July
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Fire Line Newsletter

FOND DU LAC
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FIRE / RESCUE

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From the Balcony - Graduations

As I have written in previous columns, I think there is something quite special about this time of year when graduations are in the air. This year is no different and I want to reflect on some of them.

I am not sure where the past four years went, but even though I sometimes wish I could slow down time, my youngest, Thomas is finished with college. It was a tough junior and senior year for him no doubt, but he like everyone else who was in school during the pandemic found a way to learn and thrive, even if his college experience was not quite what he had hoped for and thought it would be. When it was all over, a socially distant outdoor graduation looked much different than his brother's did at the same college five years ago, but when he crossed that stage with a mask on and a fist bump from the President of the University, he had his diploma and in a couple months he will begin his career virtual at first, and then in Atlanta. He and his fellow graduates demonstrated incredible discipline and determination to finish their college experience on schedule.

Our own Assistant Chief Erick Gerritson completed his advanced degree requirements and earned a Master's Degree from Grand Canyon University. Later this year Erick will travel to Phoenix to formally walk across the stage and earn the recognition of his hard work. This makes the third chief officer who has earned an advanced degree along with the Executive Fire Officer designation. Congratulations Erick!

Firefighter Paramedic Anthony Gonzalez "graduated" from probationary status, which was hampered due to the pandemic. Anthony didn't miss a beat throughout his first year and his parents, grandparents and sister were on hand as well as many co-workers and friends as he received his badge and helmet. Congratulations Anthony!

Graduations celebrate the cultivation of commitment, drive, dedication and perseverance. Graduations are not an ending, rather a milestone and an invitation for continued personal growth. Congratulations to our graduates.

Until Next Month,
Be Safe and Be Well

Fire Chief
Peter O'Leary

Duty • Honor • Pride • Tradition

FOND DU LAC FIRE RESCUE OPERATIONS

By: Assistant Chief
Erick Gerritson

A Plan for Managing Company Development: Start with the Company Officer

Developing and maintaining the "growth mindset" is easier said than done.

"If you want a man to keep his head when the crisis comes, you must first give him some training before it comes." Seneca, ca. 50 AD/2004

The development of firefighters falls squarely on the company officers; it is their job to ensure that the members of the company are trained and prepared to accomplish their assigned jobs. The goal of a training program is to ensure that company officers have the resources needed to coordinate company level training sessions, regardless of whether those occur on the weekly drill night or during daily shift training. All levels of the company must be proficient in the basics of firefighting and emergency medic services (EMS) for the company to be successful in the greater picture. While the multi-company evolutions and actual incidents garner the lion's share of attention, individual and company level training that happens during the day-to-day routine creates the solid foundation of skills that success of multi-company operations depends on. Company success, which leads to departmental success, begins, grows, or dies with the company officer.

Culture of the Company

It has been said a fire department is made up of several individual fire departments all following their own agendas. Groups are different; some are naturally cohesive unit, one that just meets standards, or focused on a common goal from the beginning. Others need more work. One of the first priorities for a company officer to bring a group together is to find the common ground and develop that to form a synergistic team. The company officer is the foundation for determining whether a fire company becomes a positive, high-output unit, one that just meets standards, or one that becomes toxic and inevitably fails. The mindset of the company officer will greatly influence the overall culture of the group.

In her book Mindset, The New Psychology of Success, Dr. Carol Dweck describes a "fixed" and "growth" mindset. Those who possess a fixed mindset believe that intelligence and talent are established from the onset of any endeavor-a person is either good at something or isn't. Also, if you possess a talent for something, there is no real need for practice or to try to improve because of your natural abilities, and if you aren't skilled at a task, no amount of practice will improve your capability. Alternatively, those with a growth mindset believe that they can develop new skills; they can develop others; and by praising effort instead of merely results, people can grow and expand knowledge and skills. If the company officer is perceived as a "fixed mindset," only caring about results, it will quickly discourage members who cannot immediately live up to his standard, and they will disengage. Conversely, if the company officer has incorporated a "growth mindset," the standard may be the same; however, the path to reaching the goal is much more achievable, and it will encourage growth at all levels.

Creating Buy-In

As a brand-new firefighter, I wanted to charge into fires for no other reason than I thought it was thrilling. I had the typical naiveté that comes with youth, which we were there to fight the fire at any cost and that's all that mattered. The only thing I needed to buy into was the thrill of the fight. After I was married and had children, my perspective began to change. I didn't know how to express the change until I sat in on a seminar by Battalion Chief Shannon Stone from the Ft. Walton Beach (FL) Fire Department; then I visualized my new perspective. In his seminar "Nuggets from the Right Seat," Stone spoke of a method to motivate himself and others to commit to excellence in our field. He began by asking the audience to close their eyes and envision their family and children or someone else they could not imagine their life without. He then went on to create this picture: You have just arrived for your duty day, you are given a piece of paper stating that at 3:15 this afternoon you will be dispatched to a fire in your home with nothing you can do to alter this fact, and your loved one will be trapped on the second floor and won't survive unless you can get a ladder to that windowsill. Stone then asked the audience what they would spend the next several hours leading up to 3:15

doing? The audience unanimously said they would spend every minute practicing throwing that ladder until they could do it without thought, perfectly. Unfortunately, we are never handed a piece of paper with the time and place when we will have to go to work, but the scenario does create a strong motivation to be highly proficient at your trade and rehearse for when you do not have time to think.

Setting Priorities and Examples

To be successful, a company officer must clearly define the priorities for the company, the expectations, and the standards the members including the company officer will be held to. Failing to do so quickly creates confusion, and confusion is a key symptom of discontent. If the company officer has the "fixed mindset" described by Dr. Dweck, chances are very high discontent will spread to each member of the company. Each organization has a full spectrum of personalities and firefighters interested and engaged; conflicting with those who are not quickly becomes evident. Maintaining that positive "growth mindset" during company evolutions can be challenging, especially when surrounded by "fixed mindsets," but this allows time for the "why" questions and answers. This time investment by a company officer will fully quell confusion and enhance firefighter and company buy-in. A good method to encourage participation is to have the members of the company act as instructors for topics they are comfortable. Not only does this provide an opportunity for every member of the company to contribute and expand their own knowledge of the topic, it creates trust, and a sense that their knowledge and ideas are valued.

Developing Individual and Team Skills

Hose loads and attack lines. An engine company's bread and butter are hose. Firefighters assigned to an engine company must be familiar with each hose load's various lengths, nozzles, flows, how to deploy, and common challenges deploying as well as how to overcome them. It is also imperative when practicing to consider a realistic estimation of the number of personnel on scene. Practicing moving a hoseline with 10 people when the company has four is doing a disservice to everyone. By doing this, you will know what staffing is essential to accomplish the initial tasks to get the line in operation. Additionally, consideration must be given to forcible entry and possible rescue scenarios.

Recently, several members of my department attended "The Nozzle Forward" course developed by Aaron Fields from the Seattle (WA) Fire Department and brought back several new methods for operating and movement of hoselines that led to the redevelopment of our skid loads based on what was learned. After several weeks of development and trials, the new skid load was placed in service and our Training Department oversaw department level training. Individual training led to personal proficiency, which then led to proficiency of the team, which led to a team effort to develop a better way to deploy and operate the attack lines for our entire organization. It also laid the foundation for company officers to build on during company level training.

Building construction and district familiarization. As the fire service is evolving, we are drawing more and more new personnel from places other than the trades. The loss of the hands-on knowledge and experience of electricians, carpenters, plumbers, and mechanics is very real. Company officers should look to capitalize on any knowledge from the trades or others who have that type of expertise and have those members mentor those who did not add twofold success to any company. This works both ways: the newer, more technology savvy generation can in turn educate the previous generation and help integrate the use of current technologies to improve response and capabilities.

My first-due response area covers half of the downtown area consisting of light industrial, several large nursing homes, commercial storefronts, and single and multi-family homes. These structures all differ in building construction and date from the early 1900s to present day. When possible, I will take my company to one of these areas and simply walk around and discuss/review different buildings, the characteristics of different eras of construction, and the problems they present. By learning various methods of construction from the time period buildings were built, firefighters build a good foundation for sizing up buildings as well as anticipating what problems may be encountered. Not only does this provide an up-close view of the buildings and the quirks of the neighborhood, but it is a chance to interact with shop owners and residents. After EMS calls, false alarms, or simply on the way back from the grocery store, look at the buildings in your first-due district and, if time allows, stop in front of one and have each person in the vehicle give a size-up. Little details you pick up may save your life later. This concept paid off when one of the buildings we walked through extensively, which was an old Type III multi-story taxpayer with very tight stairwells, security bars and open exposed wood porches, had a working apartment fire. During one of our walks, the company discussed the different potential of fires, the best entry, where the utilities were, and the hazards to tenants on the first floor. The day of the apartment fire, the fire was on the second floor of this building with multiple rescues. This company drill reinforced Chief Stone's drill: the Company knew the building layout, the potential hazards, and how to achieve the goal of saving lives.

Tool assignments and planning

Dwight D. Eisenhower said, "In preparing for battle, I have found that plans are useless, but planning is indispensable". Planning is everything. If we, as firefighters, are solely reactive, the chances of failure when it matters most increase exponentially. Every sports team practices for game day, football teams practice routes, and baseball teams rehearse base-running scenarios where each person has a specific task needed to be successful. The fire service is no different. Each individual firefighter has a task to accomplish to ensure the company achieves their goals. By pre-assigning these tools and tasks to each of the riding positions in the station, it takes the guesswork out of what will be expected when the company arrives on the scene. Posting these in each seat position so they can be quickly reviewed is also beneficial, especially if a firefighter is detailed in from another station or in volunteer departments where firefighters respond in apparatus in order of their arrival at the station. Pre-assigning tasks and tools reduces the amount of decisions in an already stressful environment and simultaneously increases firefighter accountability. A set of assigned duties ensures the company officer knows what the company is doing and where the firefighters are if something goes wrong. No amount of planning can address every possible response type;

however, for the major incidents, it is much easier to slightly alter a plan than it is to create one. Whatever the organization's policy, the company officer must be thinking about tools and tasks ahead of time to prevent multiple firefighters with the same tool showing up to the front door asking what to do!

Bringing it all together: the five-minute drill. Individual training and competency are important but being able to bring both together at a critical moment to operate in sync is the goal. The first five minutes of a working fire determine how the next hour will go. Going out to the drill ground or in the neighborhood practicing these evolutions will build muscle memory and confidence in your firefighters. First, talk through the evolutions, review each position, tools they will bring, and responsibilities for each. Once the expectations are clear, then walk through the evolutions, creating muscle memory. As skill levels increase, incorporate dry hose deployments, and then full evolutions in real time, in as realistic an environment as possible. Once proficient, additional challenges can be added, further developing critical thinking, rapid decision-making skills, while maintaining core competencies. This becomes a great opportunity for aspiring engineers and company officers to function in the roles giving them opportunities to make the critical decisions, a view from a new perspective, and to make and learn from mistakes when there are no consequences for wrong decisions.

Maintain Core Skills
In the current environment of reductions in budgets, staffing, and the number of fires, it is crucial to maintain core skills. Continuing to train for high-risk/low-frequency events will ensure these perishable skills are maintained and critical decision-making skills are enhanced. Developing and maintaining the "growth mindset" is easier said than done, but identifying the opportunity in every incident, in every drill, and every day will ultimately make every firefighter more proficient in job functions; more comfortable with each other; and, most importantly, safe.

Reference:
Christopher L. Rymut from Firefighernation.com

Until Next Month…
Stay Safe!!

Operations by the Numbers

May, 2021	By Month		Year-To-Date	
PREVENTION	**Last Year**	**This Year**	**Last Year**	**This Year**
Total Inspections	97	189	870	1262
Total Defects	22	95	528	575
SUPPRESSION				
Alarms Involving Fire	13	9	53	43
Fire Mutual Aid Given	0	2	8	9
Fire Mutual Aid Received	0	0	0	5
Service/Good Intent Calls	61	63	239	232
False Alarms/False Calls	29	28	119	134
Other Calls	17	13	61	51
Total Fire Alarms & Calls	120	113	472	460
EMS				
Total Ambulance Calls	518	573	2431	2580
Total Fire/EMS Responses	638	686	2903	3040
Fire Property Loss	$109,100.00	$3,050.00	$335,100.00	$203,313.00
Fire Contents Loss	$58,600.00	$0.00	$168,751.00	$98,150.00
Engine Assisted EMS Calls	221	230	1030	1035

The Code Summary

By: Assistant Chief Todd Janquart

Differentiating Facial Weakness Caused by Bell's Palsy vs. Acute Stroke

Authored by: Michael T. Jullen, MD & Caitlin Loomis, MD: JEMS.com

You're responding to a 54-year-old woman with facial weakness. The patient states she looked in the mirror this morning and noticed her face appeared "twisted". She didn't notice any facial asymmetry before going to bed the night before. She complains of no pain or numbness.

Your assessment shows the right side of her mouth isn't able to smile and she has difficulty closing her right eye. You perform a neurologic exam; strength and sensation are normal throughout, with no weakness in the arms or legs and no other neurologic findings. She's able to communicate and answers all questions appropriately. Is this a stroke?

Facial Weakness

The two most common causes of acute facial paralysis are Bell's palsy and ischemic stroke. EMS providers are often faced with the challenge of differentiating between these two diagnoses. Because acute stroke is a time-critical illness, the distinction between stroke and Bell's palsy must be made quickly to avoid unnecessary delays in treatment.

Anatomy of Facial Muscle Control

Two facial nerves, the right and the left, control all of the muscles in the face. The right facial nerve controls all of the muscles on the right side and the left facial nerve controls all of the muscles on the left side of the face. The facial nerves emerge from the middle of the brainstem (the pons) and carry motor fibers to the muscles of facial expression. These fibers come from the motor cortex of both cerebral hemispheres. From their origin in the motor strip of the cortex, they can be split into additional fibers that supply muscles in the upper face, including those controlling eye closure and forehead movement, and fibers that supply muscles in the lower face, including the mouth.

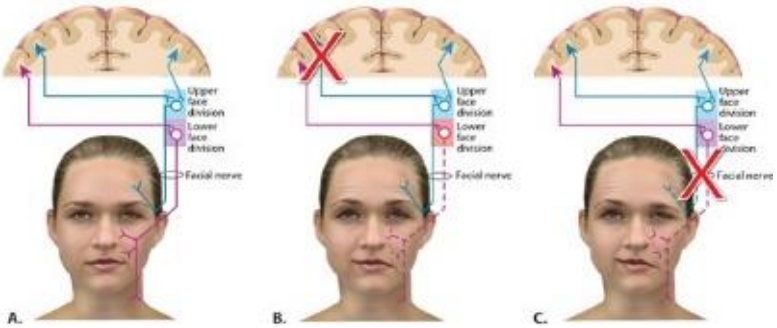
The fibers that control the lower face travel from the cortex down to the brainstem. In the brainstem, these fibers cross over to the opposite, or contralateral, facial nerve.

The fibers that control the upper face take a slightly different path. After travelling down to the brainstem, half of the fibers cross over to the contralateral facial nerve, and half remain on the same side and contribute to the ipsilateral facial nerve. Therefore, the eyes and forehead receive innervation from both hemispheres, while the lower face only receives innervation from the contralateral hemisphere.

Why does this matter? The strictly contralateral innervation of the lower half of the face and dual innervation of the upper half of the face is critical when assessing facial weakness. Lesions that damage the motor cortex, such as acute ischemic strokes, will results in contralateral facial weakness of the lower face only, with preservation of the muscles of the upper face on both sides, due to the dual innervation of the upper face. Patients will have a weak smile, but will b able to close their eye tightly and wrinkle their forehead symmetrically. This pattern is often referred to as "central facial weakness", because it's caused by injury to the cerebral cortex, which is a part of the central nervous system.

Lesions that damage the facial nerve in the brainstem, or after it exits the brainstem, result in ipsilateral facial weakness involving both the upper and lower face. It doesn't matter where the innervation is coming from; if the nerve is damaged, all the muscles on that side of the face are weak. These lesions area referred to as "peripheral lesions" because they affect the facial nerve as it exits the brainstem. Patients will be unable to wrinkle their forehead, tightly close their eye, or smile on the affected side. This distinction can aid in localizing the lesion to the appropriate place in the nervous system, thereby narrowing the differential diagnosis.

Pathways of the facial nerve



A) *The innervation to the muscles of the upper face originates on both sides of the brain, whereas the innervation to the muscles of the lower face comes from the opposite side of the brain only.*
B) *When the cortex is injured, there's weakness in the contralateral lower face only.* ***C)*** *When the facial nerve is injured, there's weakness in the ipsilateral upper and lower ace.* Illustration Brook Wainwright Designs

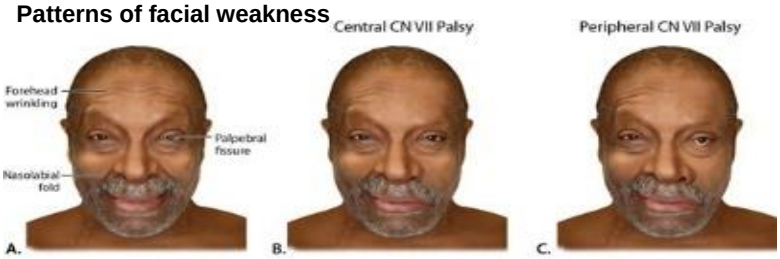
Bell's Palsy

Bell's palsy is an acute peripheral facial nerve palsy of unknown etiology, causing rapid onset of facial weakness. It's the most common cause of facial nerve injury. Deficits accumulate over hours to days, and reach maximum severity within three weeks. The symptoms may also develop at night while the patient is sleeping, making them seem more acute. Facial weakness typically recovers-partially or fully-within six months. Although Bell's palsy can effect patients of any age, the median age of onset is 40 years, and it's more common in patients in their third to fifth decade.

As Bell's palsy affects the facial nerve, it causes facial weakness in a peripheral pattern-that is, weakness involving the mouth, eye and forehead. Specific clinical features include: weakness raising the eyebrow and furrowing the brow; difficulty or inability to close the eye; weakness in grimacing and smiling; and flattening of the

Bell's Palsy vs. Acute Stroke…Continued

Patterns of facial weakness



A) *Normal anatomic landmarks during smiling and raising the eyebrows.* ***B)*** *On the left, the nasolabial fold is flat and the mouth is turned down but the forehead wrinkles are intact and the palpebral fissures are symmetric.* ***C)*** *On the left the nasolabial fold is flat, the mouth is turned down, the forehead is not wrinkled and the palpebral fissure is widened.* Illustration Broke Wainwright Designs

nasolabial fold. Although the exact cause of Bell's palsy is often unknown, infectious causes are thought to contribute in the majority of cases. It's widely believed that the most common cause is reactivation of herpes simples virus-1. Bell's palsy is treated with a 10-day course of steroids. In some cases antiviral therapy may also be prescribed. While some patients are left with permanent facial paralysis, the majority of patients with Bell's palsy experience a complete, or near complete, recovery.

Acute Stroke

Acute ischemic stroke is due to an occlusion of an artery supplying the brain. Deficits are abrupt in onset and typically reach maximum severity within seconds to minutes. In stroke, the pattern of symptoms is determined by the arterial supply of the affected blood vessel and should therefore correspond to a known vascular distribution in the brain or brainstem.

Facial weakness can be caused by strokes in many different locations in the brain and brainstem. Strokes involving the brain typically cause central facial weakness that involves the mouth and spares the eye and forehead. Strokes involving the brainstem can sometimes cause weakness of the mouth, eye and forehead-mimicking a peripheral lesion. In these cases however, there will be other focal neurologic deficits. A review of systems and neurologic examination can help to identify signs and symptoms of stroke.

Bell's Palsy vs. Stroke

Differentiating a Bell's palsy from an acute ischemic stroke can be achieved by following these steps:

1. Talk to the patient. Ask the patient when they first noticed the weakness and how quickly it developed. Although both Bell's palsy and acute stroke cause "acute" facial weakness, ischemic stroke is much more acute in onset, reaching maximum severity within seconds to minutes. Bell's palsy reaches maximum severity within hours to a few days. Patients often don't know the exact time of onset, but family members, co-workers, or other witnesses may have more information. It's crucial to determine the time they were last seen normal when assessing onset, rather than the time they first noticed the deficit.

2. Perform a brief neurologic exam. You want to determine if the facial weakness is caused by a peripheral or central lesion.

- **Mouth:** First, inspect the patient's mouth. Look at the nasolabial fold-the wrinkle between the corner of their nose and the corner of their mouth. Facial weakness or drooping can obscure this wrinkle, as the face is pulled down by gravity. Next, have the patient smile, If the facial palsy is severe, they'll be unable to life the side of their mouth. If the patient is able to smile symmetrically but has flattening of the nasolabial fold, this is still a sign of mild facial weakness. Mouth weakness will be present in both central and peripheral facial palsies.
- **Eyes:** First, inspect the eyes at rest. Look at the palpebral fissure-the space between the eyelids-to determine if one eye is opened more widely than the other. This may be a subtle sign of eye closure weakness. Next, ask the patient to close their eyes tightly. Normally, patients should be able to squeeze their eyes so tightly that the eyelashes are no longer visible. Asymmetry in eyelid closure is a sign of peripheral facial nerve palsy.
- **Forehead**: Have the patient wrinkle their forehead, as if they're surprised. In a central lesion, the forehead should lift symmetrically, due to bilateral cortical innervation of the frontalis muscle. However, in a peripheral lesion, the patient will be unable to wrinkle their forehead on one side, or have fewer wrinkles on that side. Asymmetry in forehead wrinkles is a sign of peripheral facial nerve palsy.

Once you've performed this quick exam, you should be able to determine if the lesion is peripheral or central. If central, it can't be Bell's palsy and the most likely etiology is stroke. If it's peripheral in appearance its likely Bell's palsy, but you have to do a little more work to be sure. Although the majority of acute strokes are due to damage to the cerebral hemispheres, therefore causing a central facial palsy, it's possible to have a stroke affecting only the brainstem. Brainstem strokes can affect the facial nerve as it travels through the brainstem, causing facial weakness in the same pattern as that of Bell's palsy. So how can you tell the difference?

3. Look for associated signs/symptoms. A key to differentiating acute stroke from Bell's palsy in the presence of peripheral facial weakness is to determine if the weakness could be due to a brainstem stroke. Due to the vascular supply of the brainstem, brainstem strokes typically affect multiple cranial nerves in addition to either motor or sensory tracts traveling to the spinal cord. Bell's palsy, on the other hand, typically affects only the facial nerve, causing only peripheral facial weakness. Key signs to look for include the following:

- **Weakness or numbness in the arm or leg:** Weakness or numbness can occur either on the same side as the facial palsy, or on the opposite side, due to the crossing sensory and motor fibers in the brainstem. Have the patient lift their arms and legs to

Table 1: Typical presentation of Bell's palsy and acute stroke

	Bell's palsy	Acute stroke
Age	20s–50s	> 60
Time course	Hours to a few days	Seconds to minutes
Upper face	Always affected	+/- affected
Lower face	Always affected	Always affected
Associated symptoms	Typically none (Rare facial numbness)	Weakness, numbness, speech difficulty, slurred speech, double vision, facial numbness, difficulty swallowing, vertigo, ataxia

assess for any weakness.

- **Slurred speech (dysarthria):** Slurred speech secondary to brainstem ischemia is often due to a cranial neuropathy. In addition to standard conversation, you can have the patient say a few words like "baseball player", "fifty-fifty" and "tip-top".
- **Double vision (diplopia):** Double vision is often caused by misalignment of the eyes due to a cranial neuropathy affecting the extraocular muscles. Ensure that the patient is able to move his or her eyes in all directions (up, down, right, left) to rule out any abnormalities in the extraocular muscles, and ask the patient if they're seeing double.
- **Facial numbness:** Rarely, Bell's palsy can affect he trigeminal nerve, which supplies sensation to the face. It's unclear whether facial numbness is due to an additional cranial neuropathy (trigeminal neuropathy) or altered sensation in the setting of a drooping face. Other cranial neuropathies are infrequent and should raise a high index of suspicion for stroke or other, more serious, causes of facial weakness.
- **Difficulty swallowing (dysphagia):** Dysphagia secondary to brainstem ischemia is often due to a cranial neuropathy. Ask the patient if they're having trouble swallowing, or if they've noticed any coughing while swallowing.
- **Incoordination (ataxia):** Ataxia can be caused by damage to the brainstem or cerebellum. It's common to have both cerebellar and brainstem ischemia due to the same stroke. Ask the patient if they've felt off-balance while walking. Have the patient walk and perform finger-nose-finger testing to assess for any incoordination of the extremities.
- **Vertigo:** Vertigo, or the sensation of perceived movement in the absence of actual movement, is another common feature of brainstem or cerebellar strokes. Patients may state the sensation of nausea, room spinning, or feeling as if they're on a boat.

If the patient has any of these features present on exam, it's most likely a stroke, as the territory involved includes more than just the facial nerve. If the patient has a peripheral pattern of weakness and mothering else, it's most likely Bell's palsy.

Conclusion

In summary, when assessing a patient with acute facial weakness: 1) Talk to the patient; 2) Examine the muscles in the upper and lower face; and 3) Look for associated signs and symptoms. If the facial weakness is isolated to the lower face, stroke is the most likely diagnosis.

If the facial weakness involves both the upper and lower face, you must look for associated signs and symptoms. Bell's palsy typically occurs in younger patients, has a slower onset of symptoms, and occurs in isolation without other complaints or objective findings on exam.

The patient described in the case is old enough to be at risk for both Bell's palsy and stroke. She awoke with symptoms so it's impossible to know how rapidly the weakness developed-it could've developed slowly over hours or been more rapid. Her facial weakness involves the upper and lower face. Because she has no other neurologic complaints and her neurologic examination is otherwise normal, her symptoms are most likely due to Bell's palsy.

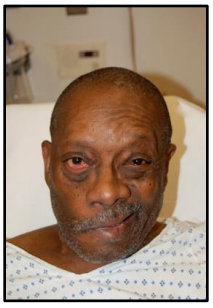
Article from the 5/7/2014 online edition of JEMS.com

Normal face, smiling and raising eyebrows.

Photo courtesy of Michael T. Mullen

Stroke causing isolated left lower facial weakness. There's a flattened nasolabial fold and inability to smile on the affected side with sparing of the forehead and eye closure muscles.

Photo courtesy of Michael T. Mullen



Bell's palsy with upper and lower facial weakness. Note the flattening of the nasolabial fold, widened palpebral fissure, and absence of forehead wrinkles on the right.

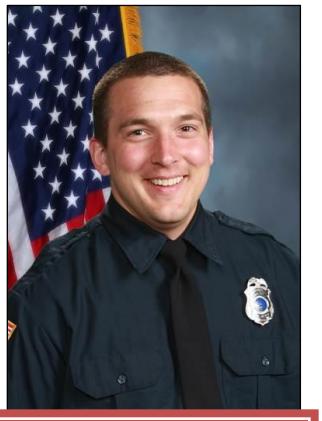
Photo courtesy of Michael T. Mullen

Predicting rain doesn't count. Building arks does.

Warren Buffet

NEWS AT THE STATION

City Clerk Maggie Hefter administered the Oath to Firefighter/Paramedic Anthony Gonzalez in our first public gathering at the fire station in over a year! Anthony's father Tony pinned the badge with Anthony's family in attendance along with many city leaders, fellow firefighters and friends. *We welcome the Gonzalez family to FDLFR!*



FF/P Nate Philipsky

CONGRATULATIONS!

FF/P Nate Philipsky and FF/P Taylor Huenink have reached their 5 year milestone at FDL Fire/Rescue.
Both Nate and Taylor started on June 13, 2016.
Thank you for your service and dedication to FDLFR!

FF/P Taylor Huenink

Happy July Birthday

Mitch Petersen • Joe Goldapske •
John Rolfe • Jon Hartzheim • Sam Tennessen
Taylor Huenink • Nate Wilson • Lori Muentner
Connor Knaus • Andrea Hoksbergen

Well-trained people are the best defense against fire.

By: Assistant Chief of Training/Safety
James Knowles III

Engine Essentials: *Initial Handline Considerations for Commercial Fires*

Commercial building fires present unique challenges for responding engine companies. The size of the structure combined with the fuel loads that are present in these occupancies can create a formidable opponent under fire conditions. These fires require strategic handline placement, high rates of water application and methodical advancement into the structure.

According to the U.S. Fire Administration's (USFA) report, "Fire in the United States 2008–2017," nonresidential building fires constituted only 7 percent of the total fire problem in 2017, the most recent year for which data are available. (Residential structure fires outnumbered nonresidential structure fires by more than 3-to-1.) Unfortunately, these low-frequency, high-hazard fires statistically result in more line-of-duty deaths than residential fires. A 2020 NFPA report that examined firefighter deaths per 100,000 structural fires indicated, "There were 3.0 fireground deaths per 100,000 nonresidential structure fires from 2014 through 2018, compared to 2.7 deaths per 100,000 residential structure fires."

The higher frequency of residential structural fires causes many departments to default to tactics that are utilized for dwelling fires even when combating nonresidential building fires. Recent UL Firefighter Safety Research Institute (UL FSRI) studies showed that fires in commercial buildings react differently because of fuel loads and building characteristics than fires in residential buildings. Departments must develop strategies and tactics that are specific to commercial building fires.

Occupancy, fire characteristics

Building characteristics and fuel loads directly affect fire growth and development. Engine companies often arrive to find nothing evident from the exterior in regard to heavy fire conditions. Commercial buildings frequently have large-square-footage floor plans, lack compartmentation and have high ceilings. These specific building features can mask the severity of a fire because of the larger interior volume that smoke and products of combustion must fill before they vent through natural openings.

These large-volume spaces also contribute to rapid fire growth because of the oxygen levels that are available in the space. The 2020 study by UL FSRI, "Exploratory Analysis of the Impact of Ventilation on Strip Mall Fires," looked at the potential energy that can be released in certain size volumes prior to the oxygen dropping to 15 percent. The study found that a single-story ranch home (9,568 cubic feet) could release slightly more than 250 Megajoules (MJ) prior to the heat release rate being affected by low oxygen levels. Compare that to a large strip mall (63,000 cubic feet), which could release roughly 1,800 MJ prior to being affected by low oxygen levels.

Available oxygen coupled with high fuel loads can generate extreme fire conditions. The amounts of fuel that are available fluctuate depending on the type of occupancy. The fuels can vary from grease in fast-food kitchens, to plastic electronics in offices, to high-racked shelving in retail spaces, to flammable liquids in vehicle repair shops. Further, the fuels often are placed in close proximity to one another, which allows the fire to rapidly spread.

The 2020 UL FSRI study of ventilation at strip malls included an experiment in a 70-foot-wide by 60-foot-deep strip mall unit. The fuel package was ignited near the middle of the structure, and the front door was left in the open position. Temperatures in the fire compartment peaked at three minutes and thirty seconds after ignition. Thermocouples in the AB, AD and CD quadrants of the structure showed homogenous floor-to-ceiling temperatures in excess of 1,200 degrees F. Temperatures in the BC quadrant, which was farthest farthest from the door and the ignition, remained stratified, with temperatures ranging from 800 degrees F at 2½ feet above the floor to 1,200 degrees F at one inch below the roof deck.

Floor-to-ceiling temperatures in excess of 1,200 degrees F throughout the 4,118-square-foot space are indicative of flashover conditions. The sheer size of this compartment coupled with the intense fire conditions throughout the space require fire streams with increased reach and gallon per minute (gpm) flow rates to effectively cool the space. Engine companies must be prepared to immediately flow their handline as soon as the door to the compartment is opened in an attempt to reduce fire growth that occurs with increased oxygen.

Handline size, flow rates

Because of the amount of water that must be flowed to combat fire conditions, a 2½-inch, or the newer 2¼-inch, hoseline should be considered the handline for commercial fires. However, engine company officers must not forget other options, such as deck guns or portable master streams, depending on the conditions that are present on arrival. If necessary, handlines should be stretched to attached exposures for protection. For the sake

Engine Essentials…Continued

of this article, we will focus on the initial handline in the building of origin.

Handline flow rates for commercial buildings should be in the range of 250–300 gpm. The rationale for this is twofold: increased fuel loads present in the building and longer distances that the stream must travel in the structure. As noted above, commercial structures tend to have higher fuel loading than residential structures solely based on the square footage. These occupancies also might have fuels that typically aren't present in residences, such as hazardous/ flammable chemicals. All of these additional fuels require higher flow rates than that of the industry standard of 150 gpm for residential fires.

The 2½-inch handline stream, specifically from a smooth bore nozzle, provides a greater mass of water than that of a stream that's generated from a 1¾-inch handline. This increased mass allows the stream to be carried greater distances into the building. As the stream passes through the superheated environment, it's converted to steam. This conversion to steam causes some gas cooling, but the goal is to extinguish the base of the fire. If the stream only cools the gases, it simply treats a symptom of the fire and not the root cause. A larger mass stream can deliver more water deeper into the structure prior to being converted to steam. Stream mass is the reason that two 1¾-inch hoselines flowing 150 gpm each don't equal the 300 gpm that's delivered by a single 2½-inch handline.

Hose placement, entry

The point of entry for the initial handline must be selected after a thorough size up. The size of the structure coupled with mazelike conditions easily can disorient an engine company that operates inside of the structure. The engine company officer must select an entrance that achieves the tactical priority based on the life hazard: handline placed between the fire and evacuating occupants and/or handline advanced through the closest door to the area of origin.

To determine the best entry point, strong consideration must be given to the common causes of fires in commercial buildings. The USFA's 2020 report looked at the causes of fires in nonresidential buildings. "For nonresidential building fires, three causes accounted for at least half of the fires: Cooking was the leading cause of fires (30 percent), followed by other unintentional or careless actions (11 percent) and intentional actions (10 percent)." Often, kitchens, electrical panels, HVAC systems and other mechanical equipment are housed near the rear of the building.

This makes entry on the C side of the building, or the area that's closest to these common areas of origin, desirable. The C side of commercial buildings often poses forcible-entry challenges, as these entry points are less visible to passing motorists, thus more attractive to burglars who attempt entry. Rear doors often are fortified heavily after hours to deter potential thieves. Engine companies should bring forcible-entry tools or partner with other companies that are on scene to gain access to the structure. Although it might take some time to force entry, the hoseline still will reach the area of fire origin faster because of the time that it takes to advance a large handline through these structures.

Engine companies should minimize long hoseline advancements through shelving/cubicles that can tip over easily simply from the hoseline catching a corner, which potentially could trap members. The advancement of a large handline in heavy smoke and/or fire conditions must be slow and methodical. The engine company officer constantly must be aware of the distance that the company has advanced into the structure, the time that it will take to exit the structure and the company's air supply.

Effectively cooling a large-volume building takes time and might come with some unintended consequences. In the UL FSRI study, researchers found that extinguishing the flames at the front of the unit allowed the oxygen entering the front to travel farther into the compartment before being consumed. This resulted in an increase in the rate of combustion deeper in the structure.

Therefore, it's critical that the engine company officer select the closest entry point to the fire, advance slowly while flowing to cool the environment and constantly be aware of changing conditions throughout the space.

Recognize differing tactics

Commercial fires pose challenges to engine companies that require different tactics than residential fires. Engine company officers must thoroughly size up the building and conditions to determine the best course of action to safely and effectively extinguish the fire. Based on the smoke and/or fire conditions that are present, a minimum of a 2½-inch handline should be stretched. If there are concerns that a 2½-inch handline might not be sufficient, a deck gun or portable master stream device should be employed.

The decision on where to place the first handline must be evaluated carefully based on life safety hazards. The initial handline should be placed either to protect evacuating occupants or at the entrance that's closest to the area of origin.

Handline advancement into the structure must be slow and methodical to ensure that the large-volume space is cooled effectively. The engine company officer must constantly be aware of conditions on all six sides that surround the company members' advance.

Although fires in commercial structures aren't as common as residential buildings, engine companies must develop strategies and tactics that work for their buildings and staffing levels. As always, engine companies should get out into their district, become familiar with their buildings and train on the use of large handlines.

Retrieved from: www.firehouse.com

Fire Prevention

The Bureau Never Sleeps

By: Division Chief Garth Schumacher

Leave Fireworks to the Experts

Summer is synonymous with barbecues, parades and fireworks. The National Safety council advises everyone to enjoy fireworks at public displays conducted by professionals, and not to use any fireworks at home. They may be legal but they are not safe.

In 2017, eight people died and over 12,000 were injured badly enough to require medical treatment after fireworks-related incidents. Of these, 50% of the injuries were to children and young adults under age 20. Over two-thirds (67%) of injuries took place from June 16 to July 16. And while the majority of these incidents were due to amateurs attempting to use professional-grade, homemade or other illegal fireworks or explosives, an estimated 1,200 injuries were from less powerful devices like small firecrackers and sparklers.

Additionally, fireworks start an average of 18,500 fires each year, including 1,300 structure fires, 300 vehicle fires and nearly 17,000 other fires.

If you Choose to Use Legal Fireworks

If consumer fireworks are legal to buy where you live and you choose to use them, be sure to follow the following safety tips:

- Never allow young children to handle fireworks
- Older children should use them only under close adult supervision
- Never use fireworks while impaired by drugs or alcohol
- Anyone using fireworks or standing nearby should wear protective eyewear
- Never hold lighted fireworks in your hands
- Never light them indoors
- Only use them away from people, houses and flammable material
- Never point or throw fireworks at another person
- Only light one device at a time and maintain a safe distance after lighting
- Never ignite devices in a container
- Do not try to re-light or handle malfunctioning fireworks
- Soak both spent and unused fireworks in water for a few hours before discarding
- Keep a bucket of water nearby to fully extinguish fireworks that don't go off or in case of fire
- Never use illegal fireworks

Better yet, grab a blanket and patch of lawn, kick back and let the experts handle the fireworks show.

Sparklers are Dangerous

Every year, young children can be found along parade routes and at fesivals with sparklers in hand, but sparklers are a lot more dangerous than most people think. Sparklers burn at about 2,000 degrees – hot enough to melt some metals. Sparklers can quickly ignite clothing, and children have received severe burns from dropping sparklers on their feet. According to the National Fire Protection Association, sparklers along account for more than 25% of emergency room visits for fireworks injuries. For children under 5 years of age, sparklers accounted for nearly half of the total estimated injuries. Consider using safer alternatives, such as glow sticks, confetti poppers or colored streamers.

Until next month,
stay safe out there!

Current Status of New Construction

- River Hills Mixed Use Development on S. Main St. – *Buildings 11, 12 are under construction*
- Forest Mall – *Demolition continues*
- Badger Liquor – *Warehouse is under construction*
- Huberty CPA's on S. Pioneer Rd. – *New Construction*
- Excel Engineering – *New addition*
- Country Lane Cottages - *Townhouses under construction*
- Sullys Tavern – *Under Construction*
- Holiday Collision Center - *Under Construction*
- Mid States Aluminum Addition – *Nearing Completion*
- Parkside, Evans, Sabish Schools – *Under Construction*
- Sister Catherine Drexel Homeless Shelter – *Under Construction*
- Hobby Lobby / Big Lots – *Construction/Renovation has started*

FIREWORKS are often used to mark special events and holidays. The only safe way to view fireworks is to attend a professional show. With many professional firework shows being canceled this year, it is important to know that **fireworks are not safe in the hands of consumers**. Fireworks cause thousands of injuries each year.

A few ideas to get into the patriotic spirit, without fireworks:

1. Use glow sticks, they glow in the dark and are a safe alternative to a sparkler. Fun for all ages.
2. Loud and proud. Noise makers are sure to make a statement. They can be found at local party supply stores or make your own.
3. Outdoor movie night. Set up a screen and projector. Don't forget the bugspray!
4. Red, white and blue silly string…fun for all ages.
5. Make a patriotic craft with the family.
6. Throw a birthday party for the USA, and don't forget the cake.

FACTS

- More than 19,500 reported fires are started by fireworks annually.
- Burns account for 44% of the 9,100 injuries treated in emergency rooms seen in the month around July 4.
- Half of the fireworks injuries seen at emergency rooms were extremities: hand, finger, or leg. One-third were to the eye or other parts of the head.
- Children ages 10–14 had the highest rate of fireworks injury, with more than one-third (36%) of the victims of fireworks injuries under age 15.
- Sparklers account for roughly one-quarter of emergency room fireworks injuries.

Source: U.S. Consumer Product Safety Commission (CPSC) 2018 Fireworks Annual Report

NATIONAL FIRE PROTECTION ASSOCIATION
The leading information and knowledge resource on fire, electrical and related hazards

FOND DU LAC FIRE / RESCUE

nfpa.org/education ©NFPA 2020

PEER FITNESS TIPS

By: Peer Fitness Trainer
Jack Prall

Motivating Firefighters to Maintain Physical Fitness

It is no secret that firefighting is a very strenuous job. It is also no secret that many volunteer or paid firefighters are in poor levels of fitness.

While we have noted some improvement over the past decades in attention to health and safety, how much change have we noted? We typically see new fire department hires who are in shape and able to pass a physical capabilities test. But by five years later, they are barely able to get out of the fire engine.

Recently, the National Fire Protection Association (NFPA) released their annual firefighter death report, which showed only 74 line-of-duty deaths, in keeping with the trend of under 70 deaths per year.

While the low number of on-duty deaths is commendable, the highest percentage (40%0 of those deaths came from cardiac-related events. Much work has been done to prevent this type of firefighter death, but more effort can be made in fire departments.

Fire Service Standards, Initiatives and Training Enhancements
Within the fire service, safety standards such as NFPA 1500 have been developed by great leaders and others in the fire service at all ranks. There are also fitness standards, such as NFPA 1583, and a medical standard in NFPA 1582. In addition, there are joint labor and management initiatives in the International Association of Fire Fighters and the International Association of Fire Chiefs Wellness Fitness Initiative.

Also, the National Fallen Firefighters Foundation (NFFF) has created Life Safety Initiatives that nearly every fire academy in the country has incorporated into their curriculum.

In addition, the National Fire Academy overhauled nearly every course they offer to include a safety and wellness section. As a result, we firefighters could not be ore inundated with wellness and safety information in our educational journey.

Staying in Shape Requires a Healthy Lifestyle throughout a Firefighter's Career
One of the issues with physical fitness in the fire service is that it is not every third-day initiative that you can only utilize while at work. It is a lifestyle.

Many of us start out in the profession in our early 20s. Often, we are a single with no kids and few responsibilities, other than showing up to work every third day. We have all the time in the day to work out. We have not developed poor eating habits and if we have our metabolism compensates for the lack of proper nutrition.

Fast-forward five to 10 years. By then we often have a spouse and children. Sometimes, we take on part-time work to compensate for all of the added expenses that come with a spouse and children. Next thing we know, we have gained 20 pounds and only pay for a gym membership rather than actually using the gym.

By this point, our metabolism is not helping us. Doing the job of firefighting has become markedly harder to recover from, and we need a day or two to recover from a fire.

Leadership Involves Setting the Example for Physical Fitness
While it is great that health, safety and wellness enhancements are in our curriculum, a look around the room in leadership classes often show many fire service leaders who are not an example of fitness or safety. While there are many reasons for executives to become physically unfit, they all boil down to a lack of priority for fitness.

Physical fitness can be attained by anyone. I have a friend that is in a wheelchair due to an accident, and he maintains a fitness level to have adventures with his son. He prioritizes his family and does what it takes.

Some executives state that they are no longer on the front lines and do not need the same level of physical fitness as other firefighters. While I would agree that using a computer mouse at a desk rather than stretching a hose takes two different fitness levels, people look to leaders who push initiatives to see if they also "walk the walk".

Similarly, would you use a financial advisor that does not invest in what they suggest for you? Would you buy a Chevy from a person that drives a Ford? Probably not. Never ask others to do what you cannot do.

Fire Department Cultures Have Different Values
Each fire department has its own culture by which the members must abide. This culture is created through established policies and the accepted values of the majority of fire department members.

Some cultures are fire-centric. Some value emergency management services, and a few value fitness. If the organization values fitness, then the internal culture often value physical fitness as well. The culture is commonly driven by expectations.

Fire Service Leaders Will Need to Develop a Culture that Emphasizes Functional Physical Fitness
As a department's members age, however, the internal culture will likely reduce its commitment to physical fitness. This area is where fire service leaders must "walk the walk" and lead the organization to maintain and increase a commitment to fitness.

Creating this change is a delicate balance, as there are many methods to become fit. Some fire Service departments may prefer triathlons, and others may prefer powerlifting.

The fire service will need a balance of cardiac fitness and

Motivating Firefighters to Maintain Physical Fitness
Continued

physical strength. For instance, a powerlifter can pick up a firefighter in distress by the air pack, tuck him under his arm and carry him out of a burning building, but that same powerlifter will be out of air in his or her air tank within minutes.

The triathlete will have much longer to utilize the limited amount of air in a self-contained breathing apparatus (SCBA).

However, he or she will lack the strength to drag a person who may be just above ideal weight away from a fire.

Neither of these scenarios are ideal. We must focus on functional fitness to meet the heavy physical demands of firefighting.

The bottom line is what a fire service organization and its members tolerate will become the norm in the fire department. If the leadership of an organization is not willing to commit to physical fitness, the rank and file won't either.

As firefighters, we are in control of the physical fitness level of our organization. Get out to the gym and be sure that you are a model of what you want your organization to become, then hold others accountable.

About the Author: *Dr. Randall W. Hanifen is a Shift Captain for the West Chester Fire Department in Ohio and a fire service consultant. He is also a faculty member at American Military University, teaching courses in its Emergency & Disaster Management program.*

Child Safety

Bicycle Safety

Actively supervise children until you're comfortable that they are responsible to ride on their own. Teach your kids to make eye contact with drivers. Bikers should make sure drivers are paying attention and are going to stop before they cross the street.

For kids and kids at heart, bicycles are a fun way to travel and get some fresh air. As your kids grow more comfortable with their new wheels, teach them essential bicycle safety. Good habits for adult bicycle safety start young. Share these tips with your kids on your next family ride.

- **Use your head, wear a helmet.** It's the single most effective safety device available to reduce head injury and death from bicycle crashes. Make sure your child wears it every time when riding, skating or scooting.
- **Find the right fit.** Helmets and bikes come in different sizes. Your kids' next bike ride will be safer and more comfortable if their protective gear and bicycle fit them.
- **Be Seen.** Wear bright clothing and/or reflective tape to increase your visibility.
- **Check your bike before leaving.** Before your kids venture out, teach them to check their bike's condition. Make sure the chain is healthy and tight, the seat is secure, and the tires have enough air.
- **Form good lifelong biking habits.** Show them how to look both ways before crossing a street, driveway, alleyway, or anywhere cars may cross. Teach them how to follow traffic signals, signs, and ride on the right side of the road.