Dear Colleagues,

Emergent airway management is an integral part of the resuscitation of critically ill patients, and is routinely performed by Emergency Physicians and Intensivists on a daily basis. Unfortunately, very little is known about how physicians manage patients requiring endotracheal intubation.

As an expert in emergent airway management, we are interested in your approach to intubation, and your views about one particular complication: post-intubation hemodynamic instability (PIHI). On behalf of the Canadian Critical Care Trials Group and the CAEP Critical Care Committee, we ask for your help by completing the following survey.

We appreciate your valuable time, and anticipate that this survey will take approximately 10-15 minutes to complete. If you do not wish to participate, please email me at the address below and we will not contact you again.

If you have any questions regarding the survey, please do not hesitate to contact me at

All information will be protected and is strictly confidential. Results will be reported in aggregate only.

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Thank vou	in a	idvance	tor vour	participation	in	this	nroiect

Sincerely,

A Survey of Emergent Endotracheal Intubation in Critically Ill Patients in Canada

Scenario 1: Sepsis

You are asked to see a 59-year-old female in the Emergency Department with pneumonia and respiratory distress. Her past history includes hypertension (controlled with a beta blocker, baseline BP 120/70) and hypercholesterolemia.

Her vital signs are HR 120 bpm, RR 32/min, BP 100/56 mmHg, SaO2 90% (on FiO2 100%) and temperature 38.9 C. You feel that she requires immediate intubation prior to transfer to the ICU. She has no predictors of a difficult airway and her weight is 70 Kg.

She has no IV access at this point, and has had no medical interventions prior to your arrival. You have the aid of a skilled acute care nurse in addition to an airway cart containing the typical medications and airway equipment available in your practice.

Based on this information, please answer the following questions:

1. Intravenous access (IV) access: In a patient similar to the one described in the above scenario (Scenario 1, sepsis), how often would you insert the following PRIOR to intubation?

Please remember that the patient has no IV access at the present time.

	Never	Rarely	Sometimes	Often	Always
Single peripheral IV	0	0	0	\circ	\circ
Multiple peripheral IV's	\bigcirc	0		\bigcirc	\circ
Central venous catheter		\circ		\bigcirc	\circ
Arterial catheter		0		0	

 IV fluid administration before emergent endotracheal intubation: In a patient similar to the one described in the above scenario (Scenario 1, sepsis), please indicate what class of IV fluid (if any) that you would administer PRIOR to intubation.

Please remember that this patient has not received any IV fluids prior to this time.

	Never	Rarely	Sometimes	Often	Always
None				\bigcirc	
Crystalloid (0.9% saline/Lactated Ringers)	\circ	\circ	\circ	\circ	\bigcirc
5% albumin				\bigcirc	\bigcirc
25% albumin				\bigcirc	
Packed Red Blood Cells					
Synthetic colloid (HES)				\bigcirc	

3. **IV FLUID Volume:** In a patient similar to the one described in the above scenario (Scenario 1, sepsis), please indicate the **approximate volume of IV fluid** that you would normally administer **PRIOR** to intubation.

Please base your answer on the nost preferred IV fluid as indicated in the question above.

-					
	Never	Rarely	Sometimes	Often	Always
No IV fluid administration	0	\circ	0		
<500 ml					
500-999 ml					
1000-1499 ml	\bigcirc				
1500-1999 ml	\bigcirc				
>2000 ml	\circ				

4. Vasopressor Administration: In a patient similar to the one described in the above scenario (scenario 1, sepsis), please indicate which (if any) of the following that you would normally administer (either bolus or infusion) PRIOR to intubation.

Please note that this patient has not reveived any interventions prior to this time. Her vital signs are HR 120 bpm, RR

32/min, BP 100/56 mmHg, SaO2 90% (on FiO2 100%) and temperature 38.9 C.

	Never	Rarely	Sometimes	Often	Always
phenylephrine	\circ				
ephedrine					
dopamine					
norepinephrine					
epinephrine					
dobutamine					
vasopressin				\bigcirc	

5. In patients similar to Scenario 1 (sepsis), please indicate how often you would administer a peripheral vasopressor prior to intubation (assuming the patient has no central venous access):

	Never	Rarely	Sometimes	Often	Always
ADMINISTER a vasopressor via a PERIPHERAL IV before intubation	0	0	0	0	0
WAIT to administer a vasopressor until after a CENTRAL VENOUS CATHETER is inserted	0	0	0	0	0

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6. In your practice, how often would you use the following medications to facilitate intubation in patients similar to the patient described in the above scenario (Scenario 1, sepsis)?

	Never	Rarely	Sometimes	Often	Always
midazolam		\circ		0	
other benzodiazepine	\circ				0
fentanyl					
other opioid		\circ			
etomidate				\circ	
propofol					
ketamine		\circ			
succinylcholine				\circ	
rocuronium					

7. Primary intubation strategy: In a patient similar to the one described in the above scenario (scenario 1, sepsis), how often would you use the following devices/procedures to intubate this patient?

Never Rarely Sometimes Often Always

Curved blade (Macintosh) direct laryngoscope	0	0	0	0	0
Straight blade (Miller) direct laryngoscope	0	0	0	0	0
Bougie assisted direct laryngoscope	0	0	0	0	0
Video laryngoscope (ie. glidescope)	0	0	0	0	0
Other indirect devices (ie. ILMA, optical stylet, airtrac, lightwand, etc.)	0	0	0	0	0
Flexible bronchoscope	0	\circ	0	\circ	\circ
Transtracheal jet ventilation	0	0	0	0	
Percutaneous wire guided cricothyrotomy	0	0	0	0	0
Open cricothyrotomy		\circ	0	\circ	\circ
Tracheostomy		\bigcirc		\circ	\circ

8. **Secondary/back up intubation strategy**: In the event that **you could not intubate** a patient similar to the patient in Scenario 1, how often would you perform the following?

	Never	Rarely	Sometimes	Often	Always
Extraglottic Device (LMA, King LT, etc)	0		0	\circ	
Trastracheal Jet Ventilation				\circ	
Percutaneous Wire Guided Cricothyrotomy	0	0	0	0	0
Open Cricothyrotomy		0		\circ	0
Tracheostomy		\circ			

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After successful intubation without complication or difficulty, the patient's blood pressure is reduced from a pre-intubation blood pressure of 100/56 mmHg.

For the purposes of the following questions, please assume that the patient's chronic "hypertension" is adequately controlled with outpatient medications, and that she currently has no evidence of other adverse events (ie: SaO2 100%, no myocardial ischemia).

Based on	this	information,	please	answer	the	following	information
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9.		d that you would		in patients similar to t pe "unstable" and ac	•	
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	Systolic Blood Pres					
	Systolic Blood Pres					
	Systolic Blood Pres					
	Systolic Blood Pres					
	Other, please speci	ııy				
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	Mean Arterial Press	sure <80				
	Mean Arterial Press	sure <70				
	Mean Arterial Press	sure <60				
	Mean Arterial Press	sure <50				
	Mean Arterial Press	sure <40				
	Other, please speci	ifv				
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	Please assume that he cardiac ischemia or other			at this time (Oxygen sa	aturation 100%, n	o evidence of
		Never	Rarely	Sometimes	Often	Always
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	Crystalloid (0.9% saline or Lacteted	_	_			_
	Ringer's) IV fluid administration	0	0	0	0	0
	Albumin IV administration	0	0	0	0	
	Synthetic colloid (HES) IV fluid	0	0			

	A Survey of Emergent Endotracheal Intubation in Critically III Patients in Canada							
administration								
vasopressor administration via a peripheral IV (if no central catheter)	0		0	0	0			
Vasopressor administration via a central catheter	0	0	0	0	0			
I would not treat post-intubation hemodynamic	0	0	0	0	0			

Scenario 2: Congestive Heart Failure

instability

You are asked to see a 67-year-old male in the Emergency Department with congestive heart failure and respiratory distress. His past history includes ischemic heart disease (3 previous myocardial infarcts, most recent 8 months ago), ischemic cardiomyopathy (documented ejection fraction 20% 2 months ago), hypertension (controlled with a beta blocker, baseline 120/70), hypercholesterolemia, and mild renal insufficiency (baseline Cr 140 mEq/L).

His vital signs are HR 120 bpm, RR 32/min, BP 100/56 mmHg, SaO2 90% (on FiO@ 100%), and temperature 36.9 C. His EKG demonstrates no acute changes and is similar to his baseline.

You feel that his presentation is due to progression of his ischemic cardiomyopathy, and that he requires immediate intubation. He has no predictors of a difficult airway and his weight is approximately 80 Kg.

He has no IV access at this point, and has had no medical interventions prior to your arrival. You have the aid of a skilled acute care nurse in addition to an airway cart containing the typical medications and airway equipment available in your practice.

Based on this information, please answer the following questions:

13. **Intravenous access (IV) access**: In a patient similar to the one described in the above scenario (Scenario 2, CHF), how often would you **insert the following PRIOR** to intubation?

Please remember that the patient has no IV access at the present time.

	Never	Rarely	Sometimes	Often	Always
Single peripheral IV	\circ	0		\bigcirc	\circ
Multiple peripheral IV's	\circ		0	\bigcirc	\circ
Central venous catheter	\circ		\circ	\bigcirc	\circ
Arterial catheter	\circ	0		0	\circ

14. IV fluid administration before emergent endotracheal intubation: In a patient similar to the one described in the above scenario (Scenario 2, CHF), please indicate what class of IV fluid (if any) that you would administer PRIOR to intubation.

Please remember that this patient has not received any IV fluids prior to this time.

	Never	Rarely	Sometimes	Often	Always
None					\bigcirc
Crystalloid (0.9% saline/Lactated Ringers)	\circ	\circ	\circ	\circ	\bigcirc
5% albumin					\bigcirc
25% albumin					\bigcirc
Packed Red Blood Cells					
Synthetic colloid (HES)	\bigcirc	\bigcirc		\bigcirc	\bigcirc

15. **IV FLUID Volume:** In a patient similar to the one described in the above scenario (Scenario 2, CHF), please indicate the **approximate volume of IV fluid** that you would normally administer **PRIOR** to intubation.

Please base your answer on the most preferred IV fluid as indicated in the question above.

-					
	Never	Rarely	Sometimes	Often	Always
No IV fluid administration	0	0		0	0
<500 ml	\circ				\circ
500-999 ml					
1000-1499 ml	\bigcirc			\circ	
1500-1999 ml	\circ	\circ			
>2000 ml	\circ				

16. **Vasopressor Administration:** In a patient similar to the one described in the above scenario (CHF), please indicate which (if any) of the following that you would normally administer (**either bolus or infusion**) **PRIOR** to intubation.

Please note that this patient has not reveived any interventions prior to this time. His vital signs are HR 120 bpm, RR 32/min, BP 100/56 mmHg, SaO2 90% (on FiO2 100%) and temperature 36.9 C.

	Never	Rarely	Sometimes	Often	Always
phenylephrine	\bigcirc			\circ	
ephedrine					
dopamine					
norepinephrine				\bigcirc	
epinephrine					
dobutamine					
vasopressin	\circ				

17. In patients similar to Scenario 2 (CHF), please indicate how often you would **administer a peripheral vasopressor prior to intubation** (assuming the patient has no central venous access):

	Never	Rarely	Sometimes	Often	Always
ADMINISTER a vasopressor via a PERIPHERAL IV before intubation	0	0	0	0	0
WAIT to administer a vasopressor until after a	0	0	0	0	0

18. In your practice, how often would you use the following medications to facilitate intubation in patients similar to the patient described in the above scenario (Scenario 2, CHF)?

	Never	Rarely	Sometimes	Often	Always
midazolam	\circ				\bigcirc
other benzodiazepine					
fentanyl		\bigcirc			
other opioid					
etomidate		\bigcirc			
propofol		\bigcirc			\bigcirc
ketamine	\bigcirc	\bigcirc		\circ	
succinylcholine	\circ	\circ			\circ
rocuronium	\bigcirc	\circ			

19. **Primary intubation strategy**: In a patient similar to the one described in the above scenario (scenario 2, CHF), **how often would you use the following devices/procedures** to intubate this patient?

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	Never	Rarely	Sometimes	Often	Always
Curved blade (Macintosh) direct laryngoscope	0	0	0	0	0
Straight blade (Miller) direct laryngoscope	0	0	0	0	0
Bougie assisted direct laryngoscope	0	0	0	0	0
Video laryngoscope (ie. glidescope)	0	0	0	0	0
Other indirect devices (ie. ILMA, optical stylet, airtrac, lightwand, etc.)	0		0	0	
Flexible bronchoscope	0	0	0	0	0
Transtracheal jet ventilation	0	0	0		\circ
Percutaneous wire guided cricothyrotomy		0	0	0	0
Open cricothyrotomy	0	0			\circ

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	Never	Rarely	Sometimes	Often	Always
Extraglottic Device (LMA, King LT, etc)	0	0	0		0
Trastracheal Jet Ventilation	\circ	\circ	0	0	0
Percutaneous Wire Guided Cricothyrotomy	0	0	0	0	0
Open Cricothyrotomy	\circ	\circ		0	
Tracheostomy	0	0		0	0
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Tracheostomy

after emergent intubation. How long does a patient similar to the patient in scenario 2 (CHF) have to be hemodynamically unstable before you intervene?
Select at least 1 and no more than 1.
☐ I would treat hemodynamic instability immediately.
1-2 min; I would treat hemodynamic instaility if it has been present for >2 min.
2-4 min; I would treat hemodynamic instability if it has been present for >4 min.
4-6 min; I would treat hemodynamic instability if it has been present for >6 min.
6-8 min; I would treat hemodynamic instability if it has been present >8 min.
>10 min; I would treat hemodynamic instability if it has been present >10 min.
Never; I would not treat hemodynamic instability.
Other, please specify

23. Please assume that your patient meets your threshold for requiring intervention for hemodynamic instability

24. Assuming that a patient similar to the patient in scenario 2 (CHF) meets your blood pressure threshold and duration criteria for post-intubation hemodynamic instability, how would you manage the patient's hemdynamic instability?

Please assume that his low blood pressure is the only issue at this time (Oxygen saturation 100%, no evidence of cardiac ischemia or other end-organ dysfunction).

	Never	Rarely	Sometimes	Often	Always
Crystalloid (0.9% saline or Lacteted Ringer's) IV fluid administration	0	0	0	0	0
Albumin IV administration	0	0	0		
Synthetic colloid (HES) IV fluid administration	0	0	0	0	0
vasopressor administration via a peripheral IV (if no central catheter)	0	0	0	0	0
Vasopressor administration via a central catheter	0	0	0	0	\circ
I would not treat post-intubation hemodynamic instability	0		0	0	

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Scenario 3: Trauma

You are asked to see a 29-year-old male in the Emergency Department who was involved in a motor vehicle collision. He was a belted passenger of a single vehicle crash in which the driver was killed. He has abrasions on his head, chest and abdomen and is immobilized with a cervical spine collar and backboard.

He was previously healthy and his weight is 90Kg. His vital signs are HR 120 bpm, RR 32/min, BP 100/56 mmHg, SaO2 90% (on FiO2 100%) and temperature 36.9 C. His GCS is 6.

A bedside ultrasound of his abdomen reveals free fluid, and you feel that he is actively bleeding from an intraabdominal source, and that he requires immediate intubation to facilitate further management.

He has no predictors of a difficult airway other than the cervical immobilization. He has no IV access at this point, and has received no other interventions prior to your arrival. You have the aid of a skilled acute care nurse in addition to an airway cart containing the usual medications and airway equipment available in your practice.

Based on this information, please answer the following questions:

25. **Intravenous access (IV) access**: In a patient similar to the one described in the above scenario (Scenario 3, Trauma), how often would you **insert the following PRIOR** to intubation?

Please remember that the patient has no IV access at the present time.

	Never	Rarely	Sometimes	Often	Always
Single peripheral IV	\circ	0	\circ	\circ	0
Multiple peripheral IV's	\circ	0		\bigcirc	\circ
Central venous catheter	\circ	\circ		\circ	\circ
Arterial catheter	\circ	\circ		\circ	\circ

26. **IV fluid administration before emergent endotracheal intubation:** In a patient similar to the one described in the above scenario (Scenario 3, trauma), please indicate what class of IV fluid (if any) that you would administer **PRIOR** to intubation.

Please remember that this patient has not received any IV fluids prior to this time.

	Never	Rarely	Sometimes	Often	Always
None					
Crystalloid (0.9% saline/Lactated Ringers)	\circ	\circ		\circ	\circ
5% albumin					
25% albumin					
Packed Red Blood Cells					
Synthetic colloid (HES)					

27. **IV FLUID Volume:** In a patient similar to the one described in the above scenario (Scenario 3, trauma), please indicate the **approximate volume of IV fluid** that you would normally administer **PRIOR** to intubation.

Please base your answer on the most preferred IV fluid as indicated in the question above.

-					
	Never	Rarely	Sometimes	Often	Always
No IV fluid administration	0	0	0	0	0
<500 ml					
500-999 ml	\bigcirc				
1000-1499 ml	\bigcirc				
1500-1999 ml	\circ	\circ			
>2000 ml					

28. **Vasopressor Administration:** In a patient similar to the one described in the above scenario (Scenario 3, trauma), please indicate which (if any) of the following that you would normally administer (**either bolus or infusion**) **PRIOR** to intubation.

Please note that this patient has not reveived any interventions prior to this time. His vital signs are HR 120 bpm, RR 32/min, BP 100/56 mmHg, SaO2 90% (on FiO2 100%) and temperature 38.9 C.

	Never	Rarely	Sometimes	Often	Always
phenylephrine		\circ			
ephedrine		\circ			
dopamine					
norepinephrine					
epinephrine					
dobutamine					
vasopressin					

29. In patients similar to Scenario 3 (Trauma), please indicate how often you would **administer a peripheral vasopressor prior to intubation** (assuming the patient has no central venous access):

	Never	Rarely	Sometimes	Often	Always
ADMINISTER a vasopressor via a PERIPHERAL IV before intubation	0	0	0	0	0
WAIT to administer a vasopressor until after a CENTRAL VENOUS CATHETER is inserted	0	0	0	0	0

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30. In your practice, how often would you use the following medications to facilitate intubation in patients similar to the patient described in the above scenario (Scenario 3, Trauma)?

	Never	Rarely	Sometimes	Often	Always
midazolam		\circ			
other benzodiazepine	\bigcirc	\circ			
fentanyl		\circ			
other opioid	\bigcirc	\circ			
etomidate	\bigcirc				
propofol		\circ			
ketamine					

rocuronium	\circ		\circ		\circ
31. Primary intubation s trauma), how often v			to the one described in es/procedures to into		
	Never	Rarely	Sometimes	Often	Always
Curved blade (Macintosh) direct laryngoscope	0	0	0	0	0
Straight blade (Miller) direct laryngoscope	0	0	0	0	0
Bougie assisted direct laryngoscope	0	0	0	0	0
Video laryngoscope (ie. glidescope)	0	0	0	0	0
Other indirect devices (ie. ILMA, optical stylet, airtrac, lightwand, etc.)	0		0	0	0
Flexible bronchoscope	0	0			
Transtracheal jet ventilation	0	0			
Percutaneous wire guided cricothyrotomy		0	0	0	0
Open cricothyrotomy		\circ			0
Tracheostomy		\circ			0
32. Secondary/back up described in the above			that you could not in ften would you perform		similar to the one
-	Never	Rarely	Sometimes	Often	Always
Extraglottic Device (LMA, King LT, etc)	0	0	0	0	0
Trastracheal Jet Ventilation	0	\circ			
Percutaneous Wire Guided Cricothyrotomy	0	0	0	0	0
Open Cricothyrotomy	0	0			0
Tracheostomy					

succinylcholine

Canada

After successful intubation without complication or difficulty, the patient's blood pressure is reduced from a pre-intubation blood pressure of 100/56 mmHg.

For the purposes of the following questions, please assume that he currently has no evidence of any adverse events (ie: SaO2 100%, no cardiac ischemia).

Based on this information, please answer the following information.

33.	. When considering blood what is the threshold Select at least 1 and no mo	that you would				
	Systolic Blood Pressu	ıre <100				
	Systolic Blood Pressu	ıre <90				
	Systolic Blood Pressu	ıre <80				
	Systolic Blood Pressu					
	Systolic Blood Pressu					
	Other, please specify					
	a strict, produce specify					
34.	. When considering blood the Mean Arterial Pre Select at least 1 and no mo	ssure (MAP) the				ario 3, what is
	Mean Arterial Pressu	re <80				
	Mean Arterial Pressu	ire <70				
	Mean Arterial Pressu	ire <60				
	Mean Arterial Pressu	ire <50				
	Mean Arterial Pressu	ire <40				
	Other, please specify	/				
	be hemodynamically		you intervene?			
	Select at least 1 and no mo	re than 1.				
	I would treat hemod					
	1-2 min; I would tre	eat hemodynamic	instaility if it has b	een present for >2 min.		
	2-4 min; I would tre	eat hemodynamic	instability if it has	been present for >4 min	n.	
	4-6 min; I would tre	eat hemodynamic	instability if it has	been present for >6 min	n.	
	6-8 min; I would tre	eat hemodynamic	instability if it has	been present >8 min.		
	>10 min; I would tr	eat hemodynamic	instability if it has	been present >10 min		
	Never; I would not t	reat hemodynami	c instability.			
	Other, please specify	/				
36.	Assuming that a patient duration criteria for p hemdynamic instabil	oost-intubation l		(Trauma) meets your stability , how would yo		
	Please assume that his cardiac ischemia or other	•	•	at this time (Oxygen sa	turation 100%, no	evidence of
	-					
		Never	Rarely	Sometimes	Often	Always

Crystalloid (0.9% saline or Lacteted Ringer's) IV fluid administration	0	0		0	
Albumin IV administration		0	0	0	0
Synthetic colloid (HES) IV fluid administration	0	0	0	0	
vasopressor administration via a peripheral IV (if no central catheter)	0	0		0	0
Vasopressor administration via a central catheter	0	0		0	0
I would not treat post-intubation hemodynamic instability	0	0			0
Investigations of E We would like to ask you your willingness to partic	ır opinions on the			nt endotracheal intu	bation and
37. Do you feel that clinical	studies in patient	ts requiring emerge	nt endotracheal intu	bation are warrant e	ed at this time?
Strongly AgreeAgreeNeutralDisagreeStrongly Disagree					
38. Would you be willing to administration prior to in Strongly Agree Agree Neutral Disagree Strongly Disagree Other, please specify	ntubation in patie				of IV fluid
39. Would you be willing to vasopressor administ endotracheal intubation Strongly Agree	ration via centr				

1/2/2015

AgreeNeutral

Emergency Medicine (CCFP or other)

General Surgery or a surgical sub-speciality

☐ Family Medicine
☐ Internal Medicine
☐ Anesthesia

Other, please specify

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3.	. Have you completed a fellowship in Critcal Care Medicine?
	○ Yes ○ No
4.	. Do you perform emergent endotracheal intubations as part of your current practice?
	○ yes
5.	. How many years have you been in practice? Select at least 1 and no more than 1.
	<pre>< 1 year</pre>
	1-5 years
	6-10 years
	11-20 years
	>20 years
6.	. In what type of hospital do you practice?* Select at least 1 and no more than 1.
	Teaching (university affiliated)
	Community (no university affiliation)
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aı	nada
	Thank You!
17.	. Thank you very much for your time. By completeing this survey, you have helped advance care for criically ill patients requiring endotracheal intubation.