Case Reviews

Walworth County Departments

Presented by Mercyhealth EMS System

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Objectives & Recent Case

Review “Stroke, and Respiratory Distress” Guideline

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Case #2- “Possibly Having a Stroke”

Priorities	***Assessment Findings***
Chief Complaint	“Weakness”, “Confusion”, “Slurred Speech”, “Unresponsive” **G-F-A-S-T** (**G**aze, **F**acial droop, **A**rm drift, **S**peech difficulties, **T**ime symptoms started)
OPQRST	Last known well time? Was it witnessed?
Associated Symptoms/ Pertinent Negatives	Headache, weakness, pupil dilation, slurred speech, aphasia, incontinent
SAMPLE	Medication consistent with history of stroke or TIA
Initial Exam	ABC’s and correct any immediate life threats
Detailed Focused Exam	**Vital signs:** BP, HR, RR, Temp, SpO2 **General Appearance:** Unresponsive?, noticeable facial droop, drooling, slouched posture **Neuro: GFAST**
Data	Blood Glucose
Goals of Therapy	Maintain ABC’s and adequate vital signs
Monitoring	12 lead EKG Heart rate and blood pressure

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Pre Hospital Stroke Checklist

Pre-Hospital Stroke Checklist

Stroke Alert Criteria	Yes	No
Last known well time < 24 hours?		
Any abnormal findings on examinations?		
Blood glucose >50?		
If all above are Yes, call Primary Stroke Center with a Code Stroke		

Minimum information for ED radio report to call Code Stroke

Time of Onset or Last Time Seen Without Signs/Symptoms:				
Level of Consciousness (AVPU):	A	V	P	U
GFAST: Those scoring 3 or more should preferentially be transported to thrombectomy capable center				
Gaze	2			
Facial Droop (show teeth or smile)	1			
Arm Drift (close eyes and hold out both arms)	1			
Speech Difficulties	1			
Time last known well	Not scored			
Blood Glucose Level:				

History of Present Illness Includes:	Yes	No
Sudden weakness on one side of body (arm, leg, face)?		
Severe headache?		
Sudden difficulty speaking or understanding what is said?		
Seizure at onset?		
Head trauma or fall at onset?		

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Pre Hospital Stroke Checklist

Additional information needed at ED

Date:			
Patient Name:			
Age:			
Witness Name:			
Witness Phone #			
Vital Signs:	**Pulse_____ BP_____ RR_____ SP02_____**		
Past Medical History:	**Yes**	**No**	
Stroke or TIA?			
Diabetes?			
Hypertension?			
Recent Surgery?			
Heart Attack?			
Current Medications:	**Yes**	**No**	**Last Dose**
Aspirin?			
Coumadin?			
Plavix?			
Aggrenox?			
Other agents?			

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Case #2 EMS Report

Dispatched to the incident address for a male patient who was possibly having a stroke. While in route dispatch advised there was a door code for the garage door.

Upon arrival EMS called dispatch and obtained access code to the residence. After gaining access to the residence EMS called out to anyone in the residence. EMS entered the residence due to being able to see the occupant sitting in his chair in the front living room. No other occupants were noted to be in the house during the entire patient encounter. Upon arrival at the patient he was found seated in his arm chair in the front living room of the house. Patient had audible snoring respiration's, gave no response to verbal stimuli, and had no purposeful movement. Upon arrival at the patient EMS attempted to arouse the patient by grabbing his shoulder and squeezing. Patient opened his eyes and lifted his head. Patient had obvious right sided facial droop, copious amounts of tears coming from his right eye, and gave no verbal response. Patient appeared to try to smile when asked but was unable to move any face muscles. Patient then went unconscious and was unable to be aroused. EMS quickly manually opened his airway to maintain an open airway. Patients tongue was noted to be protruding out of his mouth and appeared to be very swollen. No patient information was able to be obtained including history. PD did locate the patients medications to obtain a name. PD ran the name through their computer to obtain a date of birth. EMS quickly carried the patient from his chair to the cot and transferred him to the ambulance.

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Case #2 Provider Impressions

Initial Impression includes:

A- Appearance

B-Breathing

C-Circulation

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Case #2 EMS Report Cont..

While transferring the patient his airway became compromised several times. The patients head was repositioned to maintain an airway. The patient also started becoming cyanotic at this time. MD-1 was also requested through dispatch.

Once in the ambulance EMS immediately began managing his airway with a bag valve mask. The patient was difficult to bag at this time. EMS quickly attempted to insert a 28fr nasal airway in the patients left nostril. The airway met resistance upon insertion. EMS then attempted to insert a 24fr nasal cannula into the patients right nostril which was inserted without resistance. The patients respiration's also became agonal at this time and were sporadic. The patient was also placed on the cardiac monitor with defib pads to the patient rapidly de-sating. Patient was continuously bagged at this time. Patients SpO2 sats began to improve. The patients respiratory rate also began becoming more consistent and Patient was placed on an ETCO2 nasal cannula at 10lpm and placed on the monitor to trend ETCO2 readings.

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Case #2 Provider Impressions

Primary Impression includes:

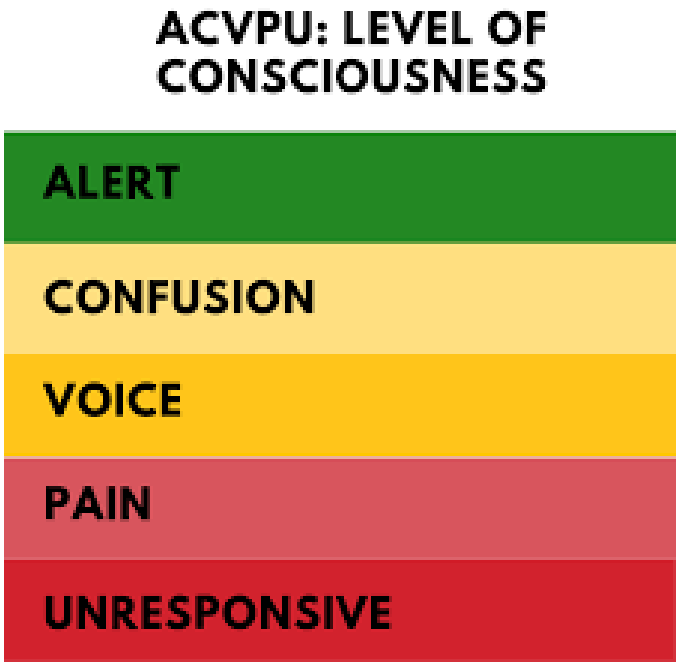
A- Airway

B-Breathing

C-Circulation

D- Disability

E- Exposure



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Case #2 EMS Report Cont..

EMS also obtained IV access with a 18 gauge IV catheter in the patients right hand. IV was flushed and found to be patent. Patients blood sugar was obtained at this time and found to be within normal ranges. A 12-lead ECG was applied to the patient for continuous cardiac monitoring. MD-1 was contacted via radio to obtain ETA and location. MD-1 gave an 8 minute ETA. Ambulance began responding to intercept with MD-1. A verbal radio report was called to MD-1 prior to arrival at the intercept.

MD-1 staging at intercept location upon arrival. A 12-lead ECG was acquired at the time of intercept. 12 lead showed A fib with occasional PVC's. EMS gave MD-1 a verbal patient care report. MD-1 assumed primary patient care. EMS assisted with RSA interventions. Normal saline was administered to the patient at a to keep open rate at this time. MD-1 administered induction medications at this time to initiate RSA.

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Case #2 Provider Impressions

Secondary Assessment includes:

S- Signs and Symptoms

A- Allergies

M- Medications

P- Past Medical History

L- Last Oral Intake

E- Events Leading

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Case #2 12 lead EKG

Case #2 **Vital Signs**

BP	MAP	Limb	BP Method	e	Resp	Effort	SpO2	Site	Qual	CO2	RR
217 / 120	152	Right Arm	Cuff-Automated	116		Slow/Bradypnea	66		High Concentration O2 (10-25 LPM)		
/		Right Arm	Cuff-Automated	83	16	Mechanically Assisted (BVM, CPAP, etc.)	95		High Concentration O2 (10-25 LPM)	34	
/		Right Arm	Cuff-Automated	106	6	Mechanically Assisted (BVM, CPAP, etc.)			High Concentration O2 (10-25 LPM)	11	
194 / 109	137	Right Arm	Cuff-Automated	86	10	Mechanically Assisted (BVM, CPAP, etc.)	91		High Concentration O2 (10-25 LPM)	35	8
119 / 74	89		Cuff-Automated	87	10	Mechanically Assisted (BVM, CPAP, etc.)				56	8
92 / 48	62	Right Arm	Cuff-Automated	74	9	Mechanically Assisted (BVM, CPAP, etc.)	98		High Concentration O2 (10-25 LPM)	46	
95 / 78	83		Cuff-Automated	61	8	Mechanically Assisted (BVM, CPAP, etc.)	96		High Concentration O2 (10-25 LPM)	38	6
40 / 25	30	Left Arm	Cuff-Automated	74	8	Mechanically Assisted (BVM, CPAP, etc.)	99		High Concentration O2 (10-25 LPM)	38	
68 / 36	46	Left Arm	Cuff-Automated	74	10	Mechanically Assisted (BVM, CPAP, etc.)	97		High Concentration O2 (10-25 LPM)	34	6
189 / 124	145	Left Arm	Cuff-Automated	159	7	Mechanically Assisted (BVM, CPAP, etc.)	82		High Concentration O2 (10-25 LPM)	54	6

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Case #2 GCS

GCS

Total Glasgow Coma Score	Eye	Motor	Verbal	Score Qualifier
3	No eye movement when assessed (All Age Groups)	No Motor Response (All Age Groups)	No verbal/vocal response (All Age Groups)	Initial GCS has legitimate values without interventions such as intubation and sedation
3	No eye movement when assessed (All Age Groups)	No Motor Response (All Age Groups)	No verbal/vocal response (All Age Groups)	Initial GCS has legitimate values without interventions such as intubation and sedation
	No eye movement when assessed (All Age Groups)		No verbal/vocal response (All Age Groups)	Patient Chemically Paralyzed ; Patient Chemically Sedated ; Patient Intubated
3	No eye movement when assessed (All Age Groups)	No Motor Response (All Age Groups)	No verbal/vocal response (All Age Groups)	Patient Intubated
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Case #2 Care Provided

- Airway Assist
- BVM/Nasal Airway
- IV/IO
- Pulse Ox
- BGM- **128**
- EKG (12 Lead)
- Intubation (RSA)
- BP Adjustments (Push Dose Epi)

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Case #2

RSA GUIDELINE (must be two qualified RSA providers at patient's side) [2]

- Indications:
  - Severe respiratory distress or failure
  - Persistent hypoxia after high-flow O_2
  - Airway management in a combative patient
  - Altered mental status with need to protect/secure airway
  - Airway compromise

- Absolute Contraindications:
  - Known allergy to RSA medications(use available alternatives)
  - Suspected epiglottitis

- Relative Contraindications (intubation should be considered high risk and reserved for those with inability to be ventilated with other means):
  - Severe oral, mandibular, or anterior neck trauma
  - Anatomic abnormalities that increase the risk of failed intubation
  - Pediatrics and bariatrics

- Prepare:
  - Wide open flowing IV/IO (IM Medications have slower onset and are emergency backup only)
  - Organize equipment, functional suction, etCO2 for waveform capnography, cardiac monitor, Bougie, video assist device, back up airway, and surgical airway
  - Select and prepare ET tube/stylet
  - Draw up RSA medications
  - Fluid bolus if hypotensive
  - If unresponsive to fluid bolus refer to section **5.42 Push Dose Pressors** to increase pre-intubation SBP>90

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Case #2

- Pre-Oxygenate:
  - Continuous SPO_2 and cardiac monitoring required
  - High-flow oxygen for 3-5 minutes prior to intubation or 8 vital capacity breaths
  - High flow oxygen should be provided via NC(15lpm) or NRB/BVM(25lpm)
  - Continuous high-flow oxygen via NC during entire procedure will reduce desaturation
  - If persistent hypoxia, consider using BVM with basic airway adjunct in addition to NC with PEEP valve attached to BVM.
  - Pre-oxygenation is not just about increasing O2 sat but also allowing time for the nitrogen in the lungs to be replaced with Oxygen, also prolonging the period before desaturation.

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Case #2

- Protect and Position:
  - Position the head and neck for intubation
  - Place towels behind the back of pediatric patients to improve visualization
  - Use towels blankets to ramp up bariatric patients to improve visualization
  - Manual c-spine stabilization in trauma patients

- Pre-paralysis Sedation/Induction:
  - Give **Ketamine** 2 mg/kg IV/IO (max dose 200mg), or 5 mg/kg IM (max dose 500mg)
  - For patients with concern of cardiac ischemia, avoid **Ketamine** and use **Midazolam (Versed)** 0.1mg/kg(max 5mg bolus) IV/IO, or 0.2mg/kg(max 10mg bolus) IM.
  - **Etomidate** 0.3mg/kg IV/IO(max dose 40mg) may be used instead of **Ketamine** or **Versed.** Do not repeat any administration of **Etomidate** after initial sedation, use other agents for analgesia and sedation.

- Paralyze **(only after sufficient sedation/induction and 2 RSA trained providers at bed side [2]):**
  - **Succinylcholine Chloride (Anectine)** 2 mg/kg IV/IO/IM max 200 mg
    - **IM Succinylcholine has unreliable absorption and is only to be used in event of IV/IO failures**
  - Do not repeat dose for long term paralysis after intubation. If repeat dose of **Succinylcholine Chloride (Anectine)** is required for RSA, have **Atropine** available for bradycardia potential, use ACLS guidelines.

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Case #2

- Placement:
  - Insert the ETT until the cuff passes the vocal cords
    - Make only one (1) attempt [3]
    - If unsuccessful, proceed to the Difficult Airway Procedure below
  - Inflate the cuff
  - Immediately verify by viewing capnography waveform and print for verification
  - A waveform should be visible with each breath, if not assume intubation attempt was not successful
  - Auscultate bilateral breath sounds, negative gastric inflation, and equal chest rise
  - Check for condensation in the tube
  - Monitor SpO_2
  - Secure ET tube with commercial holding device, noting depth of tube placement

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Case #2

- Post-Intubation Management:
  - Secure ETT and place c-collar to reduce motion
  - Monitor vitals for tachycardia and hypertension, as the paralysis will outlast the sedation. Provide sedation and/or pain management per guideline.
  - ***DO NOT*** re-paralyze under the age of 5 yrs
  - Goal is to maintain SpO_2 95-99% and etCO2 35-45mm Hg
    - Acidotic patients(DKA, ASA/TCA tox, severe sepsis, crush) etCO2 goal is closer to 30mm Hg
  - **Vecuronium Bromide (Norcuron)** 0.1 mg/kg IV/IO max of 10 mg
    or
    Rocuronium Bromide (Zemuron) 1mg/kg IV/IO max of 100mg
  - Provide adequate sedation with ½ doses of initial sedation drug every 10 minutes as necessary. Long term paralysis may be unnecessary if adequately sedated and soft restraints utilized. Monitor vitals, as adjustment in sedation drugs may be necessary. If hypotensive, use **Ketamine** or **Fentanyl.** If possibility of ongoing seizures, use **Versed.**
  - If bradycardic, ensure adequate ventilation and recheck tube placement, see *Bradycardic Guidelines*
  - Place NG/OG for gastric decompression if trained
  - Services using ventilators will require ventilator specific training
  - Monitor closely for signs of pneumothorax
  - Utilize PEEP valve 5-10mm Hg if needed to maintain oxygen saturations, monitor blood pressure.

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Case #2 EMS Report Cont…

After patient was sedated and chemically paralyzed, EMS inserted an 8.0 ET-tube via direct video laryngoscope. ET-tube was visualized passing the vocal cords. ET-tube was measured 24 at the teeth. Placement was confirmed with waveform capnography, misting in the tube, lungs sounds, and equal bilateral chest rise. The tube was then secured with a commercial device. Transport was then initiated to Mercy Hospital Janesville.

While in route to the hospital the patients condition remained unchanged. Multiple sets of vitals were obtained. MD-1 contacted Mercy Janesville to provide patient update. Patients blood pressure began trending lower throughout transport. After a set of vitals the patients BP was recorded at 40/25. 8ml of push dose epinephrine was administered to the patient at this time. Vitals were reassessed at this time and the patients BP began trending to previous ranges.

Upon arrival at the hospital the patient was transferred into the ED. Once in the ED the patient was transferred directly to CT. Once at CT patient transferred into CT scanner. MD-1 provided patient care report to ED staff. Signatures of ED staff were unable to be obtained due to the patient being in specialty area.

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Case #2 Diagnosis

1. Acute intraparenchymal hemorrhage within the posterior cerebellum which measures 4 x 5 x 3 cm. Intraventricular hemorrhagic extension into the 4th ventricle, 3rd ventricle, and lateral ventricular atria.

2. Subarachnoid hemorrhage throughout the posterior fossa and basilar cisterns as above.

3. Prominence of the lateral and 3rd ventricles, concerning for early obstructive hydrocephalus.

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Case #2 Conclusion

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