critical Care Strategic Clinical Network
jeanna.morrissey@ahs.ca

Alberta’s Strategic Clinical Networks

The Alberta Strategic Clinical Networks (SCN) are multidisciplinary teams that work across the health system to ensure high quality care and value for every Albertan. The networks are embedded within Alberta’s health system and have a mandate to identify gaps in care and improve health outcomes across the province and across the continuum of care. Having a single, province-wide health system is an asset that enables us to work together to maximize available health resources, assess current practices, implement health system improvements, and manage change on a provincial scale. By removing administrative barriers and creating opportunities for stakeholders to collaborate across zones, share ideas and work together to develop solutions, we’re able to tackle pressing issues and achieve system-level change.

All networks fulfill a critical role within the health system by bridging gaps, connecting stakeholders and enabling collaboration across institutional and geographic boundaries. The networks are embedded within Alberta’s health system, and this enables us to support continuous improvement on a local and provincial scale, respond to critical health needs, and work together to address pressing health issues.

Critical Care Strategic Clinical Network

The Critical Care Strategic Clinical Network (CC SCN) is comprised of a small group of dedicated individuals, consisting of frontline healthcare professionals, operational and medical leaders, patients and families, researchers, eCritical Alberta staff, policy-makers and a number of other stakeholder groups. This team works in collaboration with the critical care community in Alberta to achieve its goals.

Our Mission

The Critical Care Strategic Clinical Network™, through innovation and collaboration, works to ensure evidence-based, quality care for people in Alberta experiencing critical illness or injury

The CC SCN helps Alberta's health system develop and implement evidence-informed, healthcare professional-led, team-delivered critical care services and health improvement strategies that lead to better outcomes for patients and families, and greater value for the health system. Frontline staff are crucial to this work, participating in expert working groups and project teams, and making vital contributions to the development, implementation, and evaluation of priority initiatives.

Conservation of Personal Protective Equipment (PPE) in Critical Care Areas During Pandemic

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

❖ PPE usage should be restricted to direct patient care use only. PPE should not be used for simulation, orientation and education purpose unless it is expired. Conservation strategies are to be initiated immediately.

Considerations to Minimize Assessments & Interventions

❖ Determine the most appropriate minimum assessment/interventions required to deliver care for stable patients. Areas that should be evaluated:
- Patients' physical assessment.
- Vital Signs, neuro vitals & glucometers,
- Ins and outs
- Foley and Flexi seal usage
- RASS goals

❖ Physician, Residents, & Fellows assessments should be a single assessment Q 24 hours unless clinically indicated.

❖ Minimize the frequency of bloodwork & ABGs.
- Review daily at rounds
- Bundle order times & determine if required order can be added to previously drawn bloodwork.

❖ Do not order routine CXR or ECG – order only when clinically indicated.

❖ Minimize off unit procedures or interventions.

❖ Nursing and pharmacy to adjust medication administration times to cluster regular meds in a cluster.
- Suggest administration time to alignment with feeding tube water flushes.

Considerations to Maximize Time Spent in Isolation Room

❖ Reduce doffing of PPE and leaving room to collect supplies.
- Keep stock in rooms that is not excessive.
- RN and RRT to discuss patient care supply requirements during shift handover.
- Staff to determine required supplies before going into room for care and procedures.
- Use call bell & supply runners rather than leaving isolation.

❖ Group documentation together.
- Utilize existing computers in room.
- Charting does not need to be completed in real time.
- Utilize whiteboards or glass doors for interim documentation and later translation into the health record.
- Utilize staff to transcribe outside the room while care provider remains in the room.

❖ Adjust room temperature to accommodate staff comfort levels.

❖ Microbore extension tubing can be used to position IV poles outside the room.

Considerations to Minimize Staff Entering Isolation Room

❖ Reconfigure patient room to improve the line of vision to patient, ventilator, drainage systems, monitor and other pertinent equipment.

❖ RRT & RN to share tasks and responsibilities.

❖ Staff already in isolation should be utilized to their maximum scope.

❖ Adjust alarm parameters to reduce non relevant alarms.

❖ Utilize bed functions such as turn assist, rotation, percussion and vibration.

❖ Utilize the function of overhead lifts and repositioning slings. Single person techniques should be reviewed and utilized in possible.

❖ During prone positioning only team members directly involved in the turn need to be in the room.

❖ Minimize patient washes and linen changes.

❖ RN & RRT to remove garbage when full to reduce frequency of housekeeping entering the room. Garbage must be properly disposed of.

Altered Care Delivery During Surge in Critical Care

- To guide clinical decisions regarding alterations to care delivery only when standard care is not feasible during surge.
- Clinical judgment and MRHP orders should always supersede these recommendations.
- All decisions should be made by the care team and not by individual providers.
- Staff should always collaborate to maintain standard care using a team approach.
- Teams should cluster all care to optimize care delivery and minimize workload & PPE

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

	Standard Care	Frequency Q hrs. & PRN	Altered Care	Minimum Frequency
Safety Checks	Hand over	Shift	Hand over	Shift
	Chart check & Medication review	12 hrs.	Chart check & Medication review	12 -24 hrs.
	Room safety checks	12 hrs.	Room safety checks	24 hrs.
	IV line and medication review	12 hrs.	IV line and medication review	12 hrs.
	Restraint checks	1 hrs.	Restraint checks	1-4 hrs.
Assessments	Comprehensive assessment	4 hrs.	Comprehensive assessment **Focused assessments ***	12hrs. 4 hrs.
	Vital signs & rhythm	1 hrs.	Vital signs (noncomplex patients) Vital signs (complex patients)	4 hrs. 1 hrs.
	Cardiac rhythm strip analysis	12 hrs.	Cardiac Rhythm strip Analysis	12 hrs.
	Urine output	1 hrs.	Urine output	4 hrs.
	Lines, tubes &drains	4 hrs.	Lines, tubes, drains	12 hrs.
	OG & NG including flushes	4 hrs.	OG & NG flushes including flushes	With meds
Lines & Tubes Drains & Dressings	Line site dressing & cap changes	7 days	Line site dressing & cap changes	7 days.
	Pressure line & dressing changes	72 hrs.	Pressure lines & dressing changes	96 hrs.
	Zeroing of pressure lines	12 hrs.	Zeroing of pressure lines	12 hrs.
	Suction tubing change	24 hrs.	Suction tubing change	72 hrs.
	Changing IV lines	72 hrs.	Changing IV lines	96 hrs.
Patient Care	Eye care (Q2 with prone position)	4 hrs.	Eye care (Q2 with prone position)	4 hrs.
	Mouth swabs	2 hrs.	Mouth swabs	4 hrs.
	Brush teeth	12 hrs.	Brush teeth	PRN
	Bed baths & bed changes	24 hrs.	Bed baths & bed changes	PRN
	Pneumatic stockings	4 hrs.	Pneumatic stockings	12 hrs.
	Repositioning	2 hrs.	Repositioning	4 hrs.
	Psychosocial support	PRN	Psychosocial support	PRN
	Mobilization (goal 3 events)	24 hrs.	Mobilization	PRN

Checklists**	Admission	Yes	Admission	Reduced
	Discharge	Yes	Discharge	Reduced
	Death	Yes	Death	Reduced
	Quick View	Yes	Quick view	Reduced
	Rounds	Yes	Rounds	Reduced
	Fall risk	Yes	Fall risk	Reduced
	Braden scale	Yes	Braden scale	Reduced
	Off unit / transport	Yes	Off unit / transport	Reduced
	First family contact 30 min	Yes	First family contact 30 min	No
	Pre op checklist	Yes	Pre op checklist	Yes
	MRSA screening	Yes	MRSA screening	Yes
	COVID 19 screening	Yes	COVID 19 screening	Yes

*Focused assessment is a detailed nursing assessment of specific body systems related to the presenting problem or other concern.

** Reduce items documented within checklists as appropriate.

- Printable version Altered Practice Standards

Altered Documentation Frequency Recommendations in Critical Care During Surge

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

- This document should not be used as a reference for Practice Standards.
- Clinical judgment and MRHP orders should always supersede these recommendations.
- All documentation frequency decisions should be made by the care team and not by individual providers.
- Alternative documentation frequency can be applied to electronic and paper charting. Applies to all appropriate patients in ICU.
- Purpose is to guide clinical decisions regarding alterations to documentation frequency only when standard documentation is not feasible during surge

General Documentation Guidelines

- Standard documentation should be practiced whenever feasible.
- Required documentation should be completed by the individuals providing the care.
  - If a collaborative approach to documentation is required it must be identified in the document.
  - Clinician performing intervention should verify the entry.
- Delayed entry is appropriate during surge.
- Standard care can be summarized and or grouped together to reduce frequency of charting & usage of PPE.
- Paper charting should not be taken into isolation unless during a crisis.
- Altered documentation trigger point should be identified in unit surge plans.
- Staff should be educated to alternative documentation before implementation.

Altered Documentation

Possible reductions or omissions.

- Descriptive family visit/phone calls.
- Lab draws/ diagnostic imaging.
- Missed IV starts.
- Checklists (transport/admit/DC/death).
- Teaching.
- Spiritual support.
- Patient washes/ bed changes.
- Constant watches.
- Restraint checks.
- Mobility.
- Room safety checks (lines, equipment,& supplies).
- Alarms.

Unchanged Documentation

- Verbal & telephone orders from MRHP.
- Medication administration records will continue
- as per unit policy.
  - Independent double checks including 5 categories of high alert meds.
  - Med reconciliation process will remain.
- Critical care specific procedure, intervention & events.
- Lines/ tubes/ drains discontinuation & initiation.
- ACLS interventions. (code-blue)
- Out-reach/rapid response documentation.
- Blood product double checks & administration.
- Allergy
- History & next of kin contact.
- Admissions/discharge: date, time & location.
- Adverse event. (RLS)
- Goals of Care Documentation.
- Signature log & care team composition.
- Daily rounds- MRHP identification & time.

Altered Documentation of Assessment Frequency During Surge

Complex Patient
Do require titration of medication & ventilator
IS receiving invasive ICU interventions

- Comprehensive assessments to be documented at the start of every shift.
- Subsequent documentation of routine assessments should only record changes from baseline.
- The following frequency of documentation should continue as able:

Q 1 Hour & PRN
- HR/ BP/ temp/ Spo2 /RR & rhythm
- TF or etCO2 while on NMB & pupil checks

Q 4 Hour & PRN
- O2 flow delivery method
- Intake and output

Q Shift
- Complex wounds
- Fluid balance
- Stool count
- Lines tubes & drains

Documentation frequency for these advanced competency should NOT change

- ICP drains
- CSF drainage
- Post cardiac arrest care
- ICU medication titrations
- Balloon pumps
- IVAD
- Trans venous pacing
- Transcutaneous pacing
- PA catheter
- CRRT
- ECLS
- Cardioversions
- Esophageal balloons
- Prone position

✓ Medications requiring frequent titrations within a short time period can be documented once goal parameter is achieved.

Non- Complex Patient
DO NOT require titration of medication & ventilator.
NOT receiving invasive ICU interventions.

- Comprehensive assessments to be documented at the start of every shift.
- Subsequent documentation should only record changes from focused assessments.
- Monitoring frequency should be evaluated at rounds daily if possible.
- The following frequency of documentation should continue as able:

Q 4 Hour & PRN
- HR/ BP/ temp/ Spo2/ RR & rhythm
- O2 Flow delivery method

Q Shift
- Shift intake & output
- Fluid balance
- Complex wounds
- Stool count
- Lines tubes & drains

✓ VS & assessment documentation frequency should always be judged based on clinical stability.

✓ In the event that altered documentation can not be achieved the care team should be made aware.

✓ Ventilator & NIV documentation frequency are the responsibility of the RRT team .

✓ It is the teams' responsibility to make sure that documentation is completed.

Altered Standards of Continuous Monitoring Delivery in Critical Care During Surge

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

- This document should not be used as a reference for Practice Standards.
- Clinical judgment and MRHP orders should always supersede these recommendations.
- All decisions should be made by the care team and not by individual providers – Order from MRHP required to alter/discontinue current standards.
- Applies to all appropriate patients in ICU, CVICU, PICU and PCICU in Alberta.
- Purpose is to guide clinical decisions regarding alterations to monitoring standards *only when standard monitoring is not feasible during surge.*
- Goals of care must be consistent with interventions in response to an abnormality detected on a cardiac monitor to be considered.

Absolute Indication for Continuous Monitoring	Alternative Device or Removal from Continuous Monitoring	No Requirement for Continuous Monitoring
ANY hemodynamically unstable patients *	**ANY patients transitioning from unstable conditions requiring monitoring to now more stable**	**ANY patients where goals of care are not consistent with the need for ongoing monitoring**
CARDIAC: ○ Post Cardiac Arrest or Cardiac Surgery ○ Unstable/potentially unstable cardiac dysrhythmias ○ Temporary or dysfunctional pacemakers ○ Unstable mechanical circulatory support ○ Large and/or hemodynamically significant acute myocardial infarction ○ Immediately following reperfusion via thrombolysis and/or percutaneous routes ○ Hypertensive emergency requiring continuous intravenous anti-hypertensives **OTHER:** ○ Acute respiratory failure requiring acute mechanical ventilatory support ○ Acute intracranial events at risk of increased intracranial pressure ○ Large volume pulmonary embolism +/- need for thrombolysis or embolectomy ○ Significant electrolyte abnormalities ○ Significant toxic ingestion with demonstrated cardiac dysrhythmia or shock	❖ Mechanically ventilated patients or NIPPV with NO evidence of respiratory or hemodynamic instability ○ Pediatric exemption ❖ Post permanent pacemaker insertion ❖ Acute myocardial infarction with no ongoing instability – especially if post reperfusion therapy ❖ Stabilized heart failure, cirrhosis and liver failure ❖ Naloxone infusion and stabilized toxic ingestion ❖ Stable ventricular assist device (VAD) patients	❖ Withdrawal of life sustaining treatments with the exception of Donation After Circulatory Death (DCD) ❖ Patients listed for transfer to a non-monitored inpatient bed ❖ Patients awaiting discharge directly to home from ICU

Altered Continuous Monitoring during Surge

Safety Concerns

- When arterial line monitoring is deemed unnecessary and there is an inability to transduce, the arterial line should be immediately discontinued.
- Within each site and zone, alternative devices for continuous monitoring of patients have been identified:
  - These devices will vary in their ability to provide for cardiac, oxygen saturation and arterial line monitoring.
  - Not all devices will have the capability to be monitored from a central station.
  - It is advised for safety purposes, that should these devices be utilized, alarm settings be reviewed on each device and guidance be provided to staff for their use.
  - Most Responsible Healthcare Provider (MRHP), in collaboration with the healthcare team, will use clinical judgement to determine which patients are suitable for which alternative forms of monitoring.

Definitions

- **Hemodynamically Unstable ***
  - Need for ongoing significant vasopressor and/or inotropic support
  - Persistent or refractory shock of any etiology
  - Acute trauma/hemorrhagic shock
  - Unstable post-operative patients

- **Acute Respiratory Failure requiring acute mechanical ventilatory support**
  - Severe hypoxemia
  - Prone positioning
  - Inhaled epoprostenol
  - Respiratory acidosis/hypercarbia
  - Significant pressures required to oxygenate/ventilate

- **Unstable cardiac dysrhythmias**
  - VT/VF, Torsades
  - SVT/AFib/Aflutter/Bradycardia with hemodynamic compromise
  - Second degree type II and third degree AV block
  - Prolonged QT

- **Acute intracranial events at risk of increased intracranial pressure**
  - Traumatic
  - Significant subarachnoid hemorrhage of any etiology
  - Significant subdural/epidural hematoma or intraparenchymal hemorrhage at risk for significant mass effect
  - Significant cerebrovascular accident

- **Significant electrolyte abnormalities**
  - Hyper/hypokalemia
  - Hypomagnesemia
  - Hypophosphatemia
  - Severe hyper/hypocalcemia

- **Significant toxic ingestion with demonstrated cardiac dysrhythmia or shock**
  - TCA, illicit substances, toxic alcohols
  - Cardiac medications

- **Mechanical Circulatory Support**
  - Extracorporeal Life Support (ECLS)
  - Ventricular Assist Device (VAD)
  - Intra-aortic Balloon Pump (IABP)

Prioritization of Large Volume IV Pump Allocation Critical Care During Surge

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

- Purpose is to guide clinical decisions regarding prioritizing usage of intravenous pumps during surge.
- Applies to all patients in ICU, CVICU, PICU and PCICU in Alberta.
- During surge, large volume pumps will be allocated to Adult units. Pediatric units will maximize use of syringe pumps.
- Clinical judgment and MRHP orders should always supersede these recommendations.
- All decisions should be made by the care team and not by individual providers.
- The care team should evaluate the patient daily to determine if IV medication of fluids can be administered by alternative routes.

Absolute Indication for Use of IV Pump	Consider for Altered or Removal from IV Pumps	No Requirement for IV Pumps
❖ High Alert Medications. ❖ Medication infusions that are being titrated to obtain target results. For example: ○ Inotropes/Vasopressors ○ Reversal Agents/ Antidotes ○ Paralytics ○ Sedatives ○ Analgesics ❖ Total Parenteral Nutrition (TPN). ❖ Chemotherapy & Biotherapy agents. ○ Some agents are able to be given via gravity or direct IVP. ❖ Any medications that require a prescribed controlled rate of infusion. For example: ○ Vancomycin ○ Aminoglycosides	❖ IV maintenance fluid. ○ Optimize enteral administration of fluid if patient can tolerate. ○ Discontinue additional runner/driver lines. ○ Maximize infusing compatible medications together. ❖ Blood product administration. ○ Blood products can be administered using gravity and drip rate calculations where appropriate. ○ Pediatrics and IVIG excluded	❖ Peripherally infused maintenance fluids without electrolytes. ○ Pediatric exception: all fluids will be maintained on pumps per standard practice. ❖ Bolus fluids. ❖ Medications that can be given IVP. ❖ Medications administered via mini bags that do not require a controlled rate.

Prioritization of IV Pumps during Surge

Safety Recommendations

Central Access Lines

✓ Pumps should be prioritized for central lines.

Peripheral Access Lines

✓ Frequent site monitoring for occlusion, infiltration or dislodgment.
✓ Peripheral catheter should be large bore.

General safety for infusions administered off the pump

✓ IV lines should be positioned off the floor.
✓ IV lines should be positioned & secured to reduce risk of occlusion or dislodgement.
✓ Control clamps should be positioned to reduce accidental manipulation.
✓ Patients should be monitored for fluid overload.
✓ Drip rates and bag volumes should be assessed frequently.
✓ Buretrol devices should be a last resort.

Links/Resources/References

Pharmacy

- Provincial High-alert Medication List- Categories
- High alert medications listed
- Availability of Neuromuscular Blockers, Analgesics and Sedative Agents for Critical Care Patients During the COVID-19 Pandemic
- Basal Bolus Insulin Therapy Order Sheet (BBIT)
- Lexicomp
- Micromedex

Drip rate Calculator

- LIPPINCOTT IV infusion, dose and flow rate calculations

Transfusion medicine

- Blood Components & Products Information/Monographs

Chemo/ Biological agent

- Intravenous Chemotherapy And Biotherapy Agents: Administration, Safe Handling And Disposal

AHS Documents

- Large Volume Infusion Pump Conservation During COVID-19

Device

- Pediatric Common CVAD devices and volumes
- ADULT Vascular Access Device Infusion Therapy – All locations

Prioritization of Feeding Pumps in Critical Care During Surge

- ❖ All decisions should be made by the care team and not by individual providers
- ❖ Order from MRHP required to alter/discontinue current standards.
- ❖ Dietitian should be involved in the decision to alter feeds.

- ❖ Applies to all appropriate patients in ICU, CVICU, PICU PCICU in Alberta
- ❖ Daily evaluation to determine if patient requires a pump should occur.
- ❖ Recommend cohort pumps to critical care areas by applying criteria for prioritized usage on all wards

Prioritized Usage

❖ **Patients should not be transitioned to Gravity Feeding if**:

- GI surgery
- GI intolerance (i.e)
  - Abdominal distension
  - Diarrhea
  - Emesis
  - High gastric residual volume (GRV)
- Hemodynamically unstable
- New tube feed initiation until tolerating
- Prone position
- Receiving paralytic agents
- Refeeding syndrome
- Small bowel feeds
- Suboptimal blood sugar control
- Trophic feeds (trickle, minimal or priming feeds)
- Vascular patients at risk for bowel ischemia
- Ventilation with high volumes and pressures

Not Prioritized Usage

❖ **Patients that can be transitioned to Gravity Feeding or alternative delivery**.

- Stable critically ill patients that have achieved goal nutrition without concern, considering criteria for prioritized usage.

❖ **Gravity delivery includes**

1. Continuous OR Cycled
   - Feed with gravity feeding system for 8-24h
2. Intermittent
   - Often delivered within 45-60 minutes, 3-6 times per day
   - May start at a slower rate e.g. over 2 hours.
3. Bolus (may be with a syringe)
   - Often delivered over 15-30 minutes, but may quicker (i.e. 4-10 min), 3-6 times per day

Alternative Usage

- Share pumps between 2 patients in the same room for cycled feeds (e.g.12h runs each). Double check for rate, volume and formula errors. Maintain IP&C cleaning protocols.

Considerations when using Gravity Feeding

❖ Alternative feeding strategies such as Gravity Feeding systems may present challenges including:

- Clogged tubes
- Difficult control of infused volume
- GI intolerance
- Hyperglycemia
- Impaired nutrition delivery
- Increased time demand
- Risk of aspiration

❖ Clinical experience indicates that COVID-19 patients can be difficult to feed enterally for the first 1-2 weeks of ICU admission as a result of

- GI intolerance
- Hyperglycemia
- Interruptions for procedures & interventions
- Prone position

❖ Consider the following factors that will impact flow rate:

- Bag height
- Diameter of feeding tube set & length
- Formula viscosity

Considerations for using Gravity Feeding

- Use large bore gravity feed sets
- Fill the open system bag with the least amount of formula needed at a time in order to avoid over infusion.
- Flush tubes before and after feeding with sterile water as per order.
- Use roller clamp on gravity feed set to control gravity drip rate.

- **Bolus/intermittent feeds**
  - Suggest starting with roller clamp at half.
  - Monitor patient's tolerance to the feed.
  - Open roller clamp more fully as appropriate.

- **Continuous gravity feeds**
  - Determine the drip rate:
    - By counting drops per 15 seconds
    - Multiply by 4 to get drops/min and estimate 12-16 drops per mL to determine goal rate
    - Refer to the chart on the right for a starting estimate of goal rate/hr

- **Conservation of formula & sets suggestions**
  - If using an Ultrapak, suggest cutting the corner and pouring the solution into 2 or 3 gravity bags – Hang time should be limited to 8 hours for *open system* (refrigerate the unused gravity bags).
  - Opened packages should be labelled and used within 24 hours.
  - To preserve feeding sets and enteral product, utilize spike sets for up to 48h on Ultrapak bags only.

Estimate the Goal Rate Based on drops/min

Based on assumption that 1 mL = 14 drops
Higher viscosity will result in fewer drops
Lower viscosity will result in more drops

Goal Rate/Hour	Drop per 15 seconds (approx.)
60 mL/h	4 drops
80 mL/h	5 drops
100 mL/h	6 drops
120 mL/h	7 drops
140 mL/h	8 drops

- For staff education on the use of gravity feeding systems, refer to:
  - Nestle Resource
  - Abbott Resource

Continuous Use of Microbore (i.e. MRI tubing) IV Extension Tubing in Critical Care

Alberta Health Services Inspiring solutions. Together.
Critical Care Strategic Clinical Network™

- The practice of using microbore tubing to relocate IV pumps outside a patient's room is restricted to Critical Care and only during a pandemic. (current MRI transport usage remains acceptable)
- This practice is reserved for patients that are on isolation requiring frequent donning and doffing of PPE as a conservation strategy.
- Decisions to implement this strategy should be made by the care team and not by individual providers.
- Applies to all patients in ICU, CVICU, PICU and PCICU in Alberta.

Recommended Practice	Considerations	Not Recommended Practice
❖ Administration of fluids & continuous medications ❖ Use with large bore central lines that have had placement verified ❖ Continuous monitoring to ensure desired effects of medications delivered ❖ ❖ IV poles should be marked with patient label or other identifiable marker & checked every shift ❖ Maximize medication compatibility to minimize the number of microbore tubing used ❖ Merge/attach regular IV tubing to manifolds, trifurcations and bifurcations prior to attaching a single microbore tubing ❖ Microbore extension tubing should not be connected together in a series.	❖ Caution should be used with medications infusing at low volume rates ○ Consider driver/ runner lines ❖ Flow rates may be affected due to backpressure ❖ Downstream occlusion alarms may be delayed ❖ All team members should be aware if extension tubing is being utilized including housekeeping ❖ Higher priming & flushing volumes may be required ○ Extra medication amounts will be required for priming – be aware of ongoing medication shortages	❖ For patients that are: ○ Hemodynamically unstable ○ Agitated ○ Actively mobilized ○ Risk for entanglement ○ During resuscitation ○ Non Isolated ○ Cohorted in a room ❖ On CRRT circuit lines ❖ Infusions under pressure or transduced lines ❖ For blood product administration ❖ For parenteral nutrition ❖ IV direct & one time medications ❖ Infusions through peripheral IVs or IOs ❖ Gravity infusions

Micro Bore Tubing Recommendations

- Extension tubing should follow AHS standard IV tubing practice standards including:
  - Line tracing & independent double checks
  - Labeling
  - Line changes
- Tubing must be fully primed with medication or fluid prior to connecting to patient.
- Prime outside of the room and only the attachment end should enter the patient's room to reduce contamination.
- Extension tubing placement should be in low traffic areas:
  - Off the floor
  - Not in door tracks or locks
  - Ensure lines are not obstructed
  - Ensure lines are visible with identification tags
- Units should predetermine appropriate locations of beds , poles, and power sources to reduce risks to staff and patient.
- If transportation is required, take minimal infusions and ensure lines are secure.
- Caution when using in a negative pressure room – ensure sensors do not indicate a drop in pressures. Isolation should not be compromised.

P.2/2

Resources

Medical tubing Entanglement: Prevention Strategies & Intervention for the Pediatric Patient

AHS Provincial Line Label Labelling Instructions

Invasive Infusion Line & Tubing Verification

Infusion Pumps (including SMART pumps) for Medication & Parenteral Fluid Administration

Independent Double-Check

References

COVID-19 Clinical Considerations: Using extra-long extension sets with the BD Alaris™ Pump Module and Alaris™ Syringe Module

Infusion Nurses Society. Frequently Asked Questions Related to COVID-19 Health Care Challenges

Medication Administration and Safety During the COVID-19 Response

Appendix: A

Provincial Staffing & Documentation Working Group Members

- Altered Documentation Frequency Recommendations in Critical Care During Surge
- Altered Care Delivery in Critical Care During Surge

Michelle Van Beek	North	Manager, Emergency/ICU, Northern Lights Regional Hospital
Sandra Beida	North	Manager, ICU/CCU, Respiratory, EEG, Cardiology, Queen Elizabeth II Regional Hospital
Melissa Ziober	Edmonton	Clinical Nurse Educator, ICU/CCU, Grey Nuns Community Hospital
Laura Slipp	Edmonton	Patient Care Manager, NICU & PICU, Alberta Children's Hospital
Laurie Sembaliuk	Edmonton	Program Manager, Critical Care and Cardiac Sciences, Grey Nuns Community Hospital
Tove Leblanc	Edmonton	Patient Care Manager, Critical Care, Royal Alexandra Hospital
Tracy Downie	Edmonton	Patient Care Manager, PICU and Transplant, Stollery Children's Hospital
Shelley Groves-Johnston	Edmonton	Patient Care Manager, GSICU, University of Alberta Hospital
Mishaela Houle	Edmonton	Executive Director, Cardiac Sciences/Critical Care, Mazankowski Heart Institute
Donalda Dyjur	Edmonton	Executive Director, Medicine and ICU Programs, Royal Alexander Hospital
Lisa Cote	Edmonton	Patient Care Manager, PICU/ECMO/CCFP, Stollery Children's Hospital
Gillian Brown	Central	Manager, ICU/CCU, Red Deer Regional Hospital
Kelly Longard	Central	Director, Cardiac Sciences, Critical Care & Respiratory, Red Deer Regional Hospital
Patty Infusino	Calgary	Manager, Critical Care , Peter Loughheed Center
Karlyn Grant	Calgary	Unit Manager, ICU, Foothills Medical Centre
Emma Folz	Calgary	Executive Director, Critical Care, Cardiac Sciences, Medicine & Respiratory, Peter Lougheed Centre
Brian Ellis	Calgary	Assistant Manager, Allied Health, Foothills Medical Center
Yung Pham	Calgary	Department Manager, Respiratory Services, Pulmonary & Specialty Clinics, South Health Campus
Hilary Gray	Calgary	Allied Health, Rocky View General Hospital
Daniel Cashen	Calgary	Clinical Nurse Specialist, Critical Care, Foothills Medical Centre

Sarah Beckman	South	Clinical Nurse Educator, Medicine Hat Regional Hospital
Darrin Gerl	South	Quality Consultant, SZ Integrated Quality Management
Marci Neher-Schwengler	South	Unit Manager, Intensive Care Unit, Chinook Regional Hospital
Erinn Fisher	South	Manager, ICU/CCU, Medicine Hat Regional Hospital
Kathryn Brandt	South	Quality Consultant, Integrated Quality Management South Zone
Marilyn Bartoshyk	South	Director, Cardiac Sciences/Respiratory Health/Critical Care, Chinook Regional Hospital
Darrin Gerl	South	Quality Consultant, SZ Integrated Quality Management
Catherine Johansen	South	Manager Respiratory Health & Cardio-Respiratory Services, Medicine Hat Regional Hospital
Brooke Blythe	Provincial	Practice Lead, Critical Care Strategic Clinical Network
Karen Shariff	Provincial	Knowledge Translation Practice Lead, Critical Care Strategic Clinical Network
Nancy Fraser	Provincial	Senior Provincial Director, Critical Care Strategic Clinical Network
Peter Blondeel	Provincial	Senior Project Manager, Clinical Project Support Service
Jeanna Morrissey	Provincial	Manager, Critical Care Strategic Clinical Network
Kathy Sassa	Provincial	Senior Practice Consultant, Clinical Nurse Educator Support, Clinical Transition Education, ACNO
Jocelyn Anderson	Provincial	Manager, Inpatient Clinical Document Specialty & Quality Services, Information Systems
Karla Avery	Provincial	Director, Orders and Clinical Documentation Inpatient, Clinical Services Information Technology
Roxanne Tyndle	Provincial	Team Lead, e-Critical Application Support, e-Critical Alberta, IT
Sherri Kashuba	Provincial	Executive Director, Critical Care Strategic Clinical Network
Jacquelyn Odiorne	Provincial	Critical Care Nursing Education Coordinator, Health Professions Strategy and Practice

Appendix: B

Critical Care Small Equipment Task Group Members

- Altered Standards of Continuous Monitoring Delivery in Critical Care During Surge
- Prioritization of Large Volume IV Pump Allocation Critical Care During Surge
- Prioritization of Feeding Pumps in Critical Care During Surge

Michelle Van Beek	North	Manager, Emergency/ICU, Northern Lights Regional Hospital
Brenda L McGuey	North	Clinical Educator, ICU/CCU, Northern Lights Regional Health Center
Sandra Beida	North	Manager, ICU/CCU, Respiratory, EEG, Cardiology, Queen Elizabeth II Regional Hospital
Melissa Ziober	Edmonton	Clinical Nurse Educator, ICU/CCU, Grey Nuns Community Hospital
Laura Slipp	Edmonton	Patient Care Manager, NICU & PICU, Alberta Children's Hospital
Laurie Sembaliuk	Edmonton	Program Manager, Critical Care and Cardiac Sciences, Grey Nuns Community Hospital
Tove Leblanc	Edmonton	Patient Care Manager, Critical Care, Royal Alexandra Hospital
Tracy Downie	Edmonton	Patient Care Manager, PICU and Transplant, Stollery Children's Hospital
Shelley Groves-Johnston	Edmonton	Patient Care Manager, GSICU, University of Alberta Hospital
Mishaela Houle	Edmonton	Executive Director, Cardiac Sciences/Critical Care, Mazankowski Heart Institute
Donalda Dyjur	Edmonton	Executive Director, Medicine and ICU Programs, Royal Alexander Hospital
Lisa Cote	Edmonton	Patient Care Manager, PICU/ECMO/CCFP, Stollery Children's Hospital
Gillian Brown	Central	Manager, ICU/CCU, Red Deer Regional Hospital
Kelly Longard	Central	Director, Cardiac Sciences, Critical Care & Respiratory, Red Deer Regional Hospital
Patty Infusino	Calgary	Manager, Critical Care , Peter Loughheed Center
Karlyn Grant	Calgary	Unit Manager, ICU, Foothills Medical Centre
Emma Folz	Calgary	Executive Director, Critical Care, Cardiac Sciences, Medicine & Respiratory, Peter Lougheed Centre
Brian Ellis	Calgary	Assistant Manager, Allied Health, Foothills Medical Center
Yung Pham	Calgary	Department Manager, Respiratory Services, Pulmonary & Specialty Clinics, South Health Campus
Hilary Gray	Calgary	Allied Health, Rocky View General Hospital
Daniel Cashen	Calgary	Clinical Nurse Specialist, Critical Care, Foothills Medical Centre

Sean Spence	South	Physician, Medical Director, Chinook Regional Hospital
Erinn Fisher	South	Manager, ICU/CCU, Medicine Hat Regional Hospital
Sarah Beckman	South	Clinical Nurse Educator, Medicine Hat Regional Hospital
Sandy Van Reeuwyk	South	Registered Nurse, ICU, Chinook Regional Hospital
Jeanna Morrissey	Provincial	Manager, Critical Care, Strategic Clinical Network
Kristin Robertson	Provincial	Practice Lead, Critical Care, Strategic Clinical Network
Brooke Blythe	Provincial	Practice Lead, Critical Care, Strategic Clinical Network
Carlota Basualdo	Provincial	Executive Director, Strategy Standard & Practice Nutrition

Appendix: C

The Provincial Critical Care COVID 19 Working Group

- All documents where reviewed and approved by the Provincial Working Group before circulation or submitted to ECC for review and approval.

Surinder Khinda	North	Medical Director, ICU/CCU, Northern Lights Regional Health Centre
Michelle Van Beek	North	Manager, Emergency/ICU, Northern Lights Regional Health Center
Sandra Beida	North	Manager, ICU/CCU, Respiratory, Cardiology, Queen Elizabeth II Hospital
Dallas Schroeder	Edmonton	Manager, Respiratory Services, University of Alberta Hospital
Donalda Dyjur	Edmonton	Executive Director, ICU, Royal Alexandra Hospital
Lisa Cote	Edmonton	Patient Care Manager, PICU/ECMO/CCFP, Stollery Children's Hospital
Mishaela Houle	Edmonton	Executive Director, Cardiac Sciences/Critical Care, Mazankowski Alberta Heart Institute
Dominic Cave	Edmonton	Physician, Anesthesiology, Cardiac Sciences/Critical Care, Mazankowski Alberta Heart Institute
Shelley Duggan	Edmonton	Medical Director, Unit Director, Covenant Health System, Grey Nuns Community Hospital
Elizabeth Seib (retired)	Edmonton	Executive Director, Critical Care/Burns, Neurosciences, University of Alberta Hospital
Luc Benoit	Central	Physician, Critical Care Medicine, Red Deer Regional Hospital
Kelly Longard	Central	Director, Cardiac Sciences, Red Deer Regional Hospital
Adam Hall	Central	Physician, Critical Care Medicine, Red Deer Regional Hospital
Michael Russell	Central	Medical Director, ICU/CCU, Red Deer Regional Hospital
George Belanger	Central	Manager - Diagnostic Cardiology and Respiratory Therapy, Red Deer Regional Hospital
Gillian Brown	Central	Manager, ICU/CCU, Red Deer Regional Hospital
Luc Berthiaume	Calgary	Medical Director HTA, Critical Care, Peter Lougheed Centre
Daniel Cashen	Calgary	Clinical Nurse Specialist, Critical Care, Foothills Medical Centre
Tom Stelfox	Calgary	Physician, Director, Critical Care Foothills Medical Centre
Emma Folz	Calgary	Executive Director, Critical Care, Cardiac Sciences, Medicine and Respiratory, Peter Lougheed Centre
Laura Slipp	Calgary	Patient Care Manager NICU, PICU, Alberta Children's Hospital
Carmella Steinke	Calgary	Executive Director, Integrated Quality Management, South Health Campus

Sarah Beckman	South	Clinical Nurse Educator, Medicine Hat Regional Hospital
Darrin Gerl	South	Quality Consultant, SZ Integrated Quality Management
Marci Neher-Schwengler	South	Unit Manager, Intensive Care Unit, Chinook Regional Hospital
Erinn Fisher	South	Manager, ICU/CCU, Medicine Hat Regional Hospital
Adeel Azam	South	Medical Director, Medicine Hat Regional Hospital
Sean Spence	South	Physician, Medical Director, Chinook Regional Hospital
Marilyn Bartoshyk	South	Director, Cardiac Sciences/Respiratory Health/Critical Care, Chinook Regional Hospital
Tavish Barnes	South	Physician, Critical Care Medicine, Chinook Regional Hospital
Karen Shariff	Provincial	Knowledge Translation Practice Lead, Critical Care Strategic Clinical Network
Nancy Fraser	Provincial	Senior Provincial Director, Critical Care, Strategic Clinical Network
Peter Blondeel	Provincial	Senior Project Manager, Clinical Project Support Service
Jeanna Morrissey	Provincial	Manager, Critical Care Strategic Clinical Network
Kristin Robertson	Provincial	Practice Lead, Critical Care Strategic Clinical Network
Kathy Sassa	Provincial	Senior Practice Consultant, Clinical Nurse Educator Support, Clinical Transition Education, ACNO
Sherri Kashuba	Provincial	Executive Director, Critical Care, Strategic Clinical Network
Brooke Blythe	Provincial	Practice Lead, Critical Care Strategic Clinical Network
Caroline Hatcher	Provincial	Provincial Deputy Director Clinical Operations ECC
Jacquelyn Odiorne	Provincial	Critical Care Nursing Education Coordinator, Health Professions Strategy and Practice
John Montpetit	Provincial	Provincial Director, RAAPID North/South, Respiratory Equipment and Services Program
Karla Avery	Provincial	Director, Orders and Clinical Documentation Inpatient, Information Technology
Jocelyn Anderson	Provincial	Manager, Inpatient Clinical Documentation, Specialty & Quality Services, Information Technology
Suman Sengar	Provincial	Senior Project Manager Information Technology
Roberta Dubois	Provincial	Practice Director, Provincial Respiratory Services, Health Professions Strategy and Practice
Heather Sharpe	Provincial	Assistant Scientific Director, Respiratory Health Strategic Clinical Network
Brian Holroyd	Provincial	Senior Medical Director, Emergency, Strategic Clinical Network
Scott Fielding	Provincial	Physician, Emergency Medicine, University of Alberta Hospital. Senior Provincial Director, Emergency, Strategic Clinical Network
Dan Zuege	Provincial	Physician, Critical Care Medicine, Peter Lougheed Centre. Senior Medical Director, Critical Care, Strategic Clinical Network
Sean Bagshaw	Provincial	Physician, Critical Care Medicine, University of Alberta Hospital. Scientific Director, Critical Care Strategic Clinical Network
Jo Harris	Provincial	Senior Analytics and Project Consultant, Critical Care Strategic Clinical Network