

RSPT 2131 NBRC Clinical Simulation Exam (CSE) Overview

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Who can take it?

- Eligibility
 - Must be 18 years of age
 - Must have CRT *plus*
 - be a graduate of a CoARC approved program *or*
 - have 4 yrs full-time experience + 62 sem hrs *or*
 - have 2 yrs full-time experience + BS degree

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What is it?

- The CSE consists of 10 separate patient management problems
 - The clinical settings and patient situations are designed to simulate reality and be relevant to current practice
- Time allowed: 4 hours

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What is it?

- To ensure that each CSE is consistent in content, the 10 problems cannot be chosen at random
 - Such factors as problem length, patient type, disease process, degree of difficulty and content tested by individual problems must be considered

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What's on it?

- A typical CSE will include
 - 2 adult patients with COPD
 - 1-2 adult trauma patients
 - 1-2 adult cardiovascular disease patients
 - 1-2 adult neurological or neuromuscular disease patients
 - 1 pediatric patient
 - 1 neonatal patient
 - potentially 1 adult patient with other medical or surgical conditions

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A closer look...

- 2 adult patients with COPD
 - Emphysema
 - Bronchiectasis
 - Bronchitis
 - Asthma
 - Status asthmaticus
 - Sleep apnea

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A closer look...

- 1-2 adult trauma patients
 - Chest trauma/flail chest*
 - Hemo/pneumothorax*
 - Burns/smoke inhalation/CO poisoning*
 - Thoracic surgery
 - Head & neck trauma/surgery
 - ARDS
 - Spinal injury
 - Abdominal surgery - pre- & postop
 - Hypothermia

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A closer look...

- 1-2 adult cardiovascular disease patients
 - CHF/pulmonary edema*
 - MI/chest pain*
 - Mitral stenosis/valve replacement
 - Pulmonary emboli
 - Cor pulmonale/shock
 - Coronary artery disease
 - Heart surgery - pre- & postop

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A closer look...

- 1-2 adult neurological or neuromuscular disease patients
 - Myasthenia gravis*
 - Guillain-Barré syndrome
 - Poliomyelitis
 - Tetanus/botulism
 - Drug overdose
 - Stroke
 - Muscular dystrophy

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A closer look...

- 1 pediatric patient
 - Croup/epiglottitis*
 - Cystic fibrosis*
 - Bronchiolitis
 - Allergic asthma
 - Toxic substance ingestion
 - Foreign body airway obstruction

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A closer look...

- 1 neonatal patient
 - IRDS*
 - Meconium aspiration*
 - Infant apnea/CPR
 - Congenital heart disease
 - Delivery room care

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A closer look...

- Potentially 1 adult patient with other medical or surgical conditions
 - CPR*
 - AIDS*
 - Exposure/hypothermia
 - Diabetic/renal failure
 - Pickwickian syndrome/obesity
 - Near-drowning

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How does it work?

- CSEs use “branching logic”
 - Direction and progression of simulation problem is determined by your choices
- Each problem has 3 sections
 - Scenario
 - Information gathering
 - Decision making

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How does it work?

- Scenario
 - You are the day shift supervisor in a 500-bed hospital. At 2:30 pm, a male patient approximately 45 years old and weighing 180 lbs is admitted to the ED with a possible MI. The paramedics are performing CPR and ventilating the patient via bag/mask with an FIO₂ of 1.0. The mask is found to have vomitus in it. Dr. Wang asks for your help in the initial assessment of this patient.

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How does it work?

- Scenario
 - Identify the key points in the scenario
 - Mentally form possible causes and results
 - Keep an open mind

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How does it work?

- Scenario
 - You are the day shift supervisor in a 500-bed hospital. At 2:30 pm, a male patient approximately 45 years old and weighing 180 lbs is admitted to the ED with a possible MI. The paramedics are performing CPR and ventilating the patient via bag/mask with an FIO₂ of 1.0. The mask is found to have vomitus in it. Dr. Wang asks for your help in the initial assessment of this patient.

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How does it work?

- Scenario

500 bed hospital	<i>Equipment and procedures readily available</i>
45 yom, 180 lbs	<i>82 kg</i>
In ED	<i>Time constraints?</i>
Possible MI	<i>Hypoxia?</i>
CPR in progress	<i>Broken ribs?</i>
Bag/mask ventilation	<i>Gastric insufflation?</i>
Vomitus in mask	<i>Aspiration?</i>
Physician asks for initial assessment	<i>Nothing that will take a long time - nothing sophisticated</i>

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How does it work?

- Information Gathering
 - You will be instructed to select as many as you consider appropriate
 - Read all options and select those you believe appropriate
 - All options are in the same time frame
 - Do not choose more than necessary
 - Some are useful, some irrelevant and some are detrimental

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How does it work?

- Information Gathering
 - Some *almost* always result in positive results
 - vital signs
 - color
 - breath sounds, respiratory pattern
 - general appearance
 - sensorium
 - history of present illness

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How does it work?

- Information Gathering - Scoring
 - +3 Of general or critical importance in appropriate care of the patient and resolution of the problem
 - +2 Strongly facilitative of appropriate care...
 - +1 Mildly facilitative of appropriate care...
 - 0 Optional and noncontributory
 - 1 Mildly harmful...
 - 2 Seriously harmful...
 - 3 Gravely detrimental

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How does it work?

- Information Gathering

Heart rate	Breath sounds
Respiratory rate	Temperature
CVP	EKG
Blood pressure	Ocular pressure
Complete PFT	Smoking history
Spontaneous V _T	Chest x-ray
ABGs	CBC
Sputum culture	Electrolytes
Color	Deep tendon reflex

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How does it work?

- Decision Making
 - In most instances, you will be instructed to select only one option
 - Remember, this is not a multiple choice exam - all options may be correct
 - Evaluate each option critically, then choose the best answer based on information gathered
 - More than one answer may carry positive points, some more than others

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How does it work?

- Decision Making
 - You are the day shift supervisor in a 500-bed hospital. At 2:30 pm, a male patient approximately 45 years old and weighing 180 lbs is admitted to the ED with a possible MI. The paramedics are performing CPR and ventilating the patient via bag/mask with an FIO₂ of 1.0. The mask is found to have vomitus in it. Dr. Wang asks for your help in the initial assessment of this patient.

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How does it work?

- Decision Making
 - Intubate patient and place on FIO₂ 1.0
 - Intubate patient and manually ventilate at FIO₂ 1.0
 - Intubate patient and place on a pressure-limited ventilator
 - Intubate patient and place on a volume-limited ventilator
 - Intubate patient, manually ventilate at FIO₂ 1.0 and defibrillate

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How does it work?

- Decision Making
 - After reading all the options, check the one you feel is *best*
 - The data you are given will indicate your next action by either:
 - directing you to go to the next section or
 - directing you to choose another option in the same section

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How does it work?

- Decision Making
 - If you are directed to choose another option in the same section
 - it does not necessarily mean that the option you chose was incorrect, that you made a mistake or that you lost points - just like in real situations, the physician may disagree with your recommendation or decision, or equipment may not be available, etc.
 - continue to select the option you think is the most appropriate until you are directed to the next section

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How does it work?

- Decision Making
 - Occasionally, in a DM section, you will be instructed to select as many options as you feel are indicated or necessary
 - Remember that all options are in the same time frame; after reading all options, select all that would be necessary in the situation, regardless of the data you obtain from uncovering responses

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What does it test?

- The problems are constructed to simulate a clinical situation as closely as possible; they are not designed to test whether you can arrive at a solution with a minimum number of choices - on the other hand, the fact that an option is offered does not necessarily imply that it would be included in optimal management of the patient described - to summarize: you should choose EVERY item you regard as pertinent and you should NOT choose any item that you regard as not contributory or inappropriate

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What does it test?

- Remember, the test is designed to assess your ability to
 - gather appropriate clinical data, including physical and laboratory
 - interpret data to establish criteria for Decision Making
 - solve the problem by identifying and analyzing the situation, and taking the appropriate steps toward its resolution
 - make clinical judgments or decisions about the appropriate management of the patient with regard to timing and necessity of therapy

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Tips for taking it

- Information Gathering
 - respiratory rate, heart rate, BS, color and general appearance: order on *all* patients first - if no pulse, don't pick further - **Code**
 - temperature: do **not** order on trauma patients
 - blood pressure: do **not** order on arrested patients
 - WBC or CBC: order if increased temperature
 - BUN, creatinine to assess renal function
 - blood glucose, total protein, cholesterol to assess nutritional status

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Tips for taking it

- Information Gathering
 - electrolytes: order if patient is in metabolic alkalosis or patient described as having **any kind of muscle weakness**, nausea, mental changes, lethargy, drowsiness and malaise
 - cardiac enzymes: order if suspected MI or blunt chest trauma
 - chest palpation: do **not** order on burn patients
 - chest trauma: first problem is usually oxygenation

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Tips for taking it

- Information Gathering
 - Remember, with ABGs, you are at sea level
 - If you don't know what a test is - don't select it
 - Don't ask "Why select this?" - ask "Why not?"
 - too much time?
 - too expensive?
 - any use?
 - invasive?

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Tips for taking it

- Patient Management
 - Step 1 - always ask the Life Function questions
 - Is the patient ventilating? (PaCO_2 , f, V_T , BS) - if not, treat it
 - Is the patient oxygenating? (PaO_2 , SpO_2 , P_{aO_2} , color, sensorium, HR) - if not, know the rules
 - Increase FIO_2 to .6 then add PEEP/CPAP
 - If patient is already above .6 FIO_2 , then increase PEEP/CPAP
 - Does the patient have circulation? (HR & strength, CO) - if not, treat it
 - Is the patient perfusing? (BP, sensorium, urine output, hemodynamics) - if not, treat it

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Tips for taking it

- General considerations
 - In emergencies - proceed right to therapy; do not do more testing; then assess response
 - $\text{HR} > 100$ - consider the patient hypoxic; $\text{RR} > 30$ - patient is in respiratory failure
 - EEC and EKG may be offered to try to confuse you into picking EEG -- **READ CHOICES CAREFULLY**
 - Must have spontaneous breathing to use CPAP
 - Never give acetylcysteine without a bronchodilator

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Tips for taking it

- General considerations
 - Complete isolation for any staph infection
 - Antibiotics: gram+ infections, use broad spectrum e.g. Erythromycin, Terramycin; gram- infections, use "mycins" e.g. Kanamycin, Gentamycin
 - Choose cough suppressants if cyanosis occurs during coughing spells
 - No heated aerosol if patient has fever

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Tips for taking it

- General considerations
 - **NEVER give the wrong therapy, no matter what anyone threatens you with!!**

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Tips for taking it

- Diseases/conditions
 - Pulmonary edema
 - true emergency - time is a factor, be aggressive, give 100% O₂ first
 - standard treatment after O₂ used to be IPPB with 100% O₂ and 50% ethyl alcohol
 - may eventually intubate and use mechanical ventilation

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Tips for taking it

- Diseases/conditions
 - Code 99
 - NEVER leave patient
 - NEVER give IPPB
 - Do give 100% O₂ and manually ventilate
 - Know CPR sequencing
 - If patient goes on ventilator after HR is restored, use 100% O₂

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Tips for taking it

- Diseases/conditions
 - Epiglottitis
 - History will show child 2-8 yo with sudden onset of symptoms
 - fever
 - cough, hoarseness, sore throat
 - drooling
 - inspiratory stridor (supraglottic inflammation by H. influenza type B)
 - tachycardia, nasal flaring

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Tips for taking it

- Diseases/conditions
 - Epiglottitis
 - True emergency - no ABGs, BP, CXRs, lab assessment - no further stimulation of child
 - Airway is priority - to OR to intubate with 1 size smaller ETT than normal, then to ICU
 - DO NOT visualize epiglottis without airway in place - if this is done, it is usually by physician - do not touch epiglottis

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Tips for taking it

- Diseases/conditions
 - Epiglottitis
 - DO NOT give any kind of aerosol without airway in place
 - When airway is in place - humidified O₂, antibiotics, CPT and suction
 - Extubate when air leak is heard around ETT (3-4 days), then racemic epi by SVN

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Tips for taking it

- Diseases/conditions
 - Croup
 - History will show child <2 yo, and a gradual onset of symptoms
 - Assessment will reveal inspiratory stridor, barking cough, hoarseness, tachypnea and tachycardia
 - Croup is a viral infection (parainfluenza) which causes subglottic inflammation
 - Differential diagnosis of croup and epiglottitis: steeple sign in croup lateral neck xray; epiglottitis patients nearly always drool

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Tips for taking it

- Diseases/conditions
 - Croup - treatment
 - Cool mist with FIO₂ .30-.40
 - Plenty of rest; maybe ICU
 - Racemic epi by SVN (do not awaken for Rx)
 - When child shows improvement - start CPT
 - Do not suction if airway is not in place
 - Do throat and blood cultures

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Tips for taking it

- Diseases/conditions
 - Mechanical ventilation
 - Know when to commit to ventilator (by the numbers) and initial settings
 - Initial settings are by ideal body weight: male 70-80 kg; female 50-60 kg
 - Do not put patient with lung problems on pressure-cycled vent; this is ok on post-op and drug OD

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Tips for taking it

- Diseases/conditions
 - Mechanical ventilation
 - If ANY problem arises with the ventilator - manually bag the patient
 - If manual ventilation proves difficult - suction; if suction catheter won't pass - extubate
 - All ventilator changes should be based on patient condition and lab results (by the numbers)

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Tips for taking it

- Diseases/conditions
 - Neuromuscular problems
 - Will be described as generalized muscular weakness
 - Guillain-Barré
 - flu-like beginning
 - weakness begins in legs, then ascends
 - simulation will most likely follow a deteriorating patient and move to mechanical ventilation
 - basically, there is no other treatment

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Tips for taking it

- Diseases/conditions
 - Neuromuscular problems
 - Polio
 - essentially the same as Guillain-Barré except no flu-like symptoms

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Tips for taking it

- Diseases/conditions
 - Neuromuscular problems
 - Myasthenia gravis
 - upper body problems (dysphagia, blurred vision) that improve with rest
 - do Tensilon test (edrophonium) - if patient improves test is positive; if patient worsens, patient is in cholinergic crisis - give atropine and be prepared to insert airway, give O₂, intubate/ventilate, suction, etc.
 - treat with Neostigmine (Prostigmin), Mestinon
 - admit patient, monitor (VC, V_r & VS q4h) - go to mechanical ventilation if condition deteriorates

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Tips for taking it

- Diseases/conditions
 - High risk deliveries
 - C-sections, pre-term, post-term, multiple births; mother over 30 yo, drug user, diabetic
 - Initial assessment - BS, weight, APGAR
 - HR<100 = code - begin CPR (start with airway!)
 - Temperature is critical
 - When stable, do glucose on all infants - term = 30-50, pre-term = 20-30; do blood gases
 - Don't mechanically ventilate if infant is ventilating OK - remember O₂ rules

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Tips for taking it

- Diseases/conditions
 - High risk deliveries
 - Start CPAP/PEEP at 2-3 cmH₂O
 - Ventilate with pressure-cycled ventilator
 - 20-25 cmH₂O if lungs are clear
 - 30 cmH₂O if "ground glass" appearance
 - rate = 20 bpm (may need higher in pre-term, but start at 20)
 - start at same FIO₂ and PEEP level as before ventilation
 - re-assess with blood gases

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Tips for taking it

- Diseases/conditions
 - High risk deliveries
 - Consider transillumination if pneumothorax is suspected
 - Know pre-ductal vs. post-ductal sites
 - if ductus arteriosus is closed, PO₂s will be the same

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Tips for taking it

- Diseases/conditions
 - Status asthmaticus
 - History will show patient not improving with home meds
 - Assessment shows severe distress
 - Don't just keep recommending bronchodilator treatments

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Tips for taking it

- Diseases/conditions
 - Status asthmaticus
 - Treatment
 - 100% O₂
 - Sub-Q epi
 - » no response - more epi in 20-30 min
 - » no response - more epi (up to 3 injections)
 - » no response - Pavulon and mechanical ventilation
 - Maintain 100% O₂ until indications no longer exist

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Tips for taking it

- Diseases/conditions
 - True emergencies (time *really* matters)
 - Status asthmatics
 - Pulmonary edema
 - Epiglottitis
 - Burns/smoke inhalation/CO poisoning
 - Near-drowning
 - Code 99
 - Shock (maybe)

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CSE

- Study List
 - In addition to the diseases (slides 6-12) and conditions listed here, study
 - Post-op evaluation
 - Critical care management
 - Mechanical ventilation
 - PFT evaluation
 - Infection control
 - Rehabilitation
 - Home care

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CSE

- Score reporting
 - The passing score is set by the exam committee and may vary from one form of the exam to another, depending on the 10 problems presented
 - The exam committee follows very strict guidelines in selecting the 10 problems for each CSE to ensure that different versions are parallel in difficulty

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Score reporting

- Score reporting
 - Each section of IG and DM is evaluated by content experts and their judgments are used in assigning scoring weights to each section
 - You will be provided with your score on each problem and the minimum passing level (MPL) and the maximum score (MAX) for each problem

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