

# IT'S A MEDICAL EMERGENCY!

## RECOGNIZING & MANAGING ABNORMAL BREATHING LEARNER COMPANION\*

### "I can't Breathe" = Medical Emergency

Think medical emergency every time you hear, "I can't breathe," or like claims. **DO NOT** ignore: Act! (S)he is likely sensing *air hunger*<sup>5,8</sup> (shortness of breath). Immediately tell Dispatch to send Emergency Medical Service (EMS). Monitor the person and be prepared to start Cardiopulmonary Resuscitation (CPR) and/or apply an Automated External Defibrillator (AED). Follow your agency's policy, training, and always act professional.

### Air Hunger

*Air hunger* (shortness of breath) can be caused by asthma, trauma to the chest, or to a major airway, illicit drugs, and chronic obstructive pulmonary disease (COPD), cardiac origin, etc.<sup>5,8</sup> The person may feel uncomfortable, panicked, and emotionally distressed. Air hunger is potentially a medical emergency requiring fast medical intervention.

### Breathing: Dangerous Fallacies

- One or two breaths show the person is breathing
- If a person is talking, (s)he is breathing
- Lip movement shows breathing
- Compliance and death do not look similar.

### 1 or 2 Breaths ≠ Breathing

Watching a person breathe once or twice does not mean (s)he is adequately breathing. Such breathing may indicate *agonal* (agony) breathing, and that death is approaching.

### Talking ≠ Breathing

Myth: If a person is "talking," (s)he is properly breathing. Talking is air going over the larynx<sup>5</sup>. Recall from training that too many law enforcement officers (LEO) have responded, "If you're talking, you're breathing."

### Lip Movement ≠ Breathing

Sporadic movements of the lips do not guarantee adequate breathing. Monitor the person until EMS arrives and be prepared to begin CPR. Expedite EMS.

### Compliance or Dying?

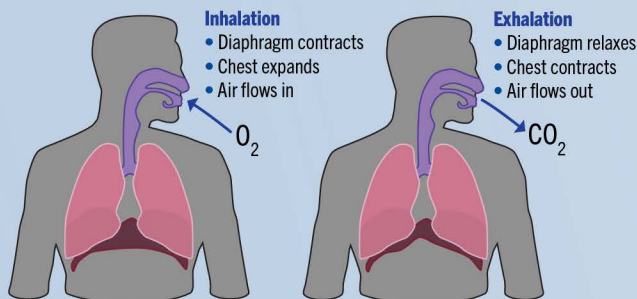
A person who suddenly becomes "compliant" after being told to "stop resisting" may in fact be dying. Unresponsiveness and death may look and act like compliance. *Continuously monitor* the person and prepare to give CPR and/or apply an AED.

### Breathing (B) = V + R

The formula for adequate breathing is *ventilation + respiration*. Normally, adults breathe between 12 and 20 breaths per minute<sup>6</sup>.

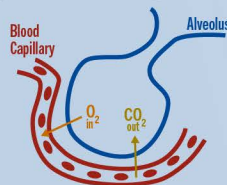
### Ventilation (V)

One part of the breathing equation is *ventilation* that has two subparts: inhalation and exhalation. *Ventilation* refers to the mechanical process of moving air into and out of the lungs<sup>6</sup>. *Inhalation* (active process) is taking air into the lungs; *exhalation* (passive process) is removing air from the lungs.



### Respiration (R)

The second part of breathing is *respiration*. *Respiration* refers to: (1) how oxygen (O<sub>2</sub>) diffuses from the air into the lungs (Alveoli) and the blood stream; and (2) how carbon dioxide (CO<sub>2</sub>) is then transferred from the blood into the lungs and discharged into the atmosphere<sup>6(p.3)</sup>. With each breath, O<sub>2</sub> is brought into the lungs, and CO<sub>2</sub> is expelled from the lungs.



### Gas Exchange and Breathing

*Gas exchange* is the process of oxygenating the blood and releasing CO<sub>2</sub> into the atmosphere<sup>6</sup>. A falling level of O<sub>2</sub> or an increase in CO<sub>2</sub> can cause a change in the individual's mental status. The *gas exchange process* involves three important steps: (1) ventilation; (2) perfusion; and (3) diffusion<sup>6(p.4)</sup>. You cannot see if gas exchange is happening because it occurs in the microscopic *alveoli* (balloon-like air sacs) inside the lungs.

### Perfusion

*Perfusion* (in this context) refers to blood flow through the pulmonary artery that is pulsing through the pulmonary capillaries<sup>6</sup>. Metaphorically, think of a train with several empty coal cars located under a large hopper filled with coal (oxygen). If the train is moving too fast (heavy breathing), the coal hopper will be drained quickly (taking a lot of oxygen from the lungs). Conversely, if the train is moving slowly (low cardiac output) or not moving at all (cardiac arrest) carbon dioxide accumulates in the blood and tissues and is not expelled from the lungs.

### Diffusion

*Diffusion* refers to the process of the movement of CO<sub>2</sub> and O<sub>2</sub> between the lungs and blood<sup>6</sup>. When the concentration of CO<sub>2</sub> is higher, it becomes "waste air" and moves in the opposite direction of O<sub>2</sub> in the alveoli and then is exhaled<sup>6</sup>. People can experience derangement from ventilation, perfusion, or diffusion because of low O<sub>2</sub> or high CO<sub>2</sub> levels.

### Carbon Dioxide Increase

A person who says "I can't breathe" may not be properly discharging CO<sub>2</sub> and may be actually "suffocating" from its build-up, or from low O<sub>2</sub><sup>5</sup>. Because the gas exchange process is not properly functioning, (s)he may be suffocating or feel like it and needs immediate medical attention. This may be the basis for saying, "I can't breathe."



# IT'S A MEDICAL EMERGENCY!

## RECOGNIZING & MANAGING ABNORMAL BREATHING LEARNER COMPANION\*

### Heart Attack

A *heart attack* occurs when blood flow is interrupted to part of the heart muscle because of blockage or narrowing of arteries that supplies that area of the heart<sup>4</sup>. Think *plumbing* problem. Not everyone who has a heart attack will suffer a cardiac arrest.

### Cardiac Arrest

*Cardiac arrest* is when the heart suddenly stops beating<sup>4</sup>. Think *electrical* problem. Cardiac arrest causes rapid unconsciousness, and without immediate intervention (AED and/or CPR) the person will usually die.

### Agonal (ag-uh-ni) Respirations (breathing)

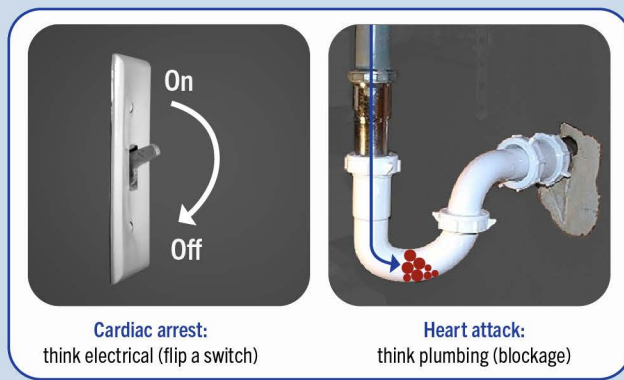
Gasping to breathe may indicate *agonal breathing* or *respirations*. Agonal respirations are often associated with cardiac arrest and are often seen before death. Agonal respirations are a brain stem reflex that occurs in 55%-60% of cardiac arrests because human tissues are not getting enough oxygen-rich blood<sup>1,8</sup>. Breathing is irregular and without a constant rhythm.

### Agonal Respirations Descriptions

*Symptoms* include: Gasping; labored breathing; snorting; snoring sounds; moaning; guttural sounds; twitching muscles; seizures; gurgling; moaning or groaning; heavy breathing; noisy breathing; and/or labored breathing<sup>1,2,8</sup>. In a study, 70% of *abnormal breathing* used the following terms: snoring, snorting, and gurgling. "Death rattle" is often used but is inaccurate because it refers to a gurgling sound made when a person is dying, and excess saliva and mucus are in the throat<sup>8</sup>.

### Common Causes of Agonal Respirations

- Cardiac arrest
- Ischemic stroke
- Hemorrhagic stroke
- Anoxia
- Drug overdose, includes opioid and narcotic overdoses<sup>8</sup>.



### Evidence-Based Action Steps

Whether responding to a "person fell" call or a "person" who becomes nonresponsive, both transition into *patients*.

**Action steps:** Notify dispatch immediately and request EMS<sup>2,38</sup>; if you have an AED, get it, and attach to the person; if necessary, perform CPR<sup>3,8</sup>; clear the airway of obstruction (if necessary); request a supervisor come to the scene; Reassure the person and attempt to keep the person calm; do not erroneously mistake unconsciousness for "compliance"; follow your policy; follow your training; demonstrate concern for the individual, family members, and friends.

### Remember to . . .

- practice **officer safety** because the person's claim of breathing problems may be false
- know abnormal breathing signs so you can get help
- not make a diagnosis (unqualified)
- not erroneously mistake unconsciousness for "compliance"
- recall a person's mental confusion may be an early sign of inadequate oxygenation
- recall a person with breathing difficulties may be unable to comply with requests and commands
- recall the recovery position does not mean the position will aid in the person's recovery
- assume you are being recorded (video/audio).

### References

- [1] Allan, L. (2019, March 6). If You Hear Someone Breathing Like This, They're Probably About to Die. Retrieved from [www.ranker.com/list/agonal-breathing-facts/laura-allan](http://www.ranker.com/list/agonal-breathing-facts/laura-allan).
- [2] Fukushima, H.J., Panczyk, M., Chengcheng, H., Dameff, C., Chikani, V., Vadeboncoeur, T., Spaitte, D. W., & Bobrow, B. J. (2017). Description of Abnormal Breathing Is Associated With Improved Outcomes and Delayed Telephone Cardiopulmonary Resuscitation Instructions. *J Am Heart Assoc*, 1-8.
- [3] Hatch, D. L. (2003). An Evaluation of the Austin Airport Police Department (AAPD) Automated External Defibrillator and Public Access Defibrillator Program. Texas: The Bill Blackwood Law Enforcement Management Institute of Texas.
- [4] Institute of Medicine. (2015). *Strategies to improve cardiac arrest survival: A time to act*. Washington, D.C.: The National Academies Press.
- [5] Law, A.C., Weissman, G. E., & Iwashyna, T. J. (2020, June). A Dangerous Myth: Does Speaking Imply Breathing? Retrieved from [www.acpjournals.org/doi/10.7326/M20-4186](http://www.acpjournals.org/doi/10.7326/M20-4186).
- [6] Myers, A. (2006). **Crash course: Respiratory system**. Philadelphia: Elsevier, Inc.
- [7] TeachPE. (2015). Gas exchange in the Lungs. Retrieved from [www.teachpe.com/anatomy/gas\\_exchange.php](http://www.teachpe.com/anatomy/gas_exchange.php)
- [8] Williams, M. (2019). What Is Agonal Breathing? Retrieved from [www.cprcertified.com/blog/what-is-agonal-breathing](http://www.cprcertified.com/blog/what-is-agonal-breathing)

### Disclaimer

This information is provided to assist first responders and others, and shall not be construed as medical, legal, psychiatric, and/or other advice, is time sensitive, and users should consult with their respective medical, legal, psychiatric, and/or other professionals prior to using this information to make sure that it is current and has not become outdated, modified, and/or replaced with more current information, and does not establish or create a standard of care, nor enhance applicable legal standards of care. The author, the advisors, reviewers, and the publisher accept no liability whatsoever for any injuries to person or to property resulting from the application or the adoption of any of the information, procedures, tactics, or other considerations presented or contained in this document.

\*Authorized for use only by IPICD-qualified Recognizing & Managing Abnormal Breathing instructors.

### Credits

Copy: John G. Peters, Jr., Ph.D.

Design: [www.curtnova.com](http://www.curtnova.com)

Peer Reviewers: D. Paul Matsenbaugh, M.D., A. David Berman, M.S. Michael Curtis, M.D., Michael A. Brave, Esq.

SKU: RMAB-LC-202101

