# TriHealth
# Emergency Journal



## New TriHealth Heart Hospital

TriHealth broke ground early this year for a new TriHealth Heart Hospital. This construction brings together the cardiac surgery programs at Good Samaritan Hospital and Bethesda North Hospital. Having both dynamic programs on one campus will increase capacity for all cardiac services.

This vision intensifies the number of procedural labs – for example: cardiac catheterization, vascular, interventional radiology, neurosurgery and electrophysiology.  The Heart Hospital will be home to TriHealth's new Advanced Heart Failure Center and left ventricular assist device (LVAD) program. The grand opening is anticipated for the Summer of 2022.

**Debra Walker**

Over the past year, Bethesda Butler Hospital has been working hard to provide more access to neurology services for our patients. Bethesda Butler now provides 24/7 inpatient neurology and critical care coverage through telemedicine. Patients and providers now have access to a neurologist and ICU intensivist from TriHealth's Bethesda North Hospital, and a neurointensivist from TriHealth's Good Samaritan Hospital Neurosurgical ICU for expert consultation. This allows patients with neurological emergencies to remain in their community, while still having access to the advanced specialty care they need.

With these advances, Bethesda Butler Hospital has started the process of applying for Primary Stroke Center Certification through The Joint Commission. Bethesda Butler is now able to admit and care for patients who have strokes that require the clot-busting medication, Alteplase (tPA), and some patients who have non-traumatic intracerebral hemorrhages (ICH). This is a huge win for Butler County as we are the only hospital providing telemedicine with neurointensivists who specialize in advanced care of neurological emergencies. We look forward to continuing to provide these services to our patients in their own community!

**Elizabeth Salyers**

The Liberty Township Fire Department was organized in Liberty Township in the early 1950s. It consisted entirely of volunteers. The Board of Township Trustees placed a bond issue on the ballot for the construction of a firehouse at 5763 Princeton-Glendale Road and the purchase of a fire pumper.

In 1974, a second fire station was built at 6957 Yankee Road. This station underwent renovation in 1999 to add a dormitory area, additional offices and an apparatus bay for the Paramedic Response Unit.

In January 2005, a third station was built to serve as a functioning firehouse and administrative headquarters. Its firefighter, medics and EMTs serve the southwestern quarter of Liberty Township. This station is located at 6682 Princeton-Glendale Road.

Ambulance service was added to the fire department in the summer of 1974. The level of service was increased throughout the years, transitioning to a combination department until 1998. This was the year the EMS service was upgraded to the paramedic level. Part-time paramedic/firefighters were placed on station 24/7 to staff the Paramedic Response Unit.

Today, the fire department is led by Fire Chief Ethan Klussman. There are 80 men and women serving Liberty Township's communities. They cover 28.5 square miles and average 2,850 emergencies a year.

**Debra Walker**

# Stonelick Township Fire Rescue – Clermont County

Stonelick Township Fire & Rescue is located in the north central portion of Clermont County and provides Fire and EMS service to Stonelick Township (29.7 square miles), and the Village of Owensville (0.5 square miles). It also to cover a portion of Jackson Township (10 square miles) for EMS coverage. There are approximately 6,200 residents in Stonelick Township and the Village of Owensville. Our response area includes the Clermont County Fairgrounds as well as the CNE School Campus.

Stonelick Township took over Fire and EMS from the Village of Owensville in 2008. The department operates out of two stations and is staffed 24 hours a day with three medic units, four engines, one aerial tower, one water tender and various support units. The department has seven full-time employees, 39 part-time employees and 14 volunteers and is led by Fire Chief Jim Pemberton.

**Fire Chief Jim Pemberton**

The Wilmington Fire Department is led by Fire Chief Andy Mason and has a rich history in our city dating back 180 years. We are comprised of 15 members—including the chief and three lieutenants—covering approximately 80 square miles, which includes two townships. We make approximately 4,000 calls for service annually out of one station. We protect roughly 20,000 citizens, with that number swelling during the daytime due to businesses within our coverage area including the nation's largest privately owned airport.

Wilmington Fire Department is the only full-time fire department in Clinton County, and we are proud to support our volunteer brothers and sisters throughout the rest of the county. Wilmington Fire Department cross-staffs at least two medic units daily with a quint and engine, tanker and rescue truck, depending on the need of the call. Our members are dedicated and proud to serve the citizens within our district.

**Lieutenant Rick Birt**

# Harrison Fire Department – Hamilton County

The Harrison Fire Department (HFD) is a suburban career fire department comprised of 40 firefighters made up of career and part-time members. Located in Southwestern Ohio, the City of Harrison is 25 miles northwest of Cincinnati in the I-74 corridor along the Whitewater River bordering the Ohio and Indiana line. Operating out of two stations, HFD provides Fire and EMS service to 27,506 citizens in 47 square miles of first-due response area. HFD is operated by the City of Harrison; however, HFD is unique in that 40 square miles of first-due response area is contracted territory—26 of which is in Indiana—in the following areas: Kelso Township, Logan Township, Harrison Township, West Harrison (Dearborn County) and Harrison Township, Ohio.

In 2020, the department responded to 2,126 EMS calls and 592 fire/rescue emergencies. The department is led by Fire Chief William R. Hursong. Staffing is 10 personnel per day, running an engine, quint and two medic units. A third medic unit is cross-staffed with an engine when needed.

**Fire Chief Rob Hursong**

In 1895, The Camden Fire Department was created. It had 15 members, receiving 50 cents for each drill and a dollar for each actual fire service they attended. In 1968, the department was equipped with more modern apparatus, including two pumpers and a water wagon.



In 1991, the Fire and EMS departments joined together to form what is known today as the Camden-Somers Township Fire and EMS Department. The department has two ambulances, a brush truck and two pumper tankers.

Camden-Somers Township Fire and EMS is led by Chief Joshua Forrer, Assistant Chiefs Billy Housewright and Brian Collins, Captains Chris Crowley and Harley McRill, Lieutenants Luke Sparks and Raymond Shattuck, and EMS Coordinator Stephanie Forrer. The department is run out of one station to cover a 54-square-mile area that includes the Village of Camden, Somers Township and Israel Township. The department makes 700 EMS calls and 200 fire calls a year, and it currently has 23 volunteer firefighters and 15 EMS personnel who provide 24-hour coverage, seven days a week.

**Stephanie Forrer**

# Switzerland County Emergency Response – Vevay, Indiana

One of our neighbors in Indiana is Switzerland County Emergency Response (SCER). They took over emergency services for Switzerland County on April 22, 2016. They are a group of EMS professionals under the direction of Chief Nadine Swift and they are responsible for 223.4 square miles. The service makes an estimated 1,130 runs per year and continues to increase staffing, education and EMS equipment.

In 2017, Belterra Casino donated a LUCAS to the department. Since that time, they received two more LUCAS machines from the EMA, bringing the total to three. SCER is a combination department and consists of part-time and full-time volunteers. They also have EMRs, EMTs and paramedics working for them – most of them from within the community.

**Debra Walker**
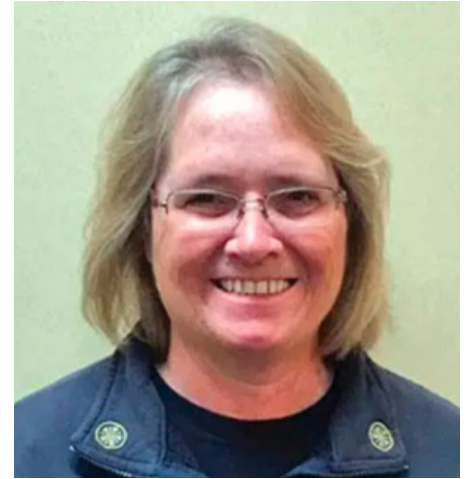
# Union Township/South Lebanon Fire Rescue – Warren County

The Union Township Fire Department was established as the South Lebanon Volunteer Fire Department in March 1931. Lester Hopkins was elected as the first chief. The first fire engine was a 1925 Dodge/Boyer. The first fire house was in the basement of the Post Office at 19 W. McKinley St.

In 1960, the Village of South Lebanon approached the Union Township Trustees to take over the fire department. A new fire house was built by the Village of South Lebanon and Union Township at 99 N. High Street and remained there until 1979 when Union Township built the current station at 327 E. Pike St. An addition was built in 1989.

The South Lebanon Life Squad was established as a private company in the 1950's. On Oct. 3, 1966, the South Lebanon Life Squad was accepted by Union Township Trustees to operate within the fire department.

Today, the helm is managed by Fire Chief Bob Napier, who took the reins in 2005. The fire department covers 14.9 square miles and protects and serves 5,276 residents. The fire company is a combination of full-time and part-time personnel, and they average 1,000 EMS/fire runs per year.
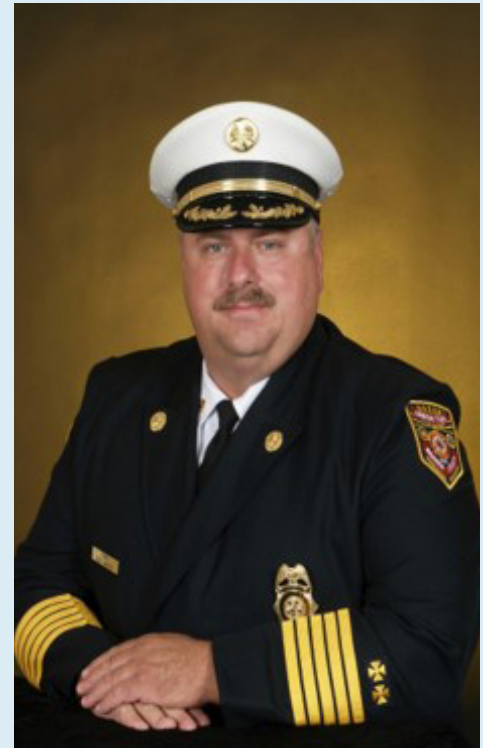
**Fire Chief Bob Napier**

## Stephanie Mackey

Stephanie was born in Middletown, Ohio. During high school, she joined the All-American Drill Team. Her team participated in the Hula Bowl and Macy's Thanksgiving Parade. In her senior year of high school, Stephanie was honored as Valedictorian and Miss Wright State. She loves to sing and dance and was awarded a dance scholarship to a college in Hawaii but did not take it.

Stephanie attended the University of Cincinnati in hopes of becoming a piano major. Instead, Steph followed her mom and aunt into nursing. She graduated with a BSN and started working as a nurse in 1980. Her admiration for song and dance has continued throughout her life. She is a dance instructor for classical ballet, modern dance and tap. Stephanie is the choreographer for Middletown Schools and performs "Handel's Messiah" every year.

Stephanie has been showered with well-deserved awards:  Florence Nightingale Award for Excellence in Nursing; Nursing Excellence Award in Patient Education; Director's Award in Nursing; Golden Shovel Award for Triage/Registration redesign; Preceptor/Clinical Coach Award; Clinical Nurse Excellence Award in Emergency Nursing for Greater Cincinnati; and Clinical Ladder IV. She is a Certified Emergency Nurse and teaches PALS, ACLS, TNCC and ENPC.

At home, Steph is an avid dog lover. Plus, congrats are in order. This grandma just welcomed twin grandsons into the world, bringing her total to three grandbabies. And if she ever slows down, her dream vacation would be to visit Ireland.

Thank you, Stephanie Mackey, for being a TriHealth Hero. We appreciate you.
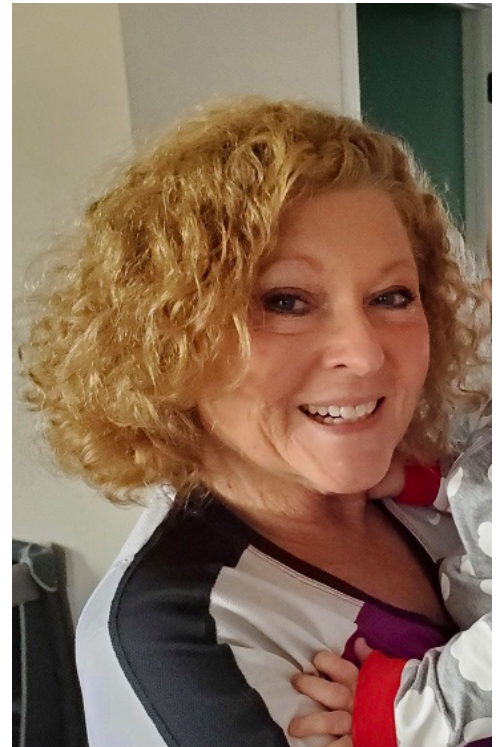
## Emily Johnson

Emily was born in Cincinnati, Ohio, and grew up in West Chester.  She graduated from Eastern Kentucky University with a bachelor's degree in health science. She continued her education at the University of Cincinnati where she acquired her BSN.

Emily started working as a nurse in 2012 in South Carolina at a nursing home and then transferred to PCU at one of the local hospitals. She started working in the Emergency Room in 2014. Realizing her passion for emergency medicine, she still works in the Emergency Department today. At Bethesda Butler, she chairs the Share Leadership Committee and is a Stroke Champion.

She loves all sports and is an outdoorsy type of person. Emily enjoys walking with her girls and spending summers at their lake house on Lake Williamstown or in Siesta Keys, Florida. Her dream vacation would be anywhere at an all-inclusive resort.

Thank you, Emily Johnson, for being a TriHealth Hero. We appreciate you.

**Debra Walker**

## Michelle Ping

Michelle was born in Ohio. The City of Hamilton to be exact. Growing up, she was not 100 percent sure she wanted to be a nurse. In New York, she attended Jefferson Community College. This small college only offered two careers – nursing and liberal arts. Thank goodness she decided on nursing. She graduated from Jefferson with her ADN and continued her nursing studies at Ohio University where she received her BSN. Michelle began her nursing career in 1991 on a Telemetry Floor. She then moved up into the ICU and eventually landed in the Emergency Department.

Michelle has been blessed with two nursing awards: TriHealth Nurse Engagement and Greater Cincinnati ENA Clinical Excellence in Emergency Nursing. She is certified in CEN and NHDP. She is the Co-Chair for the Emergency Management Committee and organized a Hospital Emergency Response Team at Bethesda Butler.

Michelle is a Disney fanatic. Mickey Mouse is her favorite Disney character. She loves antiquing and traveling. Her dream vacation would be a trip to Scotland.

Thank you, Michelle Ping, for being a TriHealth Hero. We appreciate you.

## Jamie Lucas

Jamie was born in Painesville, Ohio. Nursing has been a passion of Jamie's since she was 5 years old. She remembers enjoying dressing up in her mom's lab coat and pretending to be a nurse like her mom.

She obtained her BSN at Wright State and has been an RN in the Emergency Department for 19 years. She has always worked in an Emergency Department, including positions in Tennessee, Florida and Ohio. Jamie started out as a lab runner, was promoted to a sitter and then a tech before she finished her nursing degree. She is on the Hospital Emergency Response Team at Bethesda Butler. Jamie is also responsible for Quality; Professional Excellence and she serves on the Education Council.

Jamie loves outdoor activities. She enjoys camping and traveling and appreciates her time at her lake house relaxing on the water. Her dream vacation would be a trip to Tahiti. She also is a huge Disney fan.

Thank you, Jamie Lucas, for being a TriHealth Hero. We appreciate you.

**Debra Walker**

# ACLS and PALS Classes

TriHealth EMS Coordinators are bringing AHA ACLS and PALS classes to local Fire and EMS departments. ACLS and PALS classes can be scheduled at your station on the second, third and fourth Tuesday of the month. The $15 cost/person includes the AHA e-card.

To register: Contact Randy Johann at **513 865 5208** or **randall_johann@TriHealth.com**

# Alzheimer's Disease

In 1906, Dr. Alois Alzheimer treated a woman experiencing an unusual mental illness. He noted she experienced memory loss, language problems and unpredictable behavior. After her death, Dr. Alzheimer examined her brain and noticed changes in the brain tissue. He found abnormal clumps and tangled bundles of fibers. He also noticed there was a loss of nerve cell connections in the brain.

There are lots of theories surrounding Alzheimer's disease. There's currently no cure and the cause is still stumping medical experts. Researchers believe the disease begins in the hippocampus and entorhinal cortex. The hippocampus plays a major role in memory and learning. The entorhinal cortex is responsible for navigation and perception of time and memory.
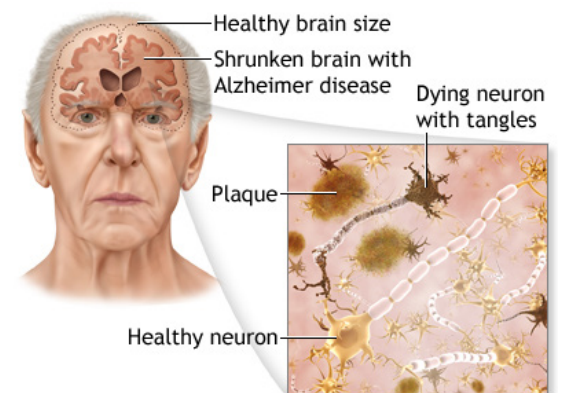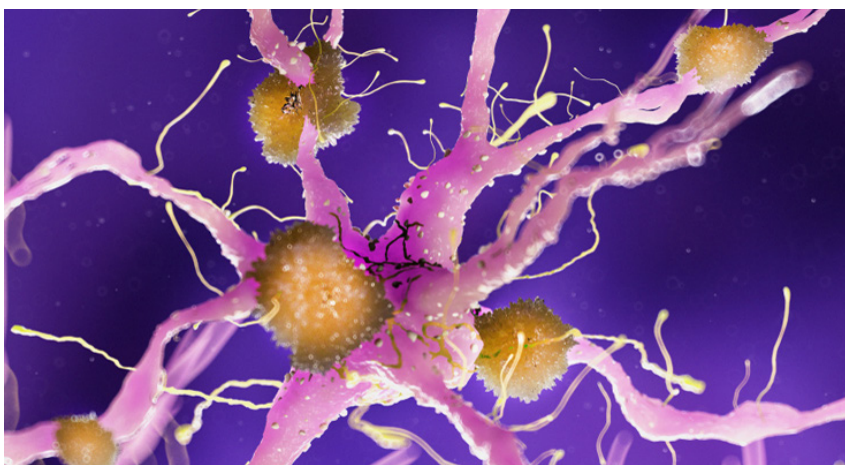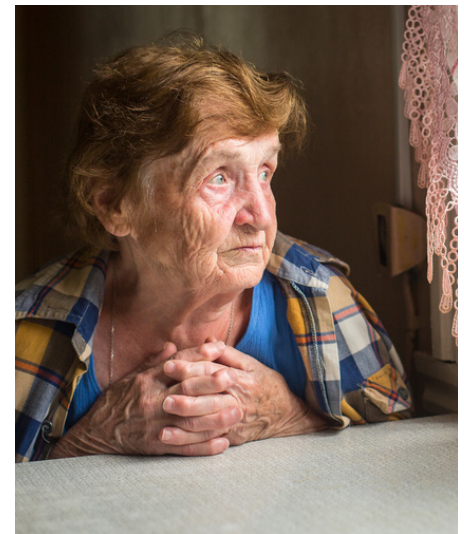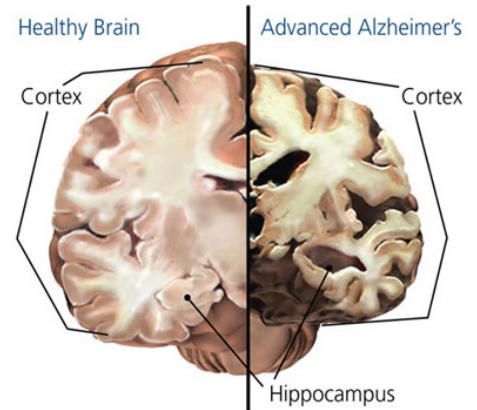
The clumps that Dr. Alzheimer found are sticky clusters of a protein called beta-amyloid. Inside the bunches of protein, researchers discovered YAP (Yes-associated protein). YAP increases neuron cell production and suppresses apoptosis. New findings suggest the loss of YAP happens before beta-amyloid builds up in the brain. This "loss" is believed to be the main cause of the neuron death. People experiencing this phenomenon are unaware and asymptomatic of the attack on their brain.

Researchers also have found a second possible cause of destruction. The beta-amyloid protein networks with another protein called Fyn. The blend causes Fyn to over-activate. This over-exertion triggers a destruction of the nerve cell connections in the brain.

There is growing evidence signifying brain health is closely related to heart and blood vessel health. The risk of acquiring Alzheimer's increases as a result of insult to the heart and arteries through high blood pressure, stroke, diabetes, high cholesterol and heart disease.

If prevention is a real possibility, people must start early in their lifespans. How early is early enough? No one knows. But Alzheimer's is a scary reality for some people. It robs folks of the memories of the life they lived and the life they are currently living. It's a terrifying disease. An illness that one day advances in research will find a prevention or a cure.

**Debra Walker**



Healthy Brain — Advanced Alzheimer's
Cortex — Cortex
Hippocampus







Healthy brain size
Shrunken brain with Alzheimer disease
Dying neuron with tangles
Plaque
Healthy neuron
ADAM.

Capnography is a wonderful tool. It measures the highest amount of carbon dioxide at the end of exhalation. The partial pressure of carbon dioxide is how much carbon dioxide is in the arterial or venous blood. The normal range is 35 to 45 mmHg. Partial pressures push the gases from one part of the body to the next.

Capnography assists the caregiver to evaluate the patient's metabolism, ventilation and perfusion. Proper ventilation is critical to patient care. The normal ventilation rate for an adult is 12-20 breaths per minute. Ventilation too slow permits extra carbon dioxide to build up in the respiratory system, displaying higher EtCO2 readings. Hyperventilation does not allow enough carbon dioxide to build up in the alveoli, expressing lower EtCO2 readings.

Many things affect respiration. The leading influences are the partial pressures of oxygen and carbon dioxide. The partial pressure of oxygen in ambient air is normally 104 mmHg. As the body inhales, it absorbs and humidifies the oxygen. This process brings the partial pressure down to 100 mmHg as it reaches the alveolus. Diffusion decreases the partial pressure to 95mmHg as oxygen travels through the single-cell lining of the alveoli into the capillaries for distribution. By the time oxygen travels to the end of the circulation highway, it has a partial

pressure of approximately 40 mmHg. This pressure is high enough to allow the oxygen to move into the surrounding muscles and organs because they have a lower partial pressure of 20 mmHg.

As carbon dioxide leaves the organs, the partial pressure is 46mmHg. This amount of pressure permits carbon dioxide to travel into the capillaries because the partial pressure in the capillaries is only 45mmHg. As it nears the finish line, carbon dioxide travels from the capillaries through the single-cell alveoli where it is exhaled at approximately 35-45 mmHg.

The shape of a normal waveform is rectangular with rounded corners. Different shapes can indicate different illnesses. COPD and asthma cause the bronchi to constrict. Bronchoconstriction causes air to be released unevenly from the alveoli, which makes the capnography waveform appear rounded. The shape is like a shark fin. The length of the waveform also represents the exhalation phase, which is prolonged during an asthma attack. The more severe the bronchoconstriction, the more pronounced the shark fin and length of the waveform.
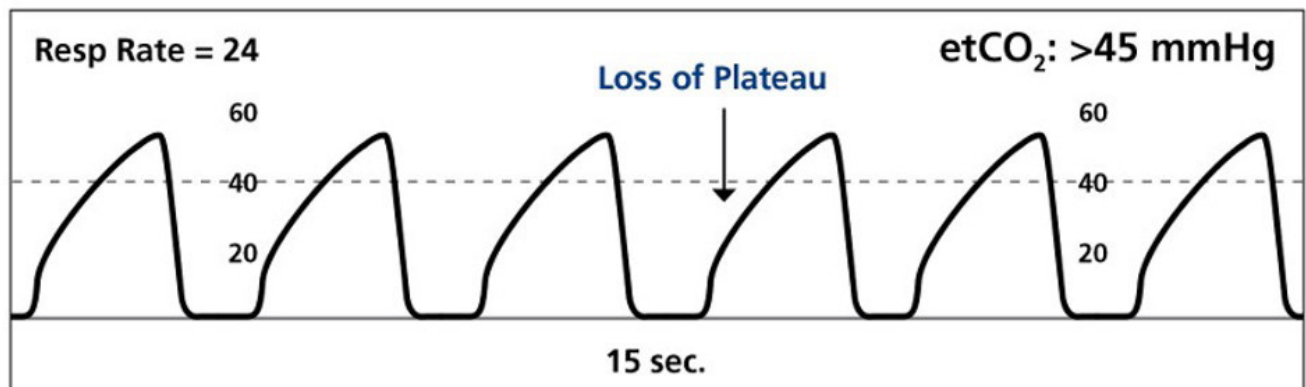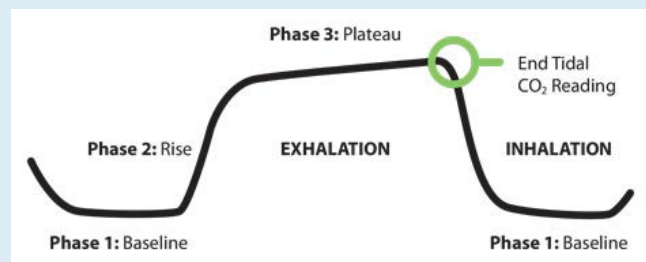
Bradypnea (hypoventilation) leads to a rise in carbon dioxide levels. The capnography will read greater than 50mmHg. Slower ventilation produces wave shapes that are wider and taller as exhalation takes longer and causes an increase in carbon dioxide between breaths.
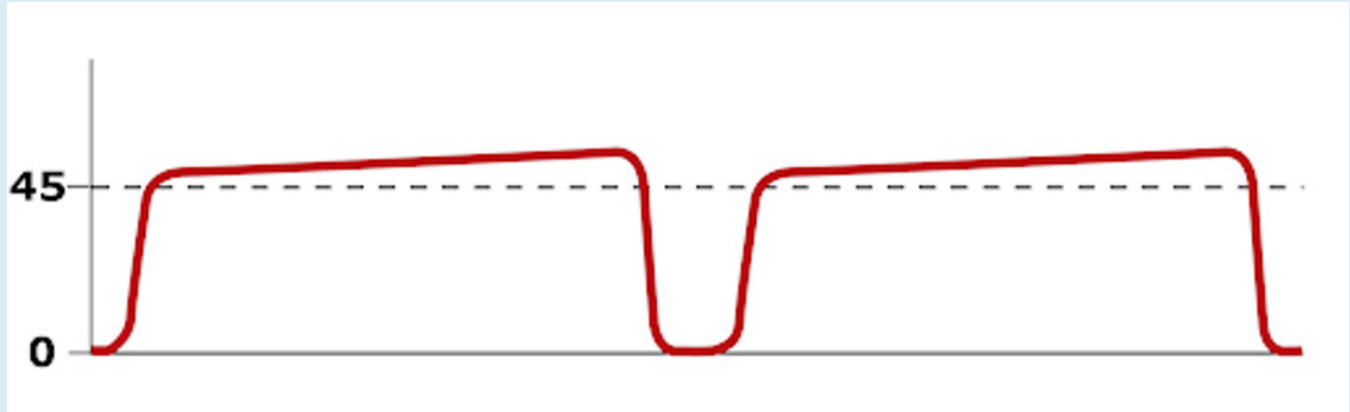


Tachypnea (hyperventilation) will produce wave shapes that aren't as wide or as tall since rapid exhalation doesn't take as long and contains less carbon dioxide. Hyperventilation allows hemoglobin to pick oxygen up more easily.
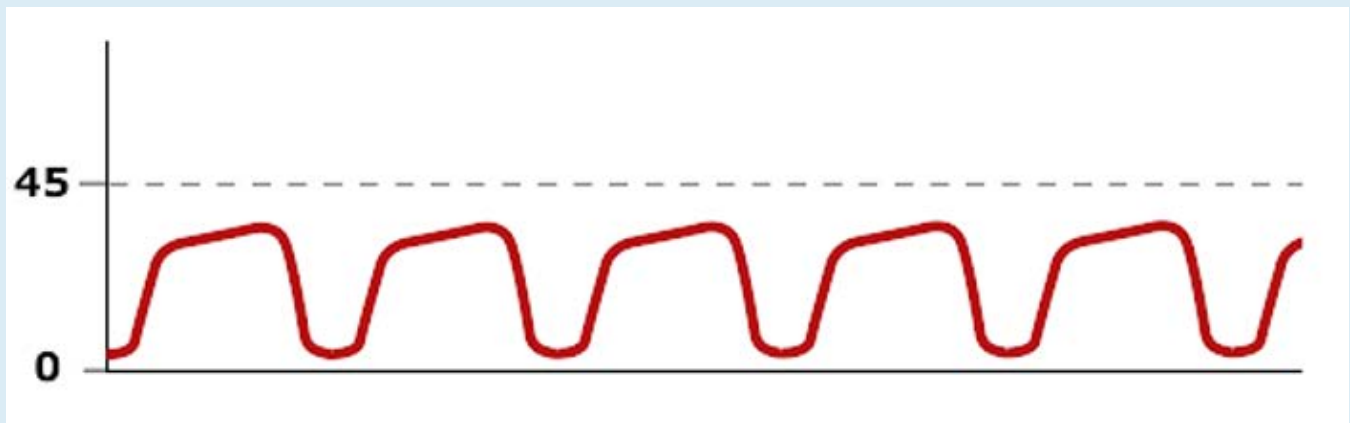


During cardiac arrest, capnography provides immediate feedback on the quality of chest compressions. If the end-tidal capnography reads less than 10 mmHg, the compressions are not fast or deep enough. Consider changing out the compressor. It is also a great indicator for ROSC. Watch for a sudden spike in the waveform. If a significant spike is noted, feel for a pulse. Sometimes it is tough to determine if the patient has a pulse, but circulation must exist if ventilation produces a waveform without compressions. Congratulations may be in order – the lifesaving efforts may have a positive outcome. Keep up the hard work. The team may have a "save."



End-tidal waveform capnography is one of the most important indicative tools in the EMS toolbox. It instantaneously measures the metabolism, ventilation and perfusion of the sick patient. Continue to train on the recognition of the various waveforms to understand the feedback. This information can assist the caregiving team to steer toward positive outcomes.

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