V1
2020

Clinical Practice Guidelines

CPRU - HANDBOOK

BARB TIERNEY

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INTRODUCTION

The following Community Paramedic Clinical Guidelines are based on current standards of practice for community paramedics assessing, providing treatment and ongoing monitoring to patients.

These guidelines have been produced by the County of Hastings and Renfrew Paramedic Services with guidance from Dr. Kristian Davis.

The following guidelines have been created to guide and support the care provided by Community Paramedics for ongoing episodic and acute care needs of our patients. Based upon the assessment and overall presentation of a patient, the Community Paramedic is authorized to apply these guidelines and delegated acts in concert with all applicable regulations and standards.

CONGESTIVE HEART FAILURE

INDICATIONS

This clinical guideline is intended for patients with a known history and treatment of congestive heart failure, experiencing an exacerbation of their condition.

CONDITIONS

Age: ≥ 18 years
LOA: Unaltered from normal
HR: 60-150 bpm
RR: 12 - 35
SBP: >100 - < 180 or (+/- 30% of normal)
Other: Weight gain >1kg < 5kg

CLINICAL CONSIDERATIONS

- Ascertain past medical history of chronic renal failure and prior history of use of furosemide and nitroglycerin.
- If patient appears to be in severe distress and has:
  - ongoing chest pain,
  - arrhythmias, i.e., new onset irregular heart rate,
  - O2 sat <87% or new drop of 5% from normal,
  - acute onset of >5kg weight gain- consider transport to emergency department.
- If patient has unaddressed social issue related to personal safety or inability to maintain independence consult primary care practitioner - consider transport to emergency department.

CONTRAINDICATIONS

Allergy or sensitivities to Furosemide or Nitroglycerin

- Unable to safely live independently despite effort.

TREATMENT

Consider Furosemide

If the patient is not currently using furosemide and does not have a past medical history of chronic renal failure, consider,

- Route-PO
- Dose -40 mg
- Dosing Interval- Initial dose at time of assessment. Repeat daily a.m. x 3 days. (PRN)
- Max # of doses- 4

If the patient is currently using furosemide and does not have a past medical history of chronic renal failure, consider,

- Route-PO
- Dose -doubling of previous chronic/prescribed dose (to a max of 200mg)
- Dosing Interval- Initial dose at time of assessment. Repeat daily a.m. x 3 days. (PRN)
- Max # of doses- 4

Past medical history of chronic renal failure

- Consult with primary care practitioner.

Consider Nitroglycerin

Note:

- Generic nitroglycerin patch available in 0.2-0.4-0.6 mg/hr dosages.
- Nitrodur is also available in 0.8 mg/hr.

Table 1: Nitro Use Pathway

PREVIOUS NITRO USE?	
NO	**YES**
– Route-Transdermal – Dose -0.2mg/hr patch – Dosing Interval- on q a.m./off q p.m. (12hr duration) – Max # of doses- 4-day total	– Route-Transdermal – Dose -Increase chronic – dose by 0.2mg/hr patch – Dosing Interval- on q a.m. /off q p.m. (12 hr duration) – Max # of doses- 4 days total

POST TREATMENT PLAN

- Return to previous dosing regimen of medication,
- Send report of treatment to primary care physician (or alternate medical care provider)
- Follow up monitoring with patient (schedule based on patient need).
- Consult primary care physician or seek alternate medical attention if patient's condition deteriorates.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

INDICATIONS

This clinical guideline is intended for patients with a known history and treatment of chronic obstructive pulmonary disease, experiencing an exacerbation of their normal baseline condition.

CONDITIONS

Age: ≥ 55 years
LOA: Unaltered from normal
HR: 60-150 bpm
RR: 12-40
SBP: >100 - <180 (+/- 30% of normal)
O2 saturation >87% or < 5% drop from normal

CLINICAL CONSIDERATIONS

- Consider consulting the patient's primary care practitioner if the patient has any of below,
- Inadequate response of symptoms to outpatient management
- Inability to eat or sleep due to symptoms,
- Inability to care for oneself (i.e., lack of home support)
- Uncertain diagnosis,
- High risk co-morbidities including,
    - pneumonia,
    - cardiac arrhythmia,
    - heart failure,
    - diabetes mellitus,
    - renal failure, or
    - liver failure.

If patient is in severe distress – initiate transportation.

CONTRAINDICATIONS

Allergy or sensitivities to:

- Salbutamol,
- Ipratropium,
- Prednisone,
- Clarithromycin,
- Cefuroxime,
- Trimethoprim/Sulfamethoxazole,

DOXYCYCLINE, LEVOFLOXACIN, OR AMOXICILLIN/CLAVULANATE TREATMENT

Consider Oxygen:

- Route-Nasal cannula
- Dose -1-6 L/min (FiO2 24% to 44%) to titrate to O2 saturation of 90 to 94%
- Max duration- 3 days

and,

Consider 100 mcg Salbutamol metered dose:

- Route-MDI
- Dose -1 to 4 puffs

- Dosing Interval- q 1-4 h
- Max # of doses- 8 puffs/ 4 hours and 48 puffs /24 hours for 3 days;

and, Consider 20 mcg Ipratropium metered dose:

- Route-MDI
- Dose -2 puffs
- Dosing Interval- q 4 h
- Max # of doses- Max # of doses- 2 puffs/ 4 hours and 12 puffs /24 hours for 3 days.

and, Consider Prednisone:

- Route-PO
- Dose -30 mg in consultation with primary care practitioner or alternate care provider
- Dosing Interval- Daily q a.m.
- Max # of doses- 5 days

Table 1 - Antibiotic Considerations

Simple Exacerbation	**Complex Exacerbation**
at least two of these three symptoms – increased dyspnea, – increased sputum volume, or – increased purulent sputum	**Simple exacerbation** and at least one of: – ≥4 exacerbations/year – Ischemic heart disease – Use of home oxygen, – Chronic oral steroid use
Route PO	
Dose - (antibiotic selection should be an alternate class to previous use within past 3 months) – Amoxicillin 500mg PO TID or – Clarithromycin 500mg PO BID or – Cefuroxime 500mg PO Q12h or – Trimethoprim 160mg/Sulfamethoxazole 800 mg PO BID or – Doxycycline 100mg PO BID (in consultation with primary care practitioner) Dosing Interval- Daily Max: 7 days	– Dose -Levofloxacin 500mg PO Qdaily; or – Amoxicillin/Clavulanate 500mg PO Q8h in consultation with primary care practitioner Dosing Interval- Daily Max: 7 days

POST TREATMENT PLAN

- Return to previous dosing regimen of medication,
- Send report of treatment to primary care physician (or alternate medical care provider)
- Follow up monitoring with patient (schedule based on patient need)
- Consult primary care physician or seek alternate medical attention if patient's condition deteriorates.

DIABETES

Table 1 - Type of Diabetes

NIDDM	IDDM
– Hypoglycemia -glucometry less than 4.0 mmol/L – Hyperglycemia with glucometry up to 15 mmol/L can be tolerated well until the patient's medication can be adjusted by their Family Practitioner – efforts should be made to ensure that this occurs within the next week if possible.	– Hypoglycemia-glucometry less than 4.0 mmol/L – Hyperglycemia –glucometry more than 8.0 mmol/L

INDICATIONS

This best practice guideline is to be followed for patients with a known history and treatment of diabetes mellitus, experiencing an exacerbation of their condition. (always consider why a patient may have altered blood sugars, such as infections stressors, cardiac events, med noncompliance, and or improper med usage, nutrition, GEM).

CONDITIONS

Age: ≥ 18 years
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: Ascertain history of increased blood glucose levels and/or signs and symptoms of dehydration.

CLINICAL CONSIDERATIONS

- If patient has an unaddressed social issue related to personal safety or inability to maintain independence consult primary care giver or alternate medical care provider
- If patient does not have clinical improvement with treatment - consider transport to emergency department.
- If patient is in severe distress – initiate transportation.

CONTRAINDICATIONS

Allergy or sensitivity to:

- Rapid Insulin.

TREATMENT

HYPERGLYCEMIA

Consider IV fluids (follow IV therapy protocol):

- Route-IV
- Dose –consider bolus of 20 ml/kg reassess at every 250 cc for fluid overload, max volume 1 litre over one hour
- Dosing Interval- infusion over 4 to 6 hours on consultation with primary care provider or alternate medical care provider
- Max duration - 3 days

Consider Rapid Insulin:

- Route- Subcutaneous
- Dose - as per Sliding Scale (see below) on consultation with primary care practitioner or alternate medical care provider,
- Dosing Interval- with breakfast, lunch, dinner, and bedtime snack
- Max duration- 3 days

Table 2 - Sliding Scale

Blood glucose targets: Before Meals = 4 to 7 mmol/L and After Meals = 5 to 10 mmol/L

Blood Glucose (mmol/L)	Additional Rapid Acting Insulin (units)
<8.0	0
8.0-9.9	1
10.0-11.9	2
12.0-13.9	3
14.0-15.9	4
16.0-19.9	5
20.0-29.9	6
>30	Consider transport to ER

- The correction factor used in this sliding scale is 1 unit of insulin for each 2 mmol/L increase in blood glucose over target level.
- This can be modified by the primary care provider or alternate medical care provider to suit individual patients accounting for insulin sensitivity and previous history.
- Patient continues with existing insulin doses with the increases by the sliding scale.
- Rapid acting insulin used only.
- Blood glucose is to be checked before breakfast, lunch, dinner and bedtime snack.

HYPOGLYCEMIA

Hypoglycemia – glucometry less than 4.0 mmol/L

CONTRAINDICATION

Allergy or sensitivity to:

- Glucagon or Hx Pheochromoctytoma.

Table 3 – Hypoglycemia Treatment

Dextrose	Glucagon(If IV access not possible)
<25 kg – 0.5g/kg IV(1 ml/kg)	< 25 kg 0.5 mg IM
≥25 kg 25 gm IV(50 ml D50W)	≥25 kg 1 mg IM

Post Hypoglycemic treatment - monitor for 1 hour to ensure effective response to treatment and any requirement for further follow up.

POST TREATMENT PLAN

- Return to previous dosing regimen of medication (if applicable)
- Send report of treatment to primary care physician (or alternate medical care provider)
- Follow up monitoring with patient (schedule based on patient need)
- Consult primary care physician or seek alternate medical attention if patient's condition deteriorates.

URINARY TRACT INFECTION

INTENDED USE

Using this directive, the Community Paramedic associated with the County of Renfrew Community Paramedic program will assess, diagnose, and treat uncomplicated urinary tract infections during home visits.

ELIGIBILITY

- Enrolled patient of the County of Renfrew Community Paramedic Program
- Community members under the care of a physician
- >65 years of age

CLINICAL CONSIDERATIONS

- All patients under the care of the Community Paramedic program who are presenting with one or more of the following:
- Dysuria
- Hematuria
- Urgency
- Cloudy or strong-smelling urine
- Suprapubic pain or pressure
- New onset lower back pain with unidentified cause
- Rigors with or without unidentified cause
- New onset delirium
- Change in LOC/Lethargy

EXCLUSION CRITERIA

- Temperature >38.0 C, vomiting, or presence of costovertebral angle tenderness
- Patient has a history of urinary calculus,
- Patient has a history of frequent UTIs (>3 in the last year)
- Acute Delirium

These symptoms are contraindicated due to the likelihood of the infection being an upper UTI (pyelonephritis, etc.), which can be more difficult to treat.

For patients presenting with the above contraindications, the Community Paramedic obtains history, performs a physical assessment, documents findings and consults with the primary care provider for further direction on patient care in a timely manner.

CP THE COMMUNITY PARAMEDIC SHALL

Acquire an incident history including presenting symptoms, urine characteristics, history of UTI and treatment, allergies to antibiotics, and kidney function. A blood draw requisition may be required to test EGFR and creatinine clearance.

Obtain a mid-stream urine sample and apply patient label to specimen bottle. Urine sample should then be tested with a chemical reagent strip using aseptic technique.

Assess urine characteristics with sample provided.

Communicate with the patient that they likely have a urinary tract infection if midstream urine specimen reveals presence of leukocytes (more than trace amount) or presence of nitrates (any positive, including trace amount).

Request a lab requisition for urinalysis and culture and sensitivities from the Primary Care Provider.

TREATMENT

Early treatment of UTI is important in elderly patients to prevent progressions to systemic infection. Because UTIs are so common in elderly women, it is important to be aware of the treatment options that are most effective in this population. When choosing an antibiotic, please consider:

- Side-effect profile
- Cost
- Bacterial Resistance
- Likelihood of compliance
- Effect of impaired renal function on dosing
- The possibility of an adverse drug reaction (interactions with other medications, age related pharmacokinetics, etc.).

ANTIBIOTICS

Macrobid

- 100mg BID 7-10 days.
- Contraindicated in patients who have a creatinine clearance of <60mL/min (known renal insufficiency or failure) or any allergy/sensitivity.
- Approximate Cost is $1.34 per day.
- Resistance for Macrobid in Canada is 21% in nursing homes and approximately 6-8% in other settings.

Amoxicillin

- 500mg TID x 7-10 days.
- Contraindicated for those who have an allergy or sensitivity.
- Approximate cost is $1.03 per day.
- Resistance for Amoxicillin is approximately 40%.

It is important to consider that Macrobid and Amoxicillin are general antibiotics and may be ineffective against complicated urinary tract infections. Complicated TI patients include those with structural or functional abnormalities such as a urinary obstruction, chronic catheter or spinal cord injury. For these situations, a consult with the patient's Primary Care Provider is indicated.

Once the urine tests have been completed, an adjustment in dosage or change in medication may be warranted depending on the type of bacteria present.

Source:

Anti-Infective Review Panel. Anti-Infective Guidelines for community-acquired infections. Toronto: MUMS Guideline Clearinghouse, 2013.

OUT-OF-RANGE INR

INTENDED USE

Using this directive, the Community Paramedic associated with the County of Renfrew Community Paramedic program will be capable of completing a point of care INR test, and provide patient care with regards to the result.

ELIGIBILITY

- Enrolled patient of the County of Renfrew Community Paramedic Program and requires regular INR testing.
- Community members under the care of a physician.

CLINICAL CONSIDERATIONS

All patients under the care of the Community Paramedic program who regularly have their INR tested.

EXCLUSION CRITERIA

- Patient not currently taking Warfarin.

CP THE COMMUNITY PARAMEDIC SHALL:

Acquire a point of care INR test result using the coaguchek device. Therapeutic range for patients with mechanical mitral valves is 2.5-3.5. For most other patients, the therapeutic range is from 2.0 – 3.0 unless stated otherwise by their physician.

For each out-of-range INR value, attempt to identify the cause. See the section attached, “Summary of Common Causes of Out-of-Range INRs”.

The attached document summarizes the common causes for Out-of-Range INRs. With this as a consideration, inquire about the following:

- Current Warfarin Dosage? Inquire about the possibility of having taken a dosage other than the one prescribed.
- Any missed dosages within the last week? Ensure all dosages were taken and suggest strategies to assist in doing so, i.e., calendar to record doses/pill box, etc.
- Any medications being stopped / started recently? Any new change in dosages? This will likely interact with INR.
- Any variances in diet? Ask about new foods or changes in consumption.
- Any changes in alcohol consumption?
- Any changes in general health? Any condition that may affect INR.

INR MONITORING AT WELLNESS CLINICS

INTENDED USE

Using the directive, the Community Paramedic can complete a point of care INR test and provide the necessary patient care based on results obtained at the Wellness Clinic.

ELIGIBILITY

- Orphaned patient without a family doctor, and
- Patient is currently taking Coumadin (warfarin) previously prescribed by a physician. A current blood work requisition is not required for this service.

CP THE COMMUNITY PARAMEDIC SHALL

- Advise the patient of the availability of point-of-care testing for INR, provide education regarding anticoagulant management and advise how to adjust minor medication changes.
- Acquire a point of care INR test result using the Coaguchek device.
- Confirm the patient's therapeutic range based on previous physician's advice or medical history:
- 2.0-3.0* Atrial Fibrillation, LV dysfunction, valvular disease
- 2.5-3.5* valve replacement, recurrent embolic events despite anticoagulation
- (*unless indicated otherwise by their physician)
- If test indicates patient is above therapeutic range recheck using another blood sample.
- Make recommendations about Coumadin adjustments, frequency of next INR test and need to report to the hospital as indicated in these guidelines.

Document the following:

- patient interaction using Wellness Clinic booklet
- Prehos – new patient file (consent, MedHx, Medications, Allergies) + INR Form for each visit
- Prehos – INR Clinic Summary for ED physician to consult when medication refills are required (this will capture Limited Use Criteria for DOAC consideration)
- Inform the patient that Community Paramedics cannot renew medications, conduct a blood draw to confirm the result or make any suggested changes if the patient is significantly out-of-range.

For each out-of-range INR value, attempt to identify the cause. See the section attached, "Summary of Common Causes of Out-of-Range INRs. Provide education regarding possible causes for INR to be out-of-range. Make medication adjustment recommendations as per this guideline or advise the patient to report to the nearest hospital as per this guideline.

Table 1 - Coumadin (warfarin) dosage to achieve INR of 2 to 3

Advise patient to adjust current Coumadin (warfarin) dose based on the follow:

INR less than 2	INR 3 to 3.5	INR greater than 3.6 to 4.0	INR greater than 4.0
Increase weekly dose by 5-15%	Decrease weekly dose by 5 to 15%	Decrease weekly dose by 10 to 15%	Advise patient to go to the nearest emergency department (withhold next dose if unable to get to ED*)
Advise INR gets rechecked in 1-2 weeks	Advise INR gets rechecked in 1-2 weeks	Advise INR gets rechecked in 1-2 weeks	Advise patient to inquire at the ED when next INR should be checked

Table 2 - Coumadin (warfarin) dosage to achieve INR of 2.5 to 3.5

INR less than 2	INR 2 to 2.4	INR 3.6 to 4.5	INR greater than 4.5
Advise to take additional dose and increase weekly dose by 10-15%	Increase weekly dose by 5-15%	Decrease weekly dose by 5 to 15%	Advise patient to go to the nearest emergency department (withhold next dose if unable to get to ED*)
Advise INR gets rechecked in 1-2 weeks	Advise INR gets rechecked in 1-2 weeks	Advise INR gets rechecked in 1-2 weeks	Advise patient to inquire at the ED when next INR should be checked

Note:

- If patient is unable to report to the nearest ED before their next dose advise to withhold and report to ED ASAP
- See table on the following page for dose adjustments based on current Coumadin dose.
- Target middle range of dose adjustment and select tablet dosage adjustment closest to target based on Coumadin tablets patient is currently using.

Table 3 - Tablet dosage adjustments table

% Change	Weekly Dose	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Based on 2 mg tablet								
-20%	11mg	1 tab	½ tab	1 tab	½ tab	1 tab	½ tab	1 tab
-15%	12mg	1 tab	½ tab	1 tab	1 tab	1 tab	½ tab	1 tab
-5%	13mg	1 tab	½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
0%	14mg	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab
+5%	15mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
+15%	16mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 ½ tab	1 tab
+20%	17mg	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab
Based on 2.5 mg tablet								
-20%	13.75mg	1 tab	½ tab	1 tab	½ tab	1 tab	½ tab	1 tab
-15%	15mg	1 tab	½ tab	1 tab	1 tab	1 tab	½ tab	1 tab
-5%	15.75mg	1 tab	½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
0%	17.5mg	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab
+5%	18.75mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
+15%	20mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 ½ tab	1 tab
+20%	23.75mg	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab
Based on 5 mg tab								
-20%	27.5mg	1 tab	½ tab	1 tab	½ tab	1 tab	½ tab	1 tab
-15%	30mg	1 tab	½ tab	1 tab	1 tab	1 tab	½ tab	1 tab
-5%	32.5mg	1 tab	½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
0%	35mg	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab
+5%	37.5mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
+15%	40mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 ½ tab	1 tab
+20%	42.5mg	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab
Based on 7.5mg tab								
-20%	41.5mg	1 tab	½ tab	1 tab	½ tab	1 tab	½ tab	1 tab
-15%	45mg	1 tab	½ tab	1 tab	1 tab	1 tab	½ tab	1 tab
-5%	48.75mg	1 tab	½ tab	1 tab	1 tab	1 tab	1 tab	1 tab
0%	52.5mg	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab	1 tab
+5%	56.25mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 tab	1 tab

+15%	60mg	1 tab	1 ½ tab	1 tab	1 tab	1 tab	1 ½ tab	1 tab
+20%	63.75mg	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab	1 ½ tab	1 tab

SUMMARY OF COMMON CAUSES FOR OUT-OF-RANGE INRS

Table 4 and Table 4 summarize common causes and management strategies for low and high INRs, respectively.

Table 4 - Common causes of Low INRs and Management Strategies

Common causes of Low INRs	Management Strategies
MISSED DOSES, NON-COMPLIANCE, or errors in dosing	Review the doses of Warfarin actually taken over the past several weeks, Use strategies to improve compliance: pill box, Warfarin pill box or pharmacy-prepared blister packs, Warfarin dosing calendar, patient education, simplify dosing regimen.
UNDERDOSING	Be aware that under dosing provides less protection against thrombosis but is still associated with bleeding. Bleeding risk is the same with INRs 1.5-2.0 and 2.0-3.0, but risk of thrombosis rises quickly below INR 2.0. Aim for INR 2.5. Aiming for 2.0 will lead to a higher chance of under dosing. Increase the dose according to INR value.
CHANGE IN DIET/EXERCISE Increased Vitamin K-rich foods (green leafy vegetables, soy, avocado, seaweed) Meal replacement beverages containing vitamin K Increased exercise	Day-to-day and week-to-week variation in dietary vitamin K intake commonly results in variability in INR. Do not advise patients to eat less vitamin K-rich foods. Educate patient to maintain a **consistent**, healthy diet and lifestyle. If INR is low and changes are long-term, increase the Warfarin dose.
DRUG INTERACTIONS **Prescription**: phenytoin, carbamazepine, barbiturates, rifampin, azathioprine **Non-prescription:** green tea, ginseng, St. John's Wort	A change in INR is seen within two weeks of drug initiation. Increase maintenance dose of Warfarin incrementally until stable maintenance dose is established. Educate patient to maintain consistency. Avoid herbal supplements, extremes of "binging" and avoidance.

Table 5 - Common causes of High INRs and Management Strategies

Common causes of High INRs	Management Strategies
DRUG INTERACTIONS*	Temporary drug interaction: temporary Warfarin hold or dose reduction. Chronic drug interaction: reduce maintenance dose and increase frequency of INR tests until new stable INR is achieved. Although many drugs may interact with Warfarin, avoidance of either Warfarin or the interacting drug is usually not required**.

ALTERED HEALTH STATES Fever, acute illness, diarrhea, reduced food intake Uncontrolled hyperthyroidism CHF exacerbation	Temporarily reduce the dose and increase the frequency of INR testing until the patient's health stabilizes.
MALNUTRITION (vitamin K deficiency)	Encourage patient to consume regular meals, including those containing vitamin K. Consider meal replacement beverage. Reduce maintenance dose of Warfarin and increase frequency of monitoring
ALCOHOL	A one-time moderate to large amounts of alcohol (more than 2 drinks) will transiently increase the INR (e.g., weekend party). Continue usual maintenance dose.
NON-COMPLIANCE OR ERRORS IN DOSING (The patient mistakenly took a different dosage regimen than was prescribed).	Review the doses of Warfarin actually taken over the past several weeks. Use strategies to improve compliance: pill box, Warfarin dosing calendar, patient education, simplify dosing regimen.

***Most common drugs that can increase INR:**

- Antibiotics: sulfamethoxazole/trimethoprim, metronidazole, quinolones (ciprofloxacin, levofloxacin), amoxicillin, erythromycin, clarithromycin, azithromycin
- Azole antifungals: fluconazole, miconazole, voriconazole
- Cardiac drugs: amiodarone, some statins (fluvastatin), fenofibrate
- Acetaminophen >1 g/day
- Levothyroxine dose increases – full effect observed after 4-6 weeks of dose change.

ANTIPLATELET AGENTS

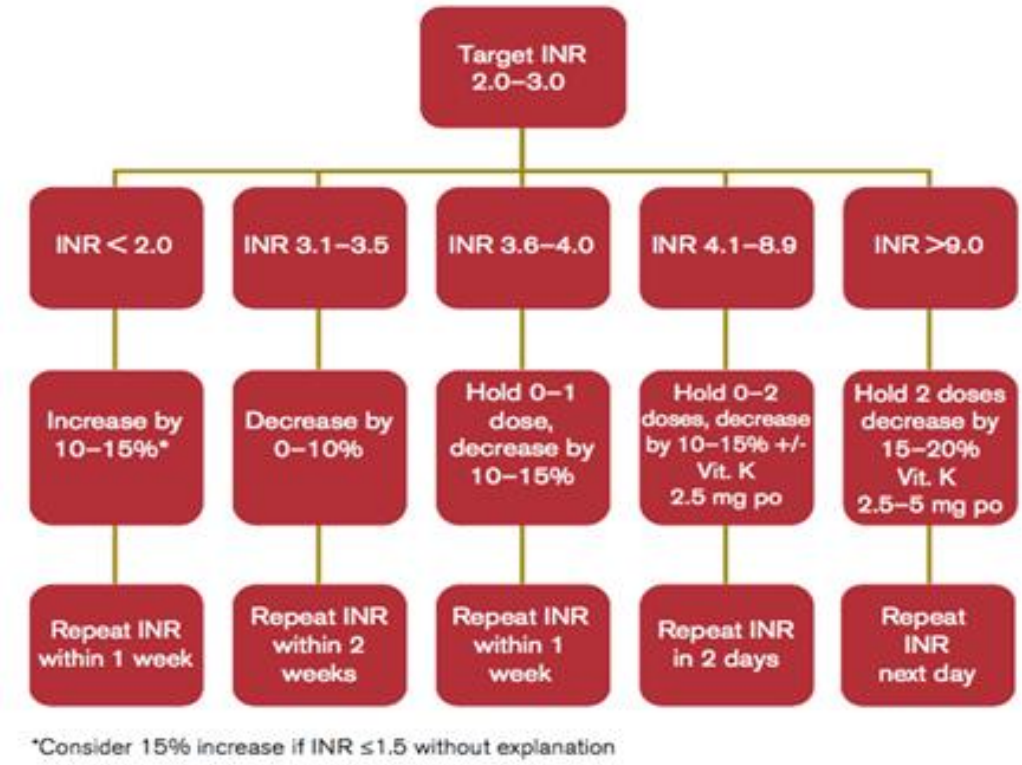
Antiplatelet agents (acetylsalicylic acid (ASA), clopidogrel, prasugrel, ticagrelor) and Non-steroidal Anti-Inflammatory Drugs (NSAIDs) significantly increase the risk of bleeding when combined with Warfarin but generally do not change the INR. The indication and clinical necessity of using these agents should be carefully weighed against the increased bleeding risk and should be avoided unless specifically indicated.

Source:

Clinical Guides. (n.d.). Retrieved September 14, 2017, from http://thrombosiscanada.ca/clinicalguides/#
Ageno W, et al. Oral anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e44S-e88S.
Cushman M, et al. 2014 Clinical Practice Guide on Anticoagulant Dosing and Management of Anticoagulant-Associated Bleeding Complications in Adults. American Society of Hematology, February 2014. Accessible at: http://www.hematology.org/Clinicians/Guidelines-Quality/Quick-Reference.aspx
Holbrook A, et al. Evidence based management of anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e152S–e184S

CLINICAL DECISION MAKING

- Determine whether a one-time change in the dose is all that is required or if a change in the maintenance dose is required or both.
- A change in the maintenance dose should be considered if there are at least two consecutive out-of-range INR values (in the same direction), in a patient with previously stable, in-range INRs and for which there is no identified temporary cause.
- A one-time change in the dose is appropriate for patients in which a transient cause is identified.
- For patients with previously in-range INR values who present with a single slightly out-of-range INR (e.g., INR 0.5 above or below the target range), there are two management options:
    1. Continue current maintenance dose and repeat INR in 1-2 weeks, OR
    2. Make a one-time dose change (increase or hold by ½ to 1 single dose) and resume current maintenance dose. Repeat INR in 1-2 weeks.
- The specific approach is influenced by the magnitude of the out-of-range value, previous experience of similar values in the patient and whether the patient has strong risk factors for thrombosis/stroke or bleeding. *INRs >6.0 must have a blood draw performed for accuracy*.



*****THIS NONOGRAM SERVES AS A GUIDE AND SHOULD NOT REPLACE CLINICAL JUDGMENT.***

SUMMARY OF COMMON CAUSES FOR OUT-OF-RANGE INRs

Table 1 and Table 2 summarize common causes and management strategies for low and high INRs, respectively.

Table 1: Common causes of Low INRs and Management Strategies

Common causes of low INRs	Management Strategies
MISSED DOSES, NON-COMPLIANCE, or errors in dosing	Review the doses of Warfarin actually taken over the past several weeks Use strategies to improve compliance: pill box, Warfarin pill box or pharmacy-prepared blister packs, Warfarin dosing calendar, patient education, simplify dosing regimen.
UNDERDOSING	Be aware that under dosing provides less protection against thrombosis but is still associated with bleeding. Bleeding risk is the same with INRs 1.5-2.0 and 2.0-3.0, but risk of thrombosis rises quickly below INR 2.0. Aim for INR 2.5. Aiming for 2.0 will lead to a higher chance of under dosing. Increase the dose according to INR value.
CHANGE IN DIET/EXERCISE	
Increased Vitamin K-rich foods (green leafy vegetables, soy, avocado, seaweed)	Day-to-day and week-to-week variation in dietary vitamin K intake commonly results in variability in INR. Do not advise patients to eat less vitamin K-rich foods.

Meal replacement beverages containing vitamin K Increased exercise	Educate patient to maintain a **consistent**, healthy diet and lifestyle. If INR is low and changes are long-term, increase the Warfarin dose.
DRUG INTERACTIONS **Prescription:** phenytoin, carbamazepine, barbiturates, rifampin, azathioprine **Non-prescription:** green tea, ginseng, St. John's Wort	A change in INR is seen within two weeks of drug initiation. Increase maintenance dose of Warfarin incrementally until stable maintenance dose is established. Educate patient to maintain consistency. Avoid herbal supplements, extremes of "binging" and avoidance.

Table 2 - Common causes of High INRs and Management Strategies

Common causes of high INRs	Management Strategies
DRUG INTERACTIONS*	*Temporary drug interaction*: temporary Warfarin hold or dose reduction. *Chronic drug interaction*: reduce maintenance dose and increase frequency of INR tests until new stable INR is achieved. **Although many drugs may interact with Warfarin, avoidance of either Warfarin or the interacting drug is usually not required**.**
ALTERED HEALTH STATES Fever, acute illness, diarrhea, reduced food intake Uncontrolled hyperthyroidism CHF exacerbation	Temporarily reduce the dose and increase the frequency of INR testing until the patient's health stabilizes.
MALNUTRITION (vitamin K deficiency)	Encourage patient to consume regular meals, including those containing vitamin K. Consider meal replacement beverage. Reduce maintenance dose of Warfarin and increase frequency of monitoring
ALCOHOL	A one-time moderate to large amounts of alcohol (more than 2 drinks) will transiently increase the INR (e.g., weekend party). Continue usual maintenance dose.
NON-COMPLIANCE OR ERRORS IN DOSING (The patient mistakenly took a different dosage regimen than was prescribed).	Review the doses of Warfarin actually taken by patient over the past several weeks. Use strategies to improve compliance: pill box, Warfarin dosing calendar, patient education, simplify dosing regimen.

***Most common drugs that can increase INR:**

- Antibiotics: sulfamethoxazole/trimethoprim, metronidazole, quinolones (ciprofloxacin, levofloxacin), amoxicillin, erythromycin, clarithromycin, azithromycin
- Azole antifungals: fluconazole, miconazole, voriconazole

- Cardiac drugs: amiodarone, some statins (fluvastatin), fenofibrate
- Acetaminophen >1 g/day
- Levothyroxine dose increases – full effect observed after 4-6 weeks of dose change.

ANTIPLATELET AGENTS, EXAMPLES

Antiplatelet agents (acetylsalicylic acid (ASA), clopidogrel, prasugrel, ticagrelor) and Non-steroidal Anti-Inflammatory Drugs (NSAIDs) significantly increase the risk of bleeding when combined with Warfarin but generally do not change the INR. The indication and clinical necessity of using these agents should be carefully weighed against the increased bleeding risk and should be avoided unless specifically indicated.

Source:

Clinical Guides. (n.d.). Retrieved September 14, 2017, from http://thrombosiscanada.ca/clinicalguides/#

Ageno W, et al. Oral anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e44S-e88S.

Cushman M, et al. 2014 Clinical Practice Guide on Anticoagulant Dosing and Management of Anticoagulant-Associated Bleeding Complications in Adults. American Society of Hematology, February 2014. Accessible at: https://www.hematology.org/education/clinicians/guidelines-and-quality-care/pocket-guides

Holbrook A, et al. Evidence based management of anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest 2012;141(2 Suppl):e152S–e184S

INFLUENZA

INTENDED USE

This clinical practice guideline is intended for patients experiencing possible influenza like symptoms.

ELIGIBILITY

- *Resident of Long-Term Care Facility*
- *Community members under the care of a physician*
- *>65 years of age*

CLINICAL CONSIDERATIONS

Influenza is suspected when the patient is experiencing an acute onset of respiratory illness with fever ($\geq 39^0C$) and new or worsening cough and with one or more of the following:

- *Sore throat*
- *Joint pain (arthralgia)*
- *Muscle aches (myalgia)*
- *Severe exhaustion (prostration) which is likely due to influenza.*

In patients 65 years of age or older, fever may not be as prominent, therefore your overall assessment will determine your index of suspicion.

Additional symptoms may include:

- *Headache*
- *Chills*
- *Loss of appetite*
- *Fatigue (tiredness)*
- *Sore throat*
- *Runny or stuffy nose*

Source:

https://www.canada.ca/en/public-health/services/diseases/flu-influenza/symptoms-flu-influenza.html

CP THE COMMUNITY PARAMEDIC SHALL:

- *Ascertain past medical history and allergies.*
- *Complete a comprehensive assessment including vital signs and temperature.*

If in the Community Paramedic's clinical judgment, the patient is suspected to have contracted influenza, proceed to proceed to testing and treatment.

INFLUENZA TESTING

INDICATIONS

- *Patients 65 years or older suspected to have contracted influenza,*
- *Community members under the care of a physician.*

CONTRAINDICATIONS

- *None*

TREATMENT

- *Complete one of the following tests for influenza confirmation:*
- *Naso-pharyngeal specimen collection, or*
- *Point of Care Immunoassays Influenza Test*
- *Blood Draw*

If influenza is suspected or confirmed:

INFLUENZA TREATMENT WITH ANTI-VIRALS

INDICATIONS

- *Patients 65 years or older suspected to have contracted influenza,*
- *Community members under the care of a physician*

CONDITIONS

See table below.

CONTRAINDICATIONS

- *Allergy to Oseltamivir (Tamiflu®) or Zanamivir (Relenza®)*
- *Zanamivir (Relenza®) cannot be initiated as a treatment option for patients with a history of chronic obstructive pulmonary disease or asthma.*

TREATMENT

See table below.

Table 1 - Prophylaxis and treatment with anti-viral

	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Dosage for treatment	75mg twice daily for 5 days for adults; Dose adjustments may be needed if person is known to have renal impairment. See AMMI guidelines	2inhalations twice daily (approximately 12 hours part) for 5days 5mg per inhalation
Dosage for prevention	75mg daily for 10 days for adults Cor in an outbreak, until the outbreak is declared over). Dose adjustments may be needed if person is known to have renal impairment. See AMMI guide lines.	2 inhalations once daily for 10days
Contraindications	None	Underlying respiratory condition such as chronic obstructive pulmonary disease or asthma.
Product monograph	http://www.rochecanada.com/content/dam/rochecanada/en_CA/documents/Research/ClinicalTrialsForms/Products/Consumerfnformation/MonographsandPublicAdvisories/Tamiflu/Tamiflu_PM_E.odf.	http://ca.gsk.com/media/535135/relenza.pdf

Notes:

1. Checking creatinine clearance and dose adjustments are not required for those who are not known to have renal impairment. For those with known renal impairment, alternative dosing based on creatinine clearance is provided in Table 5 of the AMMI Guidelines https://www.ammi.ca/Content/Guidelines/Flu%20%28published%20version%29%20FINAL.pdf

TABLE 5
Recommended oseltamivir regimens for prevention and treatment of adult patients with renal impairment (26-29, Tamiflu[R] Canadian Product Monograph, 2012)

Creatinine clearance	Treatment for 5 days	Prophylaxis until outbreak is over
>60 mL/min	75 mg twice daily	75 mg once daily
>30–60 mL/min	75 mg once daily OR 30 mg suspension twice daily OR 30 mg capsule twice daily	75 mg on alternate days or 30 mg once daily
10-30 mL/min	30 mg once daily	30 mg on alternate days
<10 mL/min (renal failure)*	Single 75 mg dose for the duration of illness	No data
Dialysis patients*	Low-flux HD: 30 mg after each dialysis session	30 mg after alternate dialysis sessions
	High-flux HD: 75mg after each dialysis session	No data
	CAPD dialysis: 30 mg once weekly	30 mg once weekly
	CRRT high-flux dialysis: 30 mg daily or 75 mg every second day	No data

The following dosing regimen has been suggested for children based on limited data (29):
In children older than one year of age, after alternate HD sessions as follows:
- 7.5 mg for children weighing >15 kg
- 10 mg for children weighing 16–23 kg
- 15 mg for children weighing 24–40 kg
- 30 mg for children weighing >40 kg

While this may provide a framework for guidance, it is strongly suggested that an infectious disease physician or clinical pharmacist should be consulted.

**Experience with the use of oseltamivir in patients with renal failure is limited. These regimens have been suggested based on the limited available data[27,28,29] Consultation with an infectious physician or clinical pharmacist is recommended*

2. *A second dose of Relenza (10 mg, which is 2 inhalations) should be taken on the first day of treatment whenever possible, provided there is at least 2 hours between doses (based on the product monograph http://ca.gsk.com/media/535135/relenza.pdf)*

Source:
CDC Influenza Antiviral Medications: Summary for Clinicians
http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm

DEHYDRATION

INDICATIONS

Patients 65 years or older suspected to have contracted influenza,

This clinical guideline is intended for the patient who has suspected or confirmed influenza and is experiencing current systemic dehydration.

Based on assessment of:

- *Mucous membranes*
- *Urine assessment (colour and output)*
- *Skin elasticity and turgor*
- *Capillary refill*
- *Auscultation of lung fields*

CONDITIONS

- *Resident of Long-Term Care Facility*
- *Suspected or confirmed influenza*

CONTRAINDICATION

Patients diagnosed with congestive heart failure showing signs of fluid retention.

TREATMENT

Consider Normal Saline

- *Route- IV*
- *Dose- 10ml/kg*
- *Dosing Interval- maximum of 1000ml per 12-hour period*

NOTE: Auscultation of lungs fields per 250ml

NAUSEA AND VOMITING

INDICATIONS

- *Patients 65 years or older suspected to have contracted influenza,*
- *This clinical guideline is intended for the patient who has suspected or confirmed influenza and is experiencing current nausea and/or active vomiting.*

CONDITIONS

- *Resident of Long-Term Care Facility*
- *Suspected or confirmed influenza*
- *Current nausea and/or active vomiting.*

CONTRAINDICATION

Allergy to Dimenhydrinate (Gravol®) or other antihistamines.

TREATMENT

Consider Dimenhydrinate (Gravol®) via intravenous or intramuscular injection.

- *Patient < 50 kg Dimenhydrinate (Gravol®) 25 mg IV/IM*
- *Patient > 50 kg Dimenhydrinate (Gravol®) 50 mg IV/IM*
- *Dosing Interval- every 4-6 hours*
- *Maximum Dosing- 600 mg per 24-hour period*

DIARRHEA

INDICATIONS

- *Patients 65 years or older suspected to have contracted influenza,*
- *This clinical guideline is intended for the patient who has suspected or confirmed influenza and is experiencing protracted diarrhea.*

CONDITIONS

- *Resident of Long-Term Care Facility*
- *Suspected or confirmed influenza*
- *Protracted severe diarrhea.*

CONTRAINDICATIONS

- *Dehydration,*
- *Allergy to Loperamide Hydrochloride (Imodium®),*
- *Tonic water,*
- *Patient taking Gemfibrozil (treatment of hypercholesterolemia),*
- *Patient taking Quinidine (class I antiarrhythmic),*
- *Patient taking Quinine (anti-malarial),*
- *Patient taking Ritonavir (anti-retroviral),*
- *Patient taking Stomach acid reducers--cimetidine, ranitidine,*
- *Patient taking Antibiotics - clarithromycin & erythromycin,*
- *Patient taking Antifungal medicine - itraconazole & ketoconazole,*
- *Bloody stool.*

TREATMENT

Consider Loperamide Hydrochloride (Imodium®)

- *Route- PO.*
- *Dose- 4mg initial dose.*
- *Dosing Interval- 2 mg subsequent dose after each unformed stool.*
- *Maximum Dosing- should not exceed 16mg per 24 hour period.*

FEVER

INDICATIONS

- *Patients 65 years or older suspected to have contracted influenza,*
- *For the patient who has suspected or confirmed influenza and is experiencing fever ≥390 C.*

CONDITIONS

- *Resident of Long-Term Care Facility*
- *Suspected or confirmed influenza*
- *Currently febrile temperature ≥390 C*

CONTRAINDICATION

Acetaminophen (Tylenol®)

- *Allergy*
- *Liver dysfunction or condition*

Ibuprofen (Advil®)

- *Allergy to NSAIDs*
- *Asthma without prior Ibuprofen use*
- *Uncontrolled hypertension (SBP >180 mmHg)*
- *Renal disease (eGFR < 40)*

TREATMENT

Consider either Acetaminophen (Tylenol®) or Ibuprofen (Advil®)

Acetaminophen (Tylenol®)

- *Route- PO*
- *Dose- <50 kg – 500 mg*

>50 kg – 1000 mg

- *Dosing Interval- <50 kg every 4 hours prn*

>50 kg every 6 hours prn

- *Maximum Dose- 4000 mg per 24 hour period*

Ibuprofen (Advil®)

- *Route- PO*
- *Dose-*
    - *<50 kg – 200 mg*
    - *>50 kg – 400 mg*
- *Dosing Interval- every 4 hours prn*
- *Maximum Dose- 2400 mg per 24 hour period*

INTRAVENOUS AND FLUID THERAPY

INDICATIONS

- *Actual or potential need for intravenous medication or fluid therapy*

CONDITIONS

Age: N/A
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: N/A

CLINICAL CONSIDERATIONS

- *Assess and auscultate for signs of fluid overload prior to administration of IV fluid.*

CONTRAINDICATIONS

- *Signs of fluid overload*

TREATMENT

Administer 0.9% NaCL	
Maintenance Infusion	**Fluid Bolus**
30-60ml/hr IV/CVAD	20ml/kg
Infusion Interval	
N/A	Immediate
Reassess Every	
N/A	250 ml
Max. volume	
2000 ml	2000 ml

NAUSEA / VOMITING

INDICATIONS

- Nausea or Vomiting

CONDITIONS

Age: N/A
LOA: Unaltered
HR: N/A
RR: N/A
SBP: N/A

Other: N/A

CLINICAL CONSIDERATIONS

- Assess for causes of nausea and vomiting.

CONTRAINDICATIONS

- Allergy or sensitivity to dimenhydrinate or other antihistamines
- Overdose on antihistamines or anticholinergics or TCAs

TREATMENT

Consider dimenhydrinate			
Weight			
≥ 25 kg to ≤50 kg		≥50kg	
IV	IM	IV	IM
25mg	25mg	50mg	50mg

Maximum Dose:

Prior to IV administration, dilute dimenhydrinate (concentration of 50mg/1ml) 1:9 with Normal Saline or sterile water. If given IM do not dilute.

ANALGESIA

INDICATIONS

- Pain and/or fever

CONDITIONS

Age: >18 yrs of age
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A
Other: N/A

CLINICAL CONSIDERATIONS

- Assess for the cause and primary source of pain
- Whenever possible, both acetaminophen and ibuprofen should be used together.

CONTRAINDICATIONS

Acetaminophen	Ibuprofen	Ketoralac
Acetaminophen use within previous 4 hours Allergy or sensitivity to acetaminophen Signs or symptoms of intoxication Active vomiting Major burns Hx of liver disease	Ibuprofen or NSAID use within previous 6 hours, Allergy or sensitivity to ASA or NSAIDS Active vomiting Current active bleeding Major burns Hx of peptic ulcer disease or GI bleed Pregnant Hx cardiovascular disease If asthmatic, no prior use of ASA or other NSAIDs CVA or TBI in the previous 24 hours	Ibuprofen or NSAID use within previous 6 hours, Allergy or sensitivity to ASA or NSAIDS Active vomiting Current active bleeding Major burns Hx of peptic ulcer disease or GI bleed Pregnant Hx cardiovascular disease If asthmatic, no prior use of ASA or other NSAIDs CVA or TBI in the previous 24 hours

TREATMENT

Consider Acetaminophen	Consider Ibuprofen	Consider Ketroralac
Route		
PO	PO	IV/IM
Dose		
960-1000mg	400mg	30 mg

Maximum Dose: 1 Ibuprophen and Ketoralac not to be administered concurrently.

GLOSSARY

LOA: level of awareness
HR: Heart Rate
RR: Respiratory Rate
SBP: Systolic Blood Pressure
O2 Sat: Oxygen Saturation
RR: Respiratory Rate

URINE TEST STRIPS

For paramedics who have received training in the use of urinalysis point-of-care testing.

PURPOSE

Urine test strips allow the paramedic to evaluate urine samples in the home for presence of glucose, bilirubin, ketones, specific gravity, blood, uroglobin, protein, nitrate, and leukocytes. This screening tool could be useful in the evaluation of diabetes, liver diseases, hemolytic diseases, urogenital, kidney disorders, urinary tract infections, carbohydrate, diabetes, liver function, acid-base balance and urine concentration.

INDICATIONS

Urine diagnostics should be completed if the Community Paramedic has concerns related to any of the aforementioned clinical indicators, or at the direction of a physician for the purposes of early identification.

CONDITIONS

Age: All
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A

CLINICAL CONSIDERATIONS

- A "positive" result warrants follow-up with the provider of record and may include diagnostic blood work, complete urinalysis and/or urine culture.
- See Procedural Guidelines, Urine Specimen Collection for more detailed collection information.
- See the package insert in Appendix C for testing limitations.

After dipping the test strip in the sample for 1-2 seconds, test read times are as follows:

Reagent	Ascorbic Acid (ASC)	Glucose (GLU)	Bilirubin (BIL)	Ketone (KET)	Specific Gravity (SG)	Blood (BLO)	pH	Protein (PRO)	Urobilinogen (URO)	Nitrite (NIT)	Leukocytes (LEU)
Earliest Read Time	30 seconds	30 seconds	30 seconds	40 seconds	45 seconds	60 seconds	60 seconds	60 seconds	60 seconds	60 seconds	120 seconds
Latest Read Time	2 mintes 30 seconds	2 mintes 30 seconds	2 mintes 30 seconds	2 mintes 40 seconds	2 mintes 45 seconds	3 mintes	3 mintes	3 mintes	3 mintes	3 mintes	4 mintes

CONTRAINDICATIONS

None other than as they pertain to use limitations of the test strips themselves.

Resources

VIDEO: Use of MultiStix (2:21)
VIDEO: Interpretation of the Urinalysis Dipstick (16:35)

ULTRASOUND

For paramedics who have received training in the use point-of-care ultrasound from a recognized program.

PURPOSE

Ultrasound is a useful tool in the assessment of a wide variety of patients both in the acute and non-acute setting. Ultrasound provides the Paramedic a dynamic image and recording of internal structures as an assessment adjunct and provides additional information to support the clinical decision-making process. The use of ultrasound does not substitute for a thorough clinical assessment and the use of other data and clinical experience in the formulation of an appropriate treatment/transport plan in accordance with the

MOHLTC ALS/BLS Patient Care Standards and related Clinical Practice Guidelines as appropriate.

INDICATIONS

- Patients who present with signs or symptoms of disease or injury where the visualization of internal structures would benefit the formulation of an appropriate treatment and/or transport plan.

CONDITIONS

Age: All
LOA: N/A
HR: N/A
RR: N/A
SBP: N/A

CLINICAL CONSIDERATIONS

In the acute setting:

- Mechanism of injury whereby trauma may have caused injury to lungs, heart, abdominal organs, or long bones,
- Disease mechanisms which may have resulted in acute failure of the lung(s) (spontaneous pneumothorax), effusion in the plural cavity, pericardium/myocardium, or abdominal/retroperitoneal spaces,
- Assessment of cardiac standstill
- Cardiac wall abnormalities,
- Confirmation of renal or biliary calculi,
- Assessment of perfusion to extremities,
- Fluid volume assessment,
- Assessment of cardiac standstill,
- Ultrasound guided IV access,
- Long bone fracture assessment.

In the non-acute setting

- Assessment and tracking of peripheral perfusion in patients experiencing a long-term degradation of peripheral blood flow.

- Assessment of pleural effusion, ascites, and similar conditions in patients with chronic disease processes that make them susceptible to gradual increases in these conditions. Consider for patients with conditions such as: CHF and liver disease including portal hypertension.

The performance of an ultrasound assessment should not impact the time required to transport a critically ill patient to definitive care. Most, if not all, ultrasound exams can be conducted while mobile.

CONTRAINDICATIONS

- Unable to access patient or unable to conduct exam due to environmental factors (cold, rain, lighting, etc,),
- Unable to perform ultrasound assessment without impacting overall transport time to definitive care.

The use of point of care ultrasound and image acquisition does not constitute a clinical diagnosis. All patients are to be assessed and treated as per the ALS / BLS Patient Care Standards and related Clinical Practice Guidelines as appropriate. The use of point of care ultrasound is to provide additional confirmatory information for the Paramedic. It is not to be used in isolation as a diagnostic tool in paramedic practice.