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The Immune System

AaNA Alaska Nurses Association

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From our President

Like most of you, I thoroughly enjoyed the first part of this Alaska summer — which felt more like a California summer with all the sunshine and warmth. It helped me to get my garden in on time this year, unlike last year when it was the middle of June before I put the last potato in the ground. By the time this goes to print, I should be pickling cucumbers, making my first batch of zucchini relish, and freezing peas for the winter. A friend of mine gave me a flat of sunflower starts this spring and I planted every one of them. Now I have sunflowers everywhere!

I made my annual August trek to Salmonfest in Ninilchik with my friend Susan. We saw old friends, made new friends, rode the free shuttle to and from the campground, and visited with our temporary neighbors on the ride. Pretty much everybody in camp knew the "ladies in the blue tarp tent" by the end of the day. The people-watching was great; young and old alike gathered, some in costumes or painted faces, and everyone danced. I didn't dress up or get my face painted, but I danced as much as I could! The food was amazing also: fish tacos, paella, Russian borscht and piroshkies, garlic cheesy spinach bread, and so much more. I highly recommend this festival to everyone!

This issue of The Alaska Nurse focuses on the immune system. We can support our immune systems by eating locally grown honey, fruits, vegetables, and meats. Local dark-colored fruits and berries carry antioxidants that help fight off diseases and support gut health. Picking red and black raspberries, red and black currants, and crab apples is very beneficial for our health and provides an outdoor activity that the whole family can enjoy. Even the major supermarkets offer locally grown vegetables at this time of year.

My favorite thing is to go shopping at the local farmers' markets; I get to talk with the farmer, gaining growing tips and recipes. I live in Palmer and have lots of local farmers' markets that I can visit. Friday Fling in downtown Palmer is one of these and offers several local farms a venue to sell their goods. So by eating local produce and shopping at local farmers' markets, you support your immune system, the farmer, AND your community. I call that a win/win!

Call me, email me, or text me your thoughts or questions on anything garden- or immune system-related. I would love to hear from you.

Warmest Regards,

Jane Erickson

Jane Erickson, ADN, RN, CCRN
President, Alaska Nurses Association

In This Issue

AUTHOR GUIDELINES FOR THE ALASKA NURSE: The Editorial Committee welcomes original articles for publication. Preference is given to nursing and health-related topics in Alaska. Authors are not required to be members of the AaNA. There is no limit on article length. Include names and applicable credentials of all authors. Articles should be Microsoft Word documents. Photos are encouraged and should be high resolution. Please include captions and photo credits at time of submission. All content submitted to The Alaska Nurse becomes property of the Alaska Nurses Association. Submit all content by email to Andrea@aknurse.org.

WORKPLACE VIOLENCE
IS ANYTHING BEING DONE?

By Stacey Sever, BSN, RN, CCDS
AaNA Health and Safety Committee Chair

Those of us in healthcare know that workplace violence (WPV) has always been prevalent, especially within certain departments and facilities. We also know that WPV in healthcare has been on the rise recently due to a multitude of factors, notably substance use and dependence issues combined with mental health conditions and the increased incivility that is being exhibited throughout our communities. The COVID-19 pandemic escalated these issues in a short period of time. Not only is this occurring both locally and on a national level, but WPV against healthcare workers is also a worldwide issue (Vento S, Sept 2020).

Due to the concern of increasing violence toward healthcare staff, the Alaska Nurses Association dedicated the spring 2019 issue of The Alaska Nurse to this problem. Articles included discussions on the short- and long-term impact WPV in healthcare has on nurses, how the healthcare environment enables the violence to continue, and how nurses can protect themselves and other staff members from becoming victims. Information was shared about Alaska's House Bill 312, which became law in 2018. The bill decreased the requirements for assault arrests in hospitals and strengthened penalties against those who assault healthcare workers (Sever, 2019).

The Alaska Nurses Association met with current and former US legislators to address their concerns about the increasing violence that was being experienced by Alaska nurses and other healthcare team members. Each legislator was asked to review information provided by the AaNA regarding WPV in healthcare that included statistics from the Occupational Safety and Health Administration (OSHA) and Bureau of Labor Statistics (BLS), along with personal stories from Alaska nurses. The legislators were asked to consider supporting federal legislation the Workplace Violence Prevention for Health Care and Social Service Workers Act. The current bills that are in the House and Senate were developed from the 2016 OSHA Guidelines for Preventing Workplace Violence

for Health Care and Social Service Workers (OHSA, 2016).

AaNA also held a postcard campaign in which Alaska nurses and other healthcare workers were asked to sign and send to Senators Murkowski and Sullivan, as well as the late Representative Don Young urging them to support the Workplace Violence Prevention for Health Care and Social Service Workers Act. Representative Young signed on as a co-sponsor of the legislation in February 2021. The bill passed in the House with a total of 146 co-sponsors.

The companion bill in the Senate was read twice in May 2022 and referred to the Committee on Health, Education, Labor, and Pensions. Currently there are 26 senatorial co-sponsors on the Senate bill.

While it is slow-going, momentum is growing to protect healthcare workers. As the incidence of WPV continues to increase, The Joint Commission published a report in June 2021 regarding workplace violence prevention standards that became effective January 1, 2022 and applies to all Joint Commission-accredited hospitals and critical access hospitals (TJC, June 2021).

The American Hospital Association (AHA) followed suit in October 2021 and co-authored with the International Association for Healthcare Security and Safety a guide to mitigating violence in healthcare settings (AHA, Oct 2021). The AHA had brought their concerns regarding WPV in healthcare to the US Attorney General Merrick Garland and urged the Justice Department to support protections for healthcare workers similar to the protections the Justice Department supported for flight crews and airport employees.

On June 7, 2022, US Reps. Madeleine Dean (PA) and Larry Bucshon, MD (IN) introduced a bill to protect healthcare workers from violence that is based on existing protections for aircraft and airport workers. The Safety from Violence for Healthcare Employees Act would criminalize assault or intimidation of hospital employees and provide legal penalties for individuals who knowingly and intentionally do so. There would be provisions for those who may be mentally incapacitated due to illness or substance use (Gooch, 2022).

Violent incidents against staff in hospitals and other healthcare facilities will never be completely eradicated. The good news is that the culture that once regarded violence in healthcare as being "part of the job" is changing. Many facilities are incorporating de-escalation training, care plans are being developed for patients with a risk for violence, and there is an increasing number of healthcare staff advocating for themselves when they are a victim of an assault. The work for preventing workplace violence continues and nurses still need to send a clear and powerful message that workplace violence will no longer be tolerated.

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A Union of Professionals

AFT Nurses and Health Professionals News Roundup

ABOUT AFT

AFT is a union of 1.7 million professionals that champions fairness, democracy, economic opportunity, and high-quality public education, healthcare and public services for our students, our families and our communities. AFT is the national affiliate of the Alaska Nurses Association.

AaNA DELEGATES ATTEND 2022 AFT CONVENTION

Earlier this summer, AaNA nurses traveled to Boston to serve as delegates at our national union's biennial convention. Attending for AaNA were Donna Phillips, Jane Erickson, Katie Shull, Sara Massmann, and Terra Colegrove, all of whom also serve on the AaNA Labor Council.

Chris Smalls, Amazon Labor Union

Joining 3,000 AFT union members from across the country, AaNA delegates listened to speakers including First Lady Dr. Jill Biden, U.S. Secretary of Labor Marty Walsh, and Rev. Dr. Otis Moss III, who delivered an emotional and powerful oration on voting rights. At the healthcare division breakfast, delegates heard from Sandra Alvarez, director of "InHospitable," a documentary film that exposes the powerful non-profit hospitals at the heart of our broken healthcare system.

"The convention is a chance for all AFT-affiliated unions to come together, talk about our shared issues, and help AFT move forward for the next two years," AaNA Labor Council Chair Donna Phillips said. "We get to participate in the democracy of the organization, and it's a great opportunity to work with union nurses from other states."

Throughout the four-day convention, delegates passed a number of resolutions, most notably "Addressing Staffing Shortages in the Healthcare Workforce," which commits AFT to develop and implement a strategy to win state laws mandating staffing ratios or safe patient limits in at least five states by 2025. The resolution also includes actions to address workplace violence, mandatory overtime, mental health and burnout,

hospital mergers, the healthcare workforce, and pandemic preparedness.

Delegates also re-elected AFT national officers, including Donna Phillips, who will continue her position on the AFT executive council as one of 46 vice presidents.

The convention called attention to recent worker victories as a wave of union organizing swells across the country. Ignited by poor working conditions during the pandemic, workers are forming unions at a pace not seen in years; the number of union election petitions filed with the National Labor Relations Board during the first few months of 2022 exceeded the total for all of 2021.

Donna Phillips with First Lady Jill Biden & Labor Secretary Marty Walsh

Many of the grassroots wins have been by essential workers at large, traditionally non-union employers. Chris Smalls, president of the Amazon Labor Union, spoke about his team's organizing efforts to win the first union at an Amazon facility in the U.S. He also spoke on the difficulties of fighting a corporate giant, saying that Amazon workers in Staten Island have a "long uphill battle" to obtain a first union contract.

AaNA Delegates

Starbucks workers spoke of their recent triumphs too. Kylah Clay, a barista and organizer in Boston, told the audience, "I have witnessed firsthand what happens when you threaten to weaken the power of a corporation," detailing the union-busting actions workers at Starbucks stores have faced.

Phillips said she felt energized by the Amazon and Starbucks organizers' remarks. "It's great to see a young, diverse generation fired up about being organized and passionate about empowering others," she said.

Attending the AFT Convention reinforces the strengths and importance of our union community. "People from all over the country share their stories, their wins, their struggles," Phillips shared, "they are the stories and struggles of all working people everywhere."

See more highlights from the convention: www.aft.org/convention

MIND AND BODY PRACTICES FOR FIBROMYALGIA

What the Science Says

Fibromyalgia is a common disorder that involves widespread pain, tenderness, fatigue, and other symptoms. An estimated 5 million American adults have fibromyalgia. Between 80 and 90 percent of people with fibromyalgia are women, but men and children can also have this condition.

In addition to pain and fatigue, people with fibromyalgia may have other symptoms, such as cognitive and memory problems, sleep disturbances, morning stiffness, headaches, painful menstrual periods, numbness or tingling of the extremities, restless legs syndrome, temperature sensitivity, and sensitivity to loud noises or bright lights.

In general, research on complementary health approaches for fibromyalgia is preliminary. However, recent systematic reviews and randomized clinical trials provide encouraging evidence that practices such as tai chi, acupuncture, mindfulness, and biofeedback may help relieve some fibromyalgia symptoms.

Current diagnostic criteria are available from the American College of Rheumatology. Treatment often involves an individualized approach that may include both pharmacologic therapies (prescription drugs, analgesics, and NSAIDs) and nonpharmacologic interventions such as exercise, muscle strength training, cognitive behavioral therapy, movement/body awareness practices, massage, acupuncture, and balneotherapy.

Mindfulness Meditation

Mindfulness meditation is a type of meditation that involves completely focusing on experiences on a moment-to-moment basis.

Mindfulness mediation may provide short-term improvements in pain and quality of life in patients with fibromyalgia; however, the evidence is limited by a small number of studies with low methodological quality. Frequent practice of mindfulness techniques may be important for good results. In a 2014 study of mindfulness for fibromyalgia, those participants who practiced mindfulness more frequently had a greater reduction in symptoms.

Mindfulness and other forms of meditation are generally considered to be safe for healthy people. However, they may need to be modified to make them safe and comfortable for people with some health conditions.

Biofeedback

Biofeedback techniques measure body functions and give you information about them so that you can learn to control them.

There is some low-quality evidence that biofeedback, compared to usual care, has an effect on physical functioning, pain, and mood in patients with fibromyalgia; however, due to the lack of quality evidence, it is unknown if biofeedback has any therapeutic effect on these outcomes.

In studies of electromyograhic biofeedback for fibromyalgia, some participants reported that the procedure was stressful. No other side effects were reported.

Guided Imagery

Guided imagery is a technique in which people are taught to focus on pleasant images to replace negative or stressful feelings. Guided imagery may be self-directed or led by a practitioner or a recording.

Studies on the effects of guided imagery for fibromyalgia symptoms have had inconsistent results. In some studies, patients who were taught guided imagery had decreases in symptoms such as pain and fatigue, but in other studies it had no effect.

Guided imagery is one of a group of approaches called relaxation techniques. Relaxation techniques are generally considered safe for healthy people. Occasionally, however, people report unpleasant experiences such as increased anxiety.

Meditative Movement Practices

Tai chi and qigong, which originated in China, and yoga, which is of Indian origin, all involve a combination of physical postures or movements, a focus on breathing, and meditation or relaxation. Because these three practices have so many features in common, they are sometimes grouped together as meditative movement practices.

Findings from some randomized controlled trials suggest that meditative movement therapies may provide modest relief of some fibromyalgia symptoms.

Meditative movement practices generally have good safety records when practiced under the guidance of a qualified instructor. Few side effects have been reported in studies of yoga, tai chi, or qigong. However, these practices may need to be modified to make them suitable for people with fibromyalgia.

Massage Therapy

Massage therapy includes a variety of techniques in which practitioners manipulate the soft tissues of the body.

There is limited evidence that massage can provide modest improvement in some fibromyalgia symptoms. Several studies have evaluated various types of massage therapy for fibromyalgia. Most indicated that massage could provide short-term relief of some fibromyalgia symptoms.

Massage therapy appears to have few risks when performed by a trained practitioner.

Acupuncture

Acupuncture is a technique in which practitioners stimulate specific points on the body, known as acupuncture points. This is most often done using needles that penetrate the skin (manual acupuncture), but other techniques, such as using electrical current (electroacupuncture), may also be used.

Limited evidence suggests that when compared to a control, acupuncture may help improve symptoms of fibromyalgia such as pain and stiffness. Electroacupuncture may produce better results than manual acupuncture.

Acupuncture is generally considered safe when performed by an experienced practitioner using sterile needles. Relatively few complications from acupuncture have been reported. Serious adverse Continued on page 10

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events related to acupuncture are rare but include infections and punctured organs.

There are fewer adverse effects associated with acupuncture than with many standard drug treatments (such as anti-inflammatory medication and steroid injections) used to manage painful musculoskeletal conditions like fibromyalgia, myofascial pain, and osteoarthritis.

Balneotherapy (Hydrotherapy)

Balneotherapy is the technique of bathing in tap or mineral water for health purposes; it also includes related practices such as mud packs. There is some limited evidence that suggests that balneotherapy (hydrotherapy) may provide small improvement in pain and health-related quality of life for patients with fibromyalgia.

Balneotherapy is generally considered safe. A few mild side effects (i.e., slight flushing) have been reported.

Nutritional Supplementation

There is insufficient evidence that any nutritional approaches can relieve fibromyalgia pain, with the possible exception of vitamin D supplementation, which may reduce pain in people with fibromyalgia who have vitamin D deficiencies.

Approaches with No Evidence of Benefit

Homeopathy. Homeopathic remedies are derived from substances that come from plants, minerals, or animals. Studies of homeopathy have not demonstrated that it is beneficial for fibromyalgia.

Reiki. In Reiki, practitioners place their hands lightly on or just above a person, with a stated goal of facilitating the person's own healing response. There is a lack of high-quality research on Reiki, but a recent study showed no effect of Reiki on pain, physical and mental functioning, medication use, and visits to healthcare providers.

Emerging Research

Traditional Chinese Medicine. Developed over thousands of years, TCM practitioners use herbs, acupuncture, and other ethods to treat a range of conditions. The effectiveness of traditional Chinese medicine for treating fibromyalgia is currently being investigated.

Magnesium supplementation. Researchers are investigating whether low magnesium levels contribute to fibromyalgia and if magnesium supplements might help to reduce symptoms.

Transcranial Magnetic Stimulation (TMS). A small number of preliminary studies have evaluated TMS for fibromyalgia symptoms, and some have had promising results.

Compiled information in this article is courtesy of the National Center for Complementary and Integrative Health.

FIRST NURSING COHORT GRADUATES FROM ALASKA PACIFIC UNIVERSITY

Sixteen nursing students graduated from Alaska Pacific University on April 30, the first cohort to complete the university's new associate degree nursing program.

Shortly before the cohort graduated, Alaska Pacific University received accreditation from the Accreditation Commission for Education in Nursing (ACEN). The accreditation is retroactive to March 3, 2020, and applies to the university's associate and bachelor degrees in nursing.

"This accreditation is a mark of quality, assuring our students and their

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future employers that our program provides excellent training relevant to Alaska," said Dr. Marianne Murray, the director of nursing at APU. "We are especially proud that our programs were recognized for the integration of cultural safety throughout the curriculum," she said.

The associate degree is a three-semester foundational program preparing graduates to become registered nurses. The current enrollment is 24 students every fall for the Anchorage cohort. A cohort will start in spring 2023 in Juneau and in Utqiagvik in fall 2023. The university hopes to begin a spring cohort in Anchorage in 2024.

The RN to BSN bridge program designed for registered nurses to advance their education and offers accelerated courses for working healthcare professionals.

Recently, APU began offering an undergraduate certificate in practical nursing. The program is offered now in Bethel, and will be offered in Fairbanks in spring 2023.

Like all its academic programs, the nursing degrees at APU emphasize Indigenous ways of knowing and respect for Alaska Native cultures. "We're honored to train nurses with respect for Alaska Native cultures and we look forward to welcoming many more nursing students to come," director Murray said.

Congratulations graduates!

CONGRATULATIONS SPRING 2022 GRADUATES!

Joanne Anderson

Cynthia Marie Bayardo-Saclayan

Tabatha Rae Brault

Peniel Selah Carr

Tabatha M. Dudoit

Jolean Rae Fultz

Veronica E. Kazuma

Shelby Lynn Johnson

Mackenzie Elizabeth Larson

Tia Elizabeth Lynn Lowe

Sarah Marie Mattie

Roanne Camille N. Nocelo

Rebecca A. Strianese

Tasha Sherie Tapey

Clint Matthew Ward II

Lillian K. Xiong

2022 State of the Air Report Awards Mixed Grades to Alaska

The American Lung Association's annual air quality "report card," called the "State of the Air" report, tracks and grades Americans' exposure to unhealthy levels of ground-level ozone air pollution (also known as smog), annual particle pollution (also known as soot), and short-term spikes in particle pollution, over a three-year period. The 2022 State of the Air report reveals that nearly 9 million more people were impacted by deadly particle pollution than reported last year. This year's report showed more days with "very unhealthy" and "hazardous" air quality than ever before in the two-decade history of this report.

The report finds that more than 137 million Americans – more than four in 10 – are still exposed to unhealthy air. This includes families here in Alaska. For example, both Anchorage and Fairbanks received a grade F for short-term levels of particle pollution, though Anchorage was able to eke out a passing grade for annual particle pollution levels. On the national list of "most polluted cities," Fairbanks ranked seventh most polluted for year-round particle pollution, and third worst in the country for short-term particle pollution levels.

While particle pollution is a problem in Fairbanks, ozone pollution is not. The city

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received an A grade and tied for the title of "cleanest metropolitan area" for ozone air pollution. Ozone pollution is not monitored in Anchorage.

Both ozone pollution and particle pollution can cause premature death and other serious health effects such as asthma attacks, cardiovascular damage, and developmental and reproductive harm. Particle pollution can also cause lung cancer.

While breathing ozone pollution and particle pollution is unhealthy for anyone, our most vulnerable neighbors, including children, older adults, pregnant people, and those with lung disease are at greater risk from the impacts of air pollution.

Communities of color are disproportionately exposed to unhealthy air, and people of color are also more likely to be living with one or more chronic conditions that make them more vulnerable to the health impact of air pollution, including asthma, diabetes and heart disease.

The report found that people of color were 61% more likely than white people to live in a county with a failing grade for at least one pollutant, and 3.6 times as likely to live in a county with a failing grade for all three pollutants.

Furthermore, as we've seen this past year, climate change and extreme weather have made cleaning up our air even more challenging. This report shows that many Americans are already experiencing worsened ground-level ozone pollution and particle pollution due to warmer temperatures and increased wildfires, both of which are exacerbated by climate change. Action taken now can and will help prevent the worst impacts of climate change and help protect the health of Alaskan families.

Organizations such as the American Lung Association and the Alliance of Nurses for Healthy Environments are calling on the Biden administration to strengthen the national limits on both short-term and year-round particulate matter air pollution. Stronger standards will educate the public about air pollution levels that threaten their health and drive the cleanup of polluting sources in communities across the country. See the full report results and sign the petition at Lung.org/SOTA.

Meet the Board of Nursing

Jody Miller, LPN

Jody Miller of Haines, Alaska is the newly appointed LPN representative to the Alaska Board of Nursing. Born and raised in Michigan, she attended local community college to obtain her nursing degree. In 1989, Jody and her husband moved from Michigan to Alaska and have stayed ever since. Jody has worked in various areas of nursing with extensive background in the emergency room and critical care. She is currently doing nurse case management, which can be very challenging in a rural community (as all nursing can be in a rural community with no hospital access). Jody looks forward to doing her very best while serving on the Alaska Board of Nursing and sharing her experience and knowledge of rural nursing.

IT'S LICENSE RENEWAL SEASON!

LPN RENEWALS

LPN renewals have started and are available online. Just scroll down the main page and you will see the section on LPN renewal. The cost is $200 for the 2-year renewal period from 2022 to 2024. Anyone who was issued their LPN license on or after October 1, 2021 will have a pro-rated renewal cost of $100.00. LPN renewal for licensure in Alaska will end on September 30, 2022.

RN AND APRN RENEWALS

RN and APRN renewals will begin in September 2022 with licenses expiring on November 30, 2022.

PROFESSIONAL ACTIVITY HOURS

Effective August 19th, for those of you using professional activity hours (volunteer hours) to meet renewal requirements for LPN or RN licenses, you will only need 30 hours instead of 60 hours.

STAY IN THE LOOP

For the most up-to-date information and to complete your license renewal, please visit nursing.alaska.gov. To receive notification when the renewal period has opened, information on upcoming board meetings, and regulations changes, please subscribe to the Alaska Board of Nursing email listserv at list.state.ak.us/mailman/listinfo/commerce-nur.

Monoclonal Antibody Reduces Asthma Attacks in Urban Youth

A monoclonal antibody, mepolizumab, decreased asthma attacks by 27% in Black and Hispanic children and adolescents who have a form of severe asthma, are prone to asthma attacks and live in low-income urban neighborhoods, a National Institutes of Health clinical trial has found.

The phase 2 study, Mechanisms Underlying Asthma Exacerbations Prevented and Persistent with Immune Based Therapy (MUPPITS-2), was conducted by the Inner City Asthma Consortium under the leadership of Daniel J. Jackson, MD, William W. Busse, MD, and Matthew C. Altman, MD, M.Phil.

Asthma is caused by chronic inflammation of the airways. During an asthma attack, the airway lining swells, muscles around the airways contract, and the airways produce extra mucus, substantially narrowing the space for air to move in and out of the lungs. An estimated 2.3 million U.S. children and adolescents experienced an asthma attack in 2019, according to the Centers for Disease Control and Prevention.

Black and Hispanic children who live in low-income urban environments in the United States are at particularly high risk for asthma that is prone to attacks. These children often have many allergies and are exposed to both high levels of indoor allergens and traffic-related pollution, which can make their asthma even more difficult to control.

In an earlier study, MUPPITS-1, investigators identified multiple networks of functionally related genes that are activated together and are associated with asthma attacks in children and adolescents who live in low-income urban settings. Some of these genetic networks are specifically associated with eosinophils.

Many people with untreated asthma have a high level of eosinophils in the blood and airways. These cells are thought to increase airway inflammation, which in turn leads to tissue damage, making breathing more difficult.

Mepolizumab is approved by the Food and Drug Administration to treat people ages 6 years and older with eosinophilic asthma and

has been shown to reduce blood levels of eosinophils. The investigators hypothesized that mepolizumab would suppress the eosinophil-specific gene networks associated with asthma attacks in Black and Hispanic urban youth with eosinophilic asthma, thereby reducing the number of asthma attacks in this population. The researchers further hypothesized that by analyzing asthma-associated gene networks during treatment, they would identify certain networks associated with stronger or weaker responses to mepolizumab. The MUPPITS-2 trial was designed to test these hypotheses.

The MUPPITS-2 study team enrolled 290 children ages 6 to 17 years whose asthma was difficult to control, prone to attacks, and characterized by high blood levels of eosinophils. Seventy percent of the participants were Black, 25% were Hispanic, and all lived in low-income neighborhoods in nine US cities. This population has been underrepresented in previous clinical trials of asthma therapeutics.

The children were assigned at random to receive an injection of either mepolizumab or a placebo once every four weeks for 12 months. No one knew who received which type of injection until the end of the trial. All the participants also received asthma care based on guidelines developed under the auspices of the National Heart, Lung, and Blood Institute, part of NIH.

The study team collected nasal secretions from the children before they began receiving injections and at the end of one year. RNA, a form of genetic material, was extracted from cells in the nasal secretions and was sequenced and analyzed to determine the activity of various gene networks. The study team also collected blood samples from participants at the start and end of the trial and a few times in-between.

Asthma control improved in all study participants, regardless of whether they received mepolizumab or placebo. This suggests that by participating in the trial, the children benefited from frequent clinic visits and maintained better adherence to asthma inhalers.

As expected, the scientists found that mepolizumab safely and substantially reduced blood levels of eosinophils among children and adolescents after a year of treatment. However, this reduction translated into a relatively modest 27% decrease in the rate of asthma attacks compared to the placebo group.

To understand this result and explain why this effect is significantly lower than what has been reported in adults in other studies, the researchers examined activity levels of the networks of genes identified during MUPPITS-1 as associated with asthma attacks. They compared these activity levels between the mepolizumab and placebo groups and between the start and end of treatment. The investigators found that although mepolizumab significantly tamped down the activity of three eosinophil-related gene networks, it did not reduce the activity of five gene networks related to tissue inflammation nor of one related to both eosinophil activation and overproduction of mucus.

These findings partially explain why mepolizumab therapy modestly decreased the risk of asthma attacks in the MUPPITS-2 study population. The findings also identify potential future targets for further reducing asthma attacks among these children and adolescents. Importantly, by clearly illustrating how a variety of gene networks associated with airway inflammation play a role in asthma attacks in low-income urban youth, the MUPPITS-2 trial paves the way for using gene activation patterns to monitor new asthma therapies in future clinical trials in this population.

Additional information about the trial is available at ClinicalTrials.gov under study identifier NCT03292588.

A Biological BETRAYAL

Dr. Mariana Kaplan (foreground) discusses experimental results with staff scientist Luz Blanco.

Any system functions best when it is carefully calibrated. A burglar alarm that blares when the front door is kicked in can be a life-saver, for example, but one that goes off every time the wind blows will soon have you pulling out your hair.

In the same way, an immune system that precisely targets disease-causing bacteria and viruses will help shield the body from illness, but one that sees our owns cells as a threat can cause life-altering consequences. It is the latter scenario that concerns Mariana Kaplan, MD, as well as the more than seven percent of the United States' population that suffers from an 'autoimmune' condition caused by an over-active immune system.

"In autoimmune disease, the immune system thinks that what is part of us is actually something that is foreign or external to us and starts attacking it," Dr. Kaplan explains.

An immune system that cannot tell friend from foe can cause widespread harm that has serious effects on the quality and length of a person's life, such as extensive damage to organs like the kidneys or lungs. It is also common for patients with autoimmune conditions to develop cardiovascular disease relatively early in life, which increases their risk for heart attacks and strokes. That's not to mention the many more mundane symptoms of these diseases, which include fatigue, frequent fevers, and skin rashes.

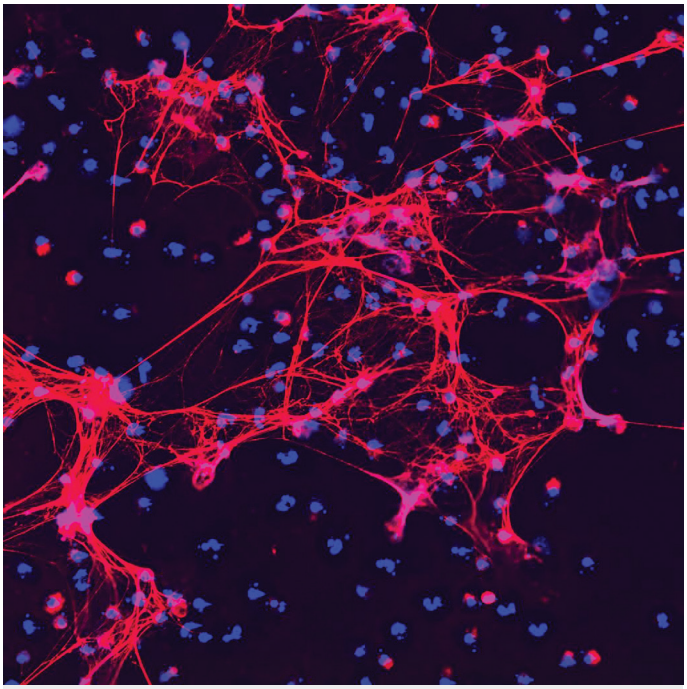
While treatments exist that combat these symptoms by suppressing the immune system, they are a blunt instrument, causing significant side effects because they affect many aspects of the body's defenses. One of the main problems with therapies that broadly restrain the immune system is an increased risk of getting seriously ill if a patient does encounter a bacteria or virus.

"We need to come up with more targeted tools so that we can, ideally, only get rid of the bad players in the immune system but not affect the good parts that are so important to fight infections and detect cancers," Dr. Kaplan says.

Dr. Kaplan has studied a number of autoimmune diseases, from joint-destroying rheumatoid arthritis to artery-inflaming vasculitis, but most of her efforts have been focused on what she calls "the poster child" for autoimmune diseases: systemic lupus erythematosus (SLE), more commonly referred to as 'lupus.' More than 5 million people around the world are thought to have some form of lupus, a number small enough to classify it as a rare disease but big enough that there is a larger pool of patients to study than many other autoimmune diseases. This makes lupus an ideal starting point for learning about the underlying causes of autoimmune disease in general.

"When diseases are very rare, it can take you a very long time to have enough patients to do good studies," Dr. Kaplan explains, "so it's helpful to extrapolate from a more common disease to a less prevalent disease, at least at the beginning."

Since she arrived at NIH in 2013, Dr. Kaplan's team has made significant progress towards zeroing in on the specific parts of the immune system that go rogue in people with autoimmune diseases like lupus. Her research has helped identify the key role of the 'innate' immune system, the portion of the body's defenses that we are born with, in contrast to the 'adaptive' immune system, which learns and evolves over time as the body encounters and responds to disease-causing invaders. For example, the innate immune system routinely produces molecules called type-1 interferons that help the body fend off viruses, but people with certain autoimmune diseases produce much more of them when there is no virus around, and their immune cells also respond more strongly to type-1 interferons than those of healthy individuals. The effects of this are akin to giving an energy drink to an already rambunctious child in a room full of fragile objects — the immune cells, all revved up with nothing to do, start taking their frustrations out on the body's own cells. Dr. Kaplan has found that type-1 interferons contribute to blood vessel damage in patients with lupus, a discovery that could help prevent some of the disease's most severe complications.



Immune cells called neutrophils produce sticky meshes made up of DNA (blue) and various proteins (red) in order to combat infections. Dr. Kaplan has discovered that this process goes haywire in people with autoimmune illnesses.

In addition, Dr. Kaplan's group has discovered that a class of white blood cells called neutrophils, which are the innate immune system's 'first responders' to an infection or injury, go haywire in many autoimmune diseases. In people with such illnesses, neutrophils over-produce anti-microbial webs called neutrophil extracellular traps (NETs). NETs play a key role in capturing and destroying microbes that have infiltrated the body. In autoimmune diseases like lupus, however, neutrophils will produce NETs even in the absence of a threat like an infectious bacterium, and these errant defensive weapons may encourage immune cells to attack the body's own tissues and cause damaging inflammation. What's more, Dr. Kaplan has found evidence that women have neutrophils that respond more strongly when exposed to type-1 interferons and produce more NETs than those of men, which may partly explain why autoimmune diseases are more common in women than in men.

"Type-1 interferons and neutrophils are both innate players of the immune system that are very important, and we think they act kind of in an alliance in patients with autoimmunity to promote even more damage

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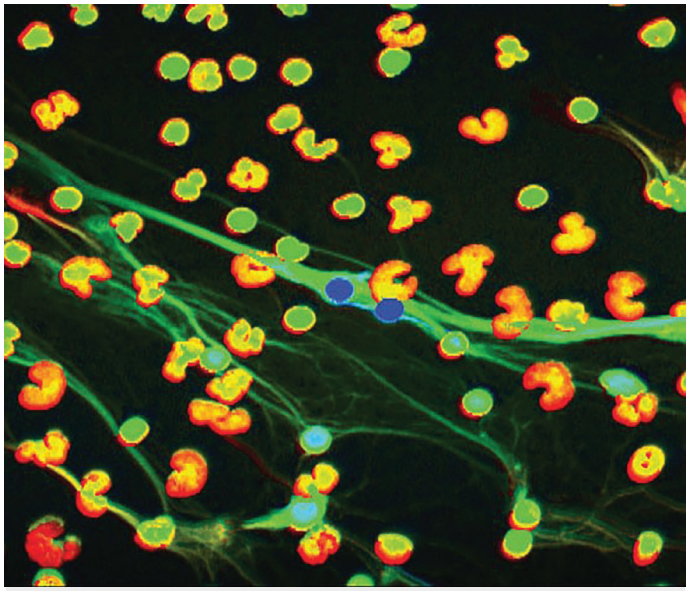
or further contribute to abnormal immune function and blood vessel disease," Dr. Kaplan says. "Ideally, we'd like to come up with one strategy that targets both, but also figure out a way to do that without making people more prone to infections. It's a fine balance that we need to achieve, and a lot of our work is focused on finding that balance."



This image from a high-powered microscope shows low-density granulocytes (LDGs), a variety of neutrophil that Dr. Kaplan's research has found to be a key player in autoimmune diseases.

One key to that is identifying the specific subsets of neutrophils that drive autoimmune disease. Scientists used to think that all neutrophils were the same, but Dr. Kaplan and others have shown that there are multiple varieties of neutrophils. Consequently, they aim to develop treatments that target only the disease-causing neutrophils while leaving the rest alone.

"Neutrophils are extremely difficult to study, and that, I think, has been a reason why they have been less understood and why the field of neutrophil biology has really lagged compared to what we know about other immune cells," she explains. "New technologies have improved our ability to study these cells, and it has been an exciting time to get to better understand them."

Access to those cutting-edge technologies is just one of the many ways the Intramural Research Program helps drive Dr. Kaplan's research forward. Another is the diverse expertise of her colleagues across the IRP, who have encouraged Dr. Kaplan to take her work in new and exciting directions. For example, she is working with scientists at the National Institute of Dental and Craniofacial Research (NIDCR) to study Sjogren's syndrome, an autoimmune condition that affects the production of tears and saliva, as well as the role of NETs in other inflammation-related diseases. Her lab is also partnering with researchers at the National Heart, Lung, and Blood Institute (NHLBI) to study blood vessel damage in inflammatory illnesses.

Like many scientists, Dr. Kaplan is also applying her unique expertise to the study of COVID-19, with the assistance of colleagues from all across the IRP. Specifically, her lab is examining how the novel coronavirus and the vaccine against it affect people with autoimmune conditions, as well as what role neutrophils might play in long-COVID, the collection of persistent symptoms experienced by many COVID-19 patients.

"The pandemic has taken us to places we didn't expect before," she says. "It has made immunology a particularly relevant field. We hope that what we learn will be helpful not only for COVID-19 but will also be complementary to our work in autoimmunity."

"This is a new era with new types of vaccines and new viruses," Dr. Kaplan adds, "and I'm sure more is yet to come."

Mariana Kaplan, MD, is a Senior Investigator and Chief of the Systemic Autoimmunity Branch at the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS).

The Food Allergy Safety, Treatment, Education, and Research Act of 2021

In April 2021, President Biden signed into law a new food allergy bill, the Food Allergy Safety, Treatment, Education, and Research (FASTER) Act of 2021. The new law makes sesame the ninth major food allergen and, as of January 1, 2023, it must be labeled as the other major food allergens.

A HISTORY OF FOOD ALLERGEN LABELING

In 2004, the Food Allergen Labeling and Consumer Protection Act (FALCPA), identified the following foods as major food allergens: milk, eggs, fish, shellfish, tree nuts, peanuts, wheat, and soybeans.

While more than 160 foods are known to cause food allergies in sensitive individuals, the eight major food allergens identified by FALCPA accounted for over 90 percent of documented food allergies and serious allergic reactions in the U.S. at the time the law was enacted, and represented the foods most likely to result in severe or life-threatening reactions.

FALCPA also began to require that foods, including dietary supplements, or ingredients that contain a "major food allergen" be specifically labeled with the name of the allergen source. This requirement does not apply to certain meat, poultry, and egg products regulated by the U.S. Department of Agriculture; alcoholic beverages subject to Alcohol and Tobacco Tax and Trade Bureau labeling regulations; raw agricultural commodities; drugs; cosmetics; and foods sold at retail or food service establishments that are not pre-packaged.

SESAME IDENTIFIED AS MAJOR FOOD ALLERGEN

Now that the FASTER Act has identified sesame as a major food allergen, sesame, or an ingredient that contains protein derived from it, will have to be clearly labeled as such beginning January 1, 2023. Food labels must identify the food source of all major food allergens used to make the product. This requirement is met if the common or usual name of an ingredient

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already identifies the food source of the major food allergen (in this case, sesame, or sesame paste). Otherwise, the major food allergen's food source must be declared at least once on the food label in one of two ways:

In parentheses following the name of the ingredient. Examples: "lecithin (soy)," "flour (wheat)," and "whey (milk)"

— OR —

Immediately after or next to the list of ingredients in a "contains" statement. Example: "Contains wheat, milk, and soy."

The FASTER Act also requires that within 18 months, the Secretary of Health and Human Services submit a report to Congress that describes ongoing Federal activities, and recommendations and strategies to expand, enhance, or improve them, related to:

• Surveillance and collection of data on the prevalence of food allergies and severity of allergic reactions for specific food or food ingredients, including the identification of any gaps in such activities,

• Development of effective food allergy diagnostics,

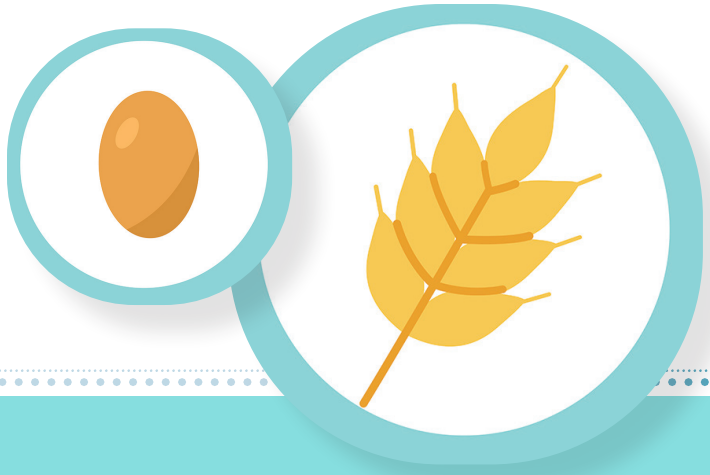
• Prevention of the onset of food allergies,

• Reduction of risks related to living with food allergies, and,

• Development of new therapeutics to prevent, treat, cure, and manage food allergies;

The report is also to include recommendations for the development and implementation of a regulatory process and scientific framework that would allow for the timely, transparent, and evidence-based modification of the definition of "major food allergen."

Courtesy of foodsafety.gov, a gateway to food safety information provided by the Food Safety and Inspection Service of the U.S. Department of Agriculture, the U.S. Food and Drug Administration, and the Centers for Disease Control and Prevention.



Calendar of Events

AaNA Meetings

AaNA Board of Directors Meeting
4:30-6pm
4th Wednesday each month

AaNA Labor Council Meeting
6-7pm
4th Wednesday each month

Providence Registered Nurses
4-6pm
3rd Thursday each month

RNs United of Central Peninsula Hospital
Visit www.aknurse.org for times

KTN – Ketchikan Registered Nurses (PHKMC)
Visit www.aknurse.org for times

Education and Events

2022 Trending Topics in Nursing Conference Alaska Nurses Association

Engaging topics, expert speakers
Earn 16+ contact hourse before renewal!

October 6-8, 2022
In Anchorage & Virtual!
www.aanaconference.org

2022 AaNA General Assembly
Help set AaNA's course for 2023!

October 8, 2022
In Anchorage & Virtual!

www.aknurse.org

Wheezin', Sneezin' & Itchin' in Alaska 2022
Asthma & Allergy Foundation of America, Alaska Chapter
September 9-10, 2022
Girdwood, AK
www.aafaalaska.com

All Alaska Pediatric Symposium
September 30-October 1, 2022
Hotel Captain Cook, Anchorage
www.a2p2.org

Alaska Board of Nursing Meeting
November 2-3, 2022
www.nursing.alaska.gov

TUESDAY TALKS: HIV Update
Presented by Lisa Rea
Tuesday, September 20 @ 6 PM
Register at www.aknurse.org
Contact hours available

TUESDAY TALKS: Eating Disorders
Alaska Eating Disorders Alliance
Tuesday, October 18 @ 6 PM
Register at www.aknurse.org
Contact hours available

TUESDAY TALKS: Topic TBD
Tuesday, November 15 @ 6 PM
Register at www.aknurse.org
Contact hours available

Want to list your event in The Alaska Nurse Calendar of Events and at www.aknurse.org? Send information to aknurse@aknurse.org

Visit www.aknurse.org for our current events, updates, and information on local nursing continuing education opportunities and conferences.