The
Pulmonary Paper

Dedicated to Respiratory Health Care
July/August 2018 Vol. 29, No. 4

GET OUTSIDE, PACE YOURSELF and Enjoy the Summer!

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We are hiding The Pulmonary Paper logo on our front cover. Can you find it?

Features

Travel

Summer Considerations

As you play outside this summer, be aware of weather that could affect your breathing. Relative humidity is the amount of water vapor present in air expressed as a percentage of the amount needed for total saturation. As humidity increases, the density of the air increases. More dense air creates more resistance to airflow in the airway resulting in shortness of breath. Summer is also the time when grasses and weeds make pollen levels higher – a little precaution and planning ensures fun in the sun!

Quiz: How Much Do You Know about the Weather?

1. What happens when cold air meets warm air?
   a. It forms a front. c. It creates a monsoon.
   b. It creates a tornado.

2. A calm, cloudless day with little wind usually means the next day will have:
   a. Rain c. Clouds
   b. The same d. Wind

3. Several days with strong winds from the south usually means what?
   a. Hurricane c. Hot weather
   b. A storm is likely. d. Cooler weather

4. Name two weather clues that a storm is coming?
   a. Wind, rain b. Clouds, hail
   c. Stratus clouds, cumulus clouds
   d. High humidity, cirrus clouds

5. Which state has the most annual precipitation?
   a. Hawaii c. Maine
   b. Washington d. Alaska

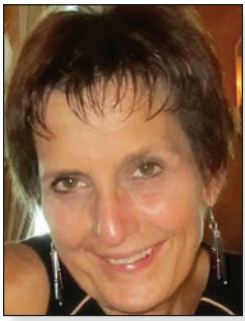
6. Which country has the highest recorded temperature record?
   a. Saudi Arabia c. United States
   b. Algeria d. Australia

7. What instrument is used to measure the water vapor content of air?
   a. Anemometer c. Rain gauge
   b. Hygrometer d. Barometer

8. What is the recommended relative humidity to maintain indoors?
   a. Outdoor temperature over 50˚F, indoor humidity levels shouldn't exceed 50%.
   b. Outdoor temperature over 20˚F, indoor humidity levels shouldn't exceed 40%.
   c. Outdoor temperature between 0˚F and 10˚F, indoor humidity levels shouldn't exceed 30%.
   d. All of the above.

9. What is the minimum wind speed for a hurricane warning to be issued?
   a. 35 mph c. 74 mph
   b. 61 mph d. 100 mph

10. Astraphobia is a fear of what weather phenomenon?
    a. Thunder and lightning
    b. Tornado
    c. Hail
    d. Sleet



Editor's Note

"The moments that I feel the most imbued with a sense of awe are always the moments when I am outdoors. I can't help but feel a certain sense of wonder – I become almost filled with it."

Kathi Appelt, American Writer

I recently had the opportunity to get in the car and drive across the country without really having a plan. It was truly an unforgettable experience and made me appreciate the beauty of our country. As you go about your daily activities, try and plan a visit to some place you have never been – a park across town, an outdoor café you often pass or a friend's house in another state. Enjoy the outdoors when the weather allows us!

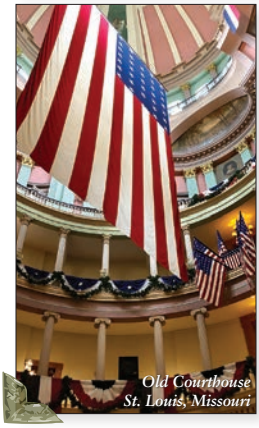
Various studies have shown benefits from spending time outside.

Some scientists think that breathing in phytoncides – airborne chemicals produced by plants – increases our levels of white blood cells, helping us fight off infections and diseases. Natural scents like roses, freshly cut grass, and pine make you feel calmer and more relaxed. We get more than 90 percent of our vitamin D from casual exposure to sunlight. Vitamin D helps us absorb calcium and reduce inflammation, among other things. According to psychologists, exposure to nature helps us shrug off society's pressures, allowing us to remember and value more important things like relationships, sharing and community.

This summer issue is smaller than usual to allow us to catch up on expenses and get outside! We will be back to normal with the next newsletter. Thank you and we appreciate your support over the past thirty years!

Celeste

Surprise visits are the best!



Old Courthouse St. Louis, Missouri

Crazy Horse Memorial, South Dakota

Estes Park, Colorado

The Chattanooga Choo Choo

Garden of the Gods, Colorado

Dr. Michael Bauer, enjoying the outdoors even more since he became a certified single sculls rower!

Calling Dr. Bauer …

For those with lung disease, shortness of breath or dyspnea – both chronic and acute – can certainly lead to symptoms of anxiety. I have some suggestions for an approach to manage these concerns.

First are strategies to minimize the production of acute dyspnea: Use your pursed lips breathing techniques as well as diaphragmatic breathing. Sometimes increasing oxygen flow rates from the typical 2 liters up to 3 to 4 liters helps. Enrolling in a formal pulmonary rehab program can be life changing for assistance in this area. You can practice your techniques with a trained professional.

Often, using a fan to produce a nice cool air breeze to the face can be helpful. Gentle chest percussion therapy by a spouse or friend helps to diminish the perception of dyspnea. Listening to music as well as learned-guided-imagery meditation techniques can relieve anxiety symptoms.

Medications to treat anxiety can be helpful but need to be used with caution. It's not usually a concern of becoming "dependent" on medication. The problem here is that most medications that treat anxiety also depress the respiratory drive centers in the brain. Lower breathing rates can cause oxygen levels to decrease and carbon dioxide to build up. Carefully monitored doses of medications like Ativan (lorazepam) or even low-dose morphine are options. Make sure your physician is comfortable and knowledgeable about the effects of these medications on respiratory function.

Finally, having a "plan of action" is comforting. Always have your rescue inhaler or nebulizer immediately available. Have portable oxygen at hand if you are traveling outside the home. For long vacations away from home, talk to your doctor about having some prednisone and/or antibiotics available to take with you.

Encouragement and reassurance from family and friends are often two of the best medicines.

Questions for Dr. Bauer? You may write to him at The Pulmonary Paper, PO Box 877, Ormond Beach, FL 32175 or by email at info@pulmonarypaper.org.

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Mark Mangus, RRT
EFFORTS Board

Ask Mark …

Mark has updated his Suggested Sequence of Using Inhalers chart in a collaborative effort with Dr. Noah Greenspan of Ultimate Pulmonary Wellness in New York City. The only inhaler not included is the new Trelegy Ellipta. It needs no "sequence", except that it should not be taken within two hours after a short-acting β-agonist (SABA) or the SABA should not be taken until at least 30 minutes after taking Trelegy.

Suggested Sequence for Use of Multiple Inhalers

Using ONLY Long-acting Medications
FIRST: Long-acting β-agonist (LABA) (alone or combined)
Foradil (formoterol)
Oxis (formoterol)
Oxese (formoterol)
Serevent (salmeterol)
Advair (Serevent & Flovent)
Duova (formoterol & tiotropium bromide)
Seretide (salmetrol & fluticasone)
Symbicort (formoterol & budesonide)
SECOND: Long-acting Anticholinergic
Spiriva (tiotropium bromide)
Tiova (tiotropium bromide)
LAST: Steroid
Aerobid, Aerospan HFA (flunisolide)
Asmanex (mometasone)
Azmacort (triamcinolone)
dexamethasone
Flovent, -HFA, -Diskus (fluticasone)
Pulmicort (budesonide)
QVAR (beclomethasone)

Using BOTH Short and Long-acting Medications
FIRST: Long-acting β-agonist (LABA) (alone or combined)
Foradil (formoterol)
Oxis (formoterol)
Oxese (formoterol)
Serevent (salmeterol)
Advair (Serevent & Flovent)
Duova (formoterol & tiotropium bromide)
Seretide (salmetrol & fluticasone)
Symbicort (formoterol & budesonide)
SECOND: Long-acting Anticholinergic
Spiriva (tiotropium bromide)
Tiova (tiotropium bromide)
THIRD: Steroid
Aerobid, Aerospan HFA (flunisolide)
Asmanex (mometasone)
Azmacort (triamcinolone)
dexamethasone
Flovent, -HFA, -Diskus (fluticasone)
Pulmicort (budesonide)
QVAR (beclomethasone)
LAST: Short-acting β-agonist (SABA) (alone or combined)
albuterol (salbutamol in UK)
Alupent (metaproterenol)
Bricanyl (terbutaline)
Bronkosol (isoetharine)
Maxair (pirbuterol)
Medihaler-Iso, Isuprel (isoproterenol)
Proventil (albuterol)
Ventolin (albuterol)
Xopenex, -HFA (levalbuterol)
Combivent (Atrovent & albuterol)

NOTES:

Short-acting drugs must be taken at least 2 hours before long-acting drugs in the same class to avoid interfering with the long-acting drug's action.

If albuterol is used on a regular scheduled basis, it should always be taken after the long-acting β-agonist, and never less than 2 hours before it.

If you must use albuterol on a "rescue" basis, then wait two hours before taking a long-acting β-agonist.

If Atrovent is used in addition to Spiriva/Tiova, it should always be taken after the Spiriva/Tiova, and never less than 2 hours before it.

Mark Mangus RRT, BSRC, is a member of the Medical Board of EFFORTS (the online support group, Emphysema Foundation For Our Right To Survive, www.emphysema. net). He generously donates his time to answer members' questions.

Fibrosis File

The American Lung Association has expanded their Better Breather support group meetings to include those dealing with pulmonary fibrosis (PF). To prepare to welcome new members with PF, health educators with the Lung Association are working closely with club facilitators to extend both educational and emotional support programs to include PF. You might also join their online support system at *www.inspire.com/groups/living-with-pulmonary-fibrosis* or caregivers may find help at *www.inspire.com/groups/caring-for-pulmonary-fibrosis*

Belonging to support groups will connect you with others to share tips on the problems you face and and meet others who truly understand your problems.

Research News

A plant compound called parthenolide significantly reduces lung fibrosis and its associated inflammatory responses, according to a study conducted in mice with idiopathic pulmonary fibrosis (IPF). The study was published in the journal *Respiratory Research*. The findings suggest that parthenolide is a worthwhile future compound for pulmonary fibrosis therapy.

Studies have shown that the LDHA enzyme and its product, lactate, are present in high levels in the lung tissue of people with IPF. Lactate was found to induce fibrosis. Gossypol, a molecule in cottonseed, inhibits the LDHA enzyme and could be a potential therapy for IPF said researchers in the journal *Plos One*.

Essential oils are aromatic extracts from parts of flowers, fruits, and plants that have powerful therapeutic properties when we smell them. A single drop rubbed on your skin or diffused into the air is enough to promote calm, boost mood or relieve stress. I use aroma therapy daily to help cope with my day to day problems with pulmonary fibrosis.

For pain: Spike lavender, sweet marjoram, lavender, petitgrain, Roman and German chamomile, clary sage, lemongrass, helichrysum, peppermint, ginger or black pepper.

For stress: Rose otto, frankincense, clary sage, sweet orange, bergamot, grapefruit, sandalwood, neroli, sweet marjoram, petitgrain, mandarin, lavender, rose geranium, tangerine or jasmine.

For sleep: Lavender, neroli, jasmine, marjoram or Roman chamomile.

For sense of well-being: Frankincense, lavender, rose, mandarin, neroli or helichrysum.

For headaches: Lavender, peppermint, marjoram or Roman chamomile.

C. Davenport, Ormond Beach, FL

Ryan Diesem

The Ryan Report

Home Oxygen Guru – The HO_2G Pen

Understanding the Oxygen Regulator

One of the most common pieces of oxygen equipment is the oxygen flow regulator. These devices fit on top of your oxygen tanks/cylinders, and to which you connect your cannula to receive oxygen. We're going to discuss the basic operation of these devices to understand just how they work.

Basically, a regulator controls the flow of oxygen from a source (the oxygen tank). You set the regulator's flow dial to a certain flow setting, and that's how much oxygen comes out. There is more going on in that little device than it might seem, however.

The oxygen tank to which you connect a regulator contains pressurized oxygen gas, at pressures up to 2000-3000 psi (pounds per square inch). That's a lot of pressure! One of the functions of a regulator is to reduce this pressure so that the gas that flows through the regulator is at a manageable pressure to help ensure the accuracy of the oxygen flow dialed in. Typically a regulator will reduce the pressure from the tank to about 50 psi as the gas moves through the device, still a lot of pressure. That allows the regulator to have better control over the flow rate of oxygen delivered to you.

When you turn the dial on an oxygen regulator to set a flow rate, you are changing the size of the orifice that the gas is passing through as it exits the regulator into your cannula. When designing and producing regulators, manufacturers are able to calibrate the orifice size to ensure that the flow is at a desired flow rate seen on the dial. If you are using a low flow setting, the orifice will have a smaller diameter than if you were using a high flow setting.

Often you will see regulators that have different ranges of flow settings. Some regulators can be set to deliver oxygen flow as low as 1/32 LPM (that's 0.03 LPM), while others may go as high as 15 LPM. What you won't see is a regulator that has both 1/32 and 15 LPM settings, with a whole bunch of other settings in between, simply because you would need a very large dial to have that type of control. Most regulators will have six to ten available flow settings; typically low flow regulators max out at 4 LPM, and standard or high flow regulators will range from 1 to 8 LPM or 1 to 15 LPM.

Ryan Diesem is Research Manager at Valley Inspired Products, Apple Valley, MN. Contact Ryan at rdiesem@inspiredrc.com with questions or comments.

Conserving regulators (aka, oxygen conserving devices or pulse oxygen regulators) add a bit of a wrinkle to the design of a regulator. Conserving regulators only deliver oxygen during inspiration, and shut off during exhalation, thus they are considered pulse only devices instead of POCs. A conserving regulator has two cannula ports instead of one, and requires a dual-lumen cannula for proper use. *(Note: The commonly used EasyPulse 5 is a single lumen conserving regulator.)* One outlet of the conserving regulator delivers oxygen through one lumen of the cannula, while the other outlet senses the pressure changes during your inspiration and expiration. When you breathe in, the pressure change sensed through the cannula opens a valve in the regulator to allow oxygen flow through the cannula, this valve closes when the sensing side of the conserving regulator senses the pressure change from when you begin to exhale, and so oxygen delivery is now blocked again. In theory, this is a great design concept as it conserves oxygen that would otherwise be wasted during exhalation. Conserving regulators often need a strong breathing signal in order to activate/deactivate the valve that turns on and turns off oxygen flow. For some oxygen users, conserving regulators can be difficult to use.

Be aware that low tank pressure can impact the performance of the regulator. This is why tanks are recommended to be refilled/replaced when the pressure seen on the regulator's pressure gauge drops below 500 psi and into the "red zone" of the pressure gauge. It is very important to ensure that any tank you are using is at or above 500 psi to guarantee receiving your oxygen at the appropriate flow rate. If you are using a tank that is below 500 psi, you may need to increase the flow setting on the dial to one setting higher to make sure you are receiving enough oxygen; understand this will use up the rest of the gas in the tank faster. If it reaches this point, have a backup tank/device.

SoftHose: Out of Business?

Messages recently came across the mailing list EFFORTS that SoftHose, a seller of nasal cannulas, had gone out of business. (EFFORTS stands for Emphysema Foundation For Our Right To Survive; you can sign up for the mailing list at *http://www.emphysema.net/*).

Paul and Chris Thompson of SoftHose have been working 12 hours every day to meet the demand for their soft cannulas and have stopped production in concerns for their health. They are trying to find someone to take over the business of w*ww.softhose.com*.

So for now at least, SoftHose will not be an option for nasal cannulas. If you are looking to replace your SoftHose cannulas, there are a few options. However, understand they will not be the exact same design and may not have the same 'soft' feel to them as you are accustomed to. Salter Labs makes the "Flexi-Soft" line of nasal cannulas (*https://www.salterlabs.com/flexi-soft-cannula.html*) and WestMed has their own line of soft cannulas called "Comfort Soft Plus" (*https://westmedinc.com/soft-cannulas/*). Both cannulas can be ordered directly from their respective websites. Additionally, Teleflex has the "Softech" line of cannulas, while Drive Medical's soft cannula line is called the "Extra Soft Cozy" cannula; these units may need to be ordered from your provider.

Sharing the Health!

Looking for creative ways to stay cool this summer besides sitting in a kiddie pool with a cold drink? You might purchase a FlexiFreeze Ice Vest from *Amazon.com* for a mere $99.99. You can also get a handheld portable fan for about $12.

Wear loose-fitting clothing, preferably of a light color. Darker colors will absorb the sun's heat and stay warmer longer than light or white clothing, which reflects light and heat.

Cotton, silk and linen clothing will keep you cooler than many synthetics as polyester or rayon. The performance clothing lines worn by athletes may help you stay cool.

Sleeping on silk, satin and cotton sheets at night will feel smoother and cooler.

Go barefoot when you can!

Try storing lotions or cosmetics in the refrigerator.

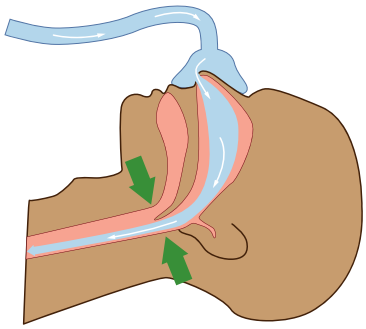
You could also keep plastic bottles of water in the freezer; grab one when you're ready to go outside. As the ice melts, you'll have a supply of cold water with you.

Anyone can use a fan! Try putting a metal bowl of salted ice in front of a fan and adjust the fan so that the air is blowing over the ice. The salt lowers the temperature at which the water freezes, allowing you to make the ice super cold.

If you set your ceiling fans to run counter-clockwise, this will draw hot air up while circulating a cool breeze through your rooms.

People with COPD who also suffer with obstructive sleep apnea have what is known as Overlap Syndrome. Unfortunately, 60 percent of people with Overlap Syndrome do not use their CPAP (continuous positive airway pressure) mask as prescribed leading to increased hospitalizations.

A new program by the COPD Foundation and the American Sleep Apnea Association has an online educational center to help people with Overlap Syndrome use their masks properly while sleeping. Join the study to determine the effectiveness of this program at *www.o2verlap.org/portal.registration*. Or email *o2verlap@copdfoundation.org* for more information.



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Reference:
1. Svenningsen S, *et al.* COPD 2016;13(1):66–74.

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Our friends in Hawaii have been dealing with erupting volcanoes. When this happens, volcanic ash and vog are released into the air. Vog is a form of air pollution that results when sulfur dioxide and other gases and particles emitted by an erupting volcano react with oxygen and moisture in the presence of sunlight. Volcanic ash may hold very small fragments of rocks, minerals and volcanic glass that can be breathed deep into the lungs. Check your weather conditions at *www.airnow.gov*.The American Lung Association recommends staying inside when the pollution is high and keeping your air conditioners in the house and car on recirculate.

Pollution is no joke! Asthma deaths in the United Kingdom and Wales have increased more than 25 percent since 2007, with the increase found to be caused by environmental pollution.

I like to eat a lot of salads, fruit and yogurt throughout the summer so I don't have to turn the oven on. I find recipes on *www.eatingwell.com*. A therapist gave me the great advice to eat smaller, more frequent meals rather than three large ones. It really made a difference!

Slushy drinks made from orange juice or grape juice are always enjoyable.

Mary Prentice, Arlington, VA

My sister and I, who both use supplemental oxygen, recently went on a road trip together. We use portable oxygen concentrators and depend on charged batteries to keep going on our adventures. Unfortunately, when we picked up our rental car, we found it did not have the traditional power outlets to plug our units into. The car did have the new USB plugs to recharge our phones and we had to carefully plan our stops. Just wanted to warn other oxygen users to be careful when renting a car!

Rose Manning, Sitka, AL

Answers to our Summer Movie Quiz in the May/June issue:

1. The Sandlot
2. American Graffiti
3. Stand by Me
4. The Great Outdoors
5. Dirty Dancing
6. Jaws
7. The Graduate
8. National Lampoon's Vacation
9. Ernest Goes to Camp
10. The Parent Trap
11. Friday the 13th
12. Meatballs

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Respiratory News

A drug to treat certain cancers may also protect against cigarette smoke-induced lung injury according to research in the *American Journal of Physiology – Lung Cellular and Molecular Physiology*. Plerixafor is a medication that stimulates the immune system to release a type of stem cell (hematopoietic progenitor cells, or HPCs) from the bone marrow into the bloodstream. Stem cells have the potential to develop into many different kinds of cells in the body and are involved in tissue repair. Previous research has shown that lower numbers of HPCs in the bloodstream correspond to increased severity of emphysema. Based on this theory, researchers explored the effect of plerixafor on stem cell circulation – and subsequent lung function – in mice. The report supports the usefulness of this FDA-approved drug as a potential treatment for emphysema.

According to an article on *Medical News Today*, enjoying these 15 immune-boosting foods may strengthen people's immune system and improve their ability to fight off infections: blueberries, dark chocolate, turmeric (a yellow spice), oily fish as salmon and tuna, broccoli, sweet potatoes, spinach, ginger, garlic, green tea, sunflower seeds, almonds, oranges and red bell peppers.

Using oxygen may make you smarter! People with COPD are at higher risk of dementia, possibly because of lower brain oxygen levels. Research published in *Experimental Physiology* reports giving people with COPD additional oxygen reduced their risk of developing dementia.

The FDA has granted approval to Pulmonx Inc. for the Zephyr Endobronchial Valve, intended to treat breathing difficulty associated with severe emphysema. Using a flexible bronchoscope, a doctor places Zephyr valves, similar in size to pencil erasers, into the diseased areas of the lung airways. Design of the device is intended to prevent air from entering the damaged parts of the lung and allows trapped air and fluids to escape. Clinical studies showed at one year, 47.7 percent of those treated with Zephyr valves experienced at least a 15 percent improvement in their pulmonary function scores.

Baseball time is here and this season has marked a small milestone in the game's movement against smokeless tobacco, which includes products such as chew and dip. As of May, smokeless tobacco is now banned in half of Major League stadiums. Smokeless tobacco use has been linked to an increased risk of mouth, tongue, cheek and gum cancers, along with other health risks. It has been banned in college baseball since 1990 and in the Minor Leagues since 1993.

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Permit #275