



Comments from the Chair Section on Osteopathic Pediatricians

Robert C. Lee, DO, MS, FAAP, FACOP, Chairperson

It seems like only yesterday that the Provisional Section on Osteopathic Pediatricians (PSOOP) was approved as a new section at the 2007 AAP Board of Directors meeting. With ~400 members, two of the main goals were: collaborate with American College of Osteopathic Pediatricians (ACOP) in developing educational programs that provide AOA CME credits and educate both DO and MD on osteopathic principles.

Today the Section on Osteopathic Pediatricians (SOOPe) is the fifth largest section with over 3900 members. Section members serve in various leadership roles within AAP. The section provides 9 hours of “dual credit CME” (AMA and AOA CME credits) at the section program with workshops on OMM/OMT that educate both DO and MD. The section sponsored successful joint CME conferences with ACOP in 2013, 2015, 2018 and 2021. The AAP and SOOPe sponsored a stand-alone specialty CME course in 2019 that offered 22 hours of “dual credit CME.”

The SOOPe Executive Committee has been busy working on implementing the current strategic priorities:

1. Expand OMM/OMT educational program at AAP meetings
2. Promote open AAP leadership to SOOPe membership
3. Diversify the SOOPe Executive Committee
4. Explore working partnerships on education or research with AOA

SOOPe is your professional home within the AAP. I wanted to take this opportunity to share with you a few highlights on what's happening in the section and profession.

- **2022 National Conference & Exhibition.** The National Conference & Exhibition (NCE) is scheduled for October 7-11, 2022 in Anaheim, CA. This will be the first in-person NCE since October 2019. Thanks to Kimberly Wolf, DO (Program Chair) for putting together another fantastic educational program. Section program is scheduled for Saturday and Sunday. One of the sessions (“Predators and Sextortion” by Free Hess, DO) was selected by AAP to livestream for attendees. This virtual session is available for AMA and AOA CME credit until January 31, 2023. There is also a workshop co-sponsored by our section titled “Happy Campers: What You Need To Know To Ensure Healthy Experience” with Erik Langenau, DO, MS (Past SOOPe Chair) and Samuel Rosenbloom, MD, MPH. Make sure to check out the sessions and claim up to 9 hours of AOA Category 1-A credits.

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Interactive Workshop

I4643: Happy Campers: What You Need To Know To Ensure a Healthy Experience

Monday, October 10, 2022 4:00 PM – 5:30 PM US PDT Location: Anaheim Convention Center, 207CD

CME: 1.50

Topic(s): Osteopathic Pediatricians; Community Pediatrics; Medicine-Pediatrics

Pediatricians staffing summer camps experience diverse clinical situations, often in low-resource settings. Faculty will share anecdotes, best practices, and advice for those considering serving as a camp doctor. Participants also can provide input.

Faculty(s)



Erik Langenau, DO, MS

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Samuel Trent Rosenbloom, MD, MPH, FAAP

- **CME Requirement.** For the 2022-24 certification cycle, AOBP certified pediatricians participating in OCC will only need 15 hours of AOA Category 1-A credits. Many states still require AOA credits for medical licensure. The Federation of State Medical Boards offers a table summarizing [CME requirements by State](#). I encourage everyone to attend the section program at the NCE to get “dual credit CME.”
- **Section Election.** I would like to welcome the newly elected member and re-elected member to the Executive Committee. Congratulations to Ashley Shamansky, DO, MPH and Alpa Shah, DO (re-elected). I would like to thank Lee Ann Conard, RPh, DO, MPH again for serving as the nomination chair. I would also like to welcome Sumedha Medicheria who will be serving as the SOPT Liaison to the section.
- **Section Subcommittees.** Jennifer Belsky, DO, MS (Chair of the Research Subcommittee) recently published her study on the [safety and feasibility of OMT in pediatric oncology outpatient clinics](#). The Research Subcommittee serves as hub for data, advice, and grant opportunities in osteopathic research. Kimberly Wolf, DO (Chair of the Education and MOC Subcommittee) continues to lead efforts to develop/organize the section program. Education and MOC Subcommittee is developing virtual CME program with the AAP Department of Education. Stay tuned for updates. Please contact Jackie Burke (jburke@aap.org) if you're interested in joining the subcommittees.
- **The Single Match.** The number of Pediatrics (Categorical) positions continue to grow since 2005. There are a total of 2,942 positions in the NRMP. 56.5% of positions were filled by U.S. MD seniors, 19.7% were filled by DO seniors, and 19.5% were filled by IMGs. We welcome the new 580 DO pediatric residents to the AAP and SOOPE.
- **Reciprocal Certification.** DO pediatricians certified by the American Board of Pediatrics prior to 2020 can obtain [reciprocal certification](#) from American Osteopathic Board of Pediatrics (AOBP). This opportunity will not require DO pediatricians to take the AOBP initial certification exam or pay initial certification fee.

As I step down from Chair at the upcoming NCE in Anaheim, I am confident that the section will thrive under the leadership of your new Chair, Gregg Lund, DO, MS.

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I wish to thank all the EC members, subcommittee chairs, and members for volunteering their time for the section. Also, thank you again to Todd Brubaker, DO (Newsletter Editor) for organizing content and reaching out to authors who contribute to this newsletter. Special thanks to Jackie Burke (Section Manager) for keeping SOOPe running for the past 15 years.

Respectfully,



Robert C. Lee, DO, MS, FAAP, FACOP

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A Letter from The Editor:

September begins the ‘busy’ season for many of us here in Pediatrics. The time of sports physicals has (mostly) come to a close and the respiratory season...well who am I kidding, the respiratory season has already hit us full force with Rhino-Enterovirus, and then fallen off the map here in the Rocky Mountain West.

September also is the beginning of the last third of the year. This year has been...interesting to say the least. We now have POLIO in NY State; Monkeypox, and of course, the ever-present COVID-19. Many have asked me, “When does it end?” I answer them: “never.”

That may seem bleak, or heartless, or otherwise a way to move on with my day while I am doing one of the many ten-thousand things a dad of three does while being a Pediatric Hospitalist. Yet, it is not. It is instead a frank realization that THIS is what we signed up for; that the ebb and flow of the calendar year also is the ebb and flow of our ‘illness’ seasons. From the Summer ‘weirdness’ to the Autumn-Winter respiratory season, those of us who have been in this game for a while, know this ebb and flow. We may embrace it, or hate it, or like me a combination of both, but we know what’s coming. By knowing what’s coming, we can know what to expect, which helps us, and our families, manage expectations for our time throughout this coming end of the year.

A few episodes back, we discussed the vitriol being piled against “us” as DO’s. Heck, just recently, my local newspaper called out the “Osteopath” who is running against the “Medical Doctor” for the county coroner position. This is in a paper of a city of 800,000 plus! I, like many reading this, mentally drafted a quick email to THAT editor, yet I stopped. Why? For starters, some of that vitriol against DO’s specifically, has died. Did you know that the current POTUS Physician is...a DO? No, you didn’t know that. Well now you do. Why aren’t we hearing about it, seeing the Yahoo and NYT Op-Ed articles about how DO’s are not ‘real physicians’ and HOW is a DO being the POTUS’ Physician? Is it Politics? Weariness? Or simply... people do not trust their physicians as much as they used to, and thus, the letters behind the name don’t matter anymore? I am quite leery it’s the latter – and that’s where this letter ends. As DO’s, we have opened the most medical schools in the last 5-10 years here in the US. We carry that ever-growing torch to not only show the world that we are as good as our MD cousins, but in my opinion, better than our MD cousins due to our training, our mantra of “Mind, Body, Spirit” and our ability to do so many extra things we trained throughout medical school to do. Whether it’s OTM, a more human touch, or like me, an older face entering the field after being in another profession, bringing the general public’s trust back to us as physicians will be paramount in the coming years and decades. So, let us end the year on a high note; take the extra time to talk to that parent for one more minute, or give out one more hug, or pat our colleagues on their backs. After all – it’s all for them and through them & Him, that we can continue to do our passion well.

Todd Brubaker, DO FAAP
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Osteopathic Medical Students Join OMT Clinical Research Team to Improve the Lives of Children with Cancer

Eyovel Eyassu OMSIII and Lauren Hoffmann, OMSIII

As pediatric chemotherapeutic treatment continues to become more efficacious and long-term survivorship increases, reducing acute and chronic long-term toxicities of chemotherapy has increasing importance. Dr. Belsky and her clinical research team have dedicated their research scope to improving these toxicities through pharmacologic and non-pharmacologic interventions, such as osteopathic manipulative treatment (OMT). Her research encompasses the core values of the osteopathic profession by seeking to alleviate unwanted chemotherapy side effects in children with cancer.

Vincristine, the most commonly used chemotherapy agent in children and the drug of focus for our research, is notorious for causing dose-limiting side effects including constipation and peripheral neuropathy. Recent literature has found that

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many pediatric oncology patients during their treatment experience medication burnout. One twelve-year-old patient with leukemia stated, "it's just I wish I wasn't on the pills. I wish there was a different way because I hate taking pills" (Belsky et al, 2020). Dose-limiting vincristine and overall quality of life may be improved in the treatment of pediatric and adolescent young adult patients by implementing a focused osteopathic intervention with an emphasis on improving lymphatic circulation, constipation, neuropathy, and gait motor dysfunction.

With the partnership of Marian University College of Osteopathic Medicine (MUCOM) faculty and Dr. Jennifer Belsky at Riley Hospital for Children/Indiana University School of Medicine, an OMT research rotation was created to test hypotheses and ask clinical research questions regarding OMT and pediatric oncology patients. Six DO students are trained on the research protocol OMT intervention. Students pair up and practice the OMT techniques under the guidance of the MUCOM faculty. Once the faculty have deemed the students to have mastered the techniques via a rigorous checklist, they are eligible to conduct OMT during their rotation. To maintain consistency and quality of the techniques performed, a rubric with defined criteria is utilized to guide the learners and the treatment clearance. Each student spends a month during their third year rotating with Dr. Belsky to treat patients enrolled in the study.

Students are given the opportunity to round with the inpatient oncology service to learn more about new oncologic and critically ill patients. Although the study's target population is patients in the outpatient setting, students are encouraged to practice OMT in the inpatient service to treat typical patient complaints such as headaches, constipation, and musculoskeletal issues. Enrolled patients first meet Dr. Belsky, then the students perform standardized OMT on the patients. The patient's progress is tracked using the RedCap secure database to quantitatively capture pain and constipation symptoms. At the end of the OMT intervention, a qualitative mixed methods survey is conducted to better understand the perspectives of patients and caregivers on OMT. An additional aim of the study, in parallel to the OMT-focused aim, is to quantify axonal nerve damage by using nerve conduction studies throughout the child's chemotherapy. Neuropathic biomarkers of interest that may be related to the onset or degree of severity of neuropathy are also being collected.

To continue moving the field of osteopathic medicine forward, Dr. Belsky and her research team feel it is of utmost importance to complete scientifically rigorous OMT studies in small patient populations. Involving osteopathic medical students is an integral part of study success and helps shape their education with early research exposures. In an attempt to expand the corpus of literature on OMT, she implores all osteopathic physicians to contribute.

We would especially would like to thank Dr. Jennifer Belsky for serving as our mentor and inspiration. Additionally, we would like to express our gratitude to Drs. David Eland, Jeremy Jones, and Luke Nelligan, who have served as excellent teachers and mentors for us.

Citation: Belsky, J. A., Stanek, J., Skeens, M. A., Gerhardt, C. A., & Rose, M. J. (2020). Supportive care and Osteopathic Medicine in Pediatric Oncology: Perspectives of current oncology clinicians, caregivers, and patients. *Supportive Care in Cancer*, 29(2), 1121–1128. <https://doi.org/10.1007/s00520-020-05612-9>

How to Join... It's easy!

There are **NO DUES** to join the SOOPe.

Send an e-mail to Jackie Burke at jburke@aap.org to request to be added to the Section.

SOOPe Welcomes Ashely Shamansky to the Executive Committee!



Ashely Shamansky, DO, MPH, FACOP, FAAP is the Assistant Chair of Pediatric Undergraduate Medical Education at the Geisinger Commonwealth School of Medicine (GCSOM). She works as a general pediatrician at Geisinger Health System, Danville, PA. Dr. Shamansky is an Assistant Professor of Pediatrics at GCSOM, Geisinger Pediatric Residency Quality Improvement Director, and core faculty for the Geisinger Pediatric Residency.

An experienced clinician, mentor, and educator, Dr. Shamansky has expertise in pediatric quality improvement and curriculum development. She has served on numerous leadership committees, including the Geisinger Pediatrics Clinical Practice Guideline Committee, GCSOM Medical Curriculum Committee, and GCSOM Assessment and Evaluation Committee.

As a leader, Dr. Shamansky has been integral in the development of successful curricular content in the clerkship years at GCSOM. She has created student and faculty development materials for the M3 pediatric clerkship, Transition to Clerkship Course, M3 Capstone Course, Transition to Residency Course, Objective Structured Clinical Examination Course, and a Health Systems Science Selective. Furthermore, she has lectured at local conferences and developed online podcasts and articulate modules for medical learners.

Dr. Shamansky is a graduate of the Philadelphia College of Osteopathic Medicine in Philadelphia, PA. She completed her Masters of Public Health at The Ohio State University in Columbus, OH. She completed pediatric residency training at the combined Doctor's Hospital/Nationwide Children's Hospital Osteopathic Residency and a fellowship in Academic Medicine at Nationwide Children's Hospital in Columbus, OH.

Dermatologic Findings in Skin of Color for Life-Threatening Pediatric Diseases

Saba Saleem BS, Kristina Burger BS

Introduction

Dermatologic treatment disparities lead to inequitable health outcomes in vulnerable patient populations (3). Race, age, sex, education level, and health insurance status are all known contributing factors that magnify these disparities (2). The U.S. Census Bureau projects that by 2050 about half of all dermatologic patients who require treatment will have skin of color. Skin conditions can present differently in patients with a darker complexion, but primary care physicians and dermatologists are not being properly trained to recognize this (1). This is because the current dermatologic literature does not describe pathology presentations in people of color. Furthermore, one study found that only 2% of teaching provided at meetings hosted by the American Academy of Dermatology addressed the issue (2). As a result, medical students have reduced accuracy in diagnosing skin conditions if shown an image of the disease on darker skin (6). In this discussion, we will focus on the life-threatening complications of Kawasaki Disease and congenital measles and highlight the potential for their associated skin findings to go unrecognized in pediatric patients of color. The implication of this suggests that minority patients may receive delayed or less aggressive therapy compared to their white counterparts (3). Late or misdiagnosis can lead to a higher morbidity and mortality rate that disproportionately affects this population, which largely comprises of Hispanic and African American patients (2). Consequently, patients and their families may develop mistrust toward physicians and the healthcare system, further worsening their care (4).

Kawasaki Disease

Kawasaki Disease is an acute, systemic vasculitis that predominantly affects infants and young children between the ages of 6 months to 2 years (7, 10). It is the most common cause of acquired heart disease in American children, with 76% of patients being younger than age five (8, 12). The median age of onset is about 2 years old, thus presentation in the neonatal period is considered extremely rare (8, 10). The highest disease incidence is in patients of Japanese descent,

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followed by black and non-Hispanic white individuals, respectively (8, 9). The diagnostic criteria for Kawasaki Disease include a high fever (greater than 102° F) for five or more days and the presence of at least 4 of the following: bilateral non-purulent conjunctivitis, oral mucosa abnormalities, polymorphous skin rash, peripheral extremity changes, and cervical lymphadenopathy (5). During the acute phase (1-2 weeks of onset), the most characteristic symptoms are a “strawberry red” tongue, cracked lips, and a maculopapular rash. Watchful waiting may be necessary to confirm the diagnosis in patients who do not display all these clinical features at once (8). However, if treatment is considerably delayed or not provided, it can lead to Coronary Artery Aneurysm (CAA) formation (5). Lack of treatment can also cause sudden death in the subacute phase (2-8 weeks after onset) due to an increased risk of thrombosis. During this period, the patient may appear to be doing better because of the disappearance of fever and other physical symptoms. However, being left untreated results in an elevated platelet count, which creates a hypercoagulable state. Therefore, all children diagnosed with Kawasaki Disease require intravenous immunoglobulin (IVIG) in combination with high-dose aspirin within the first ten days of illness. The most efficacious period is within seven days from the onset of fever. Providing IVIG and aspirin decreases the risk of CAA development to less than 5% and inhibits platelet activation to prevent thrombus formation (8). Unfortunately, because COVID-19 is currently the highest differential diagnosis for febrile illness, this can lead to a mishandled diagnosis and management of Kawasaki Disease (11). This is especially concerning because physical exam clues, such as maculopapular skin rash and palmar erythema, can go unrecognized in patients with darker complexions (see Figures 1 and 2 for comparison). However, it is important to note that even with prompt diagnosis and treatment initiation, the research suggests that there are also racial and ethnic discrepancies in treatment response. One study found that despite no racial difference in time to diagnose and provide treatment, black children with Kawasaki Disease still had worse outcomes than white children. Black patients had more severe inflammation and worse response to IVIG, requiring adjuvant medications such as Etanercept, and longer hospitalizations. Providing the standard treatment of IVIG and aspirin within the recommended window did not reduce the risk of coronary artery abnormalities in black children to the same extent that it did in other demographics (9). This highlights the fact that recognition of physical exam findings of Kawasaki Disease in darker skin tones is only one part of the solution to improving treatment outcomes. There must also be an emphasis on catering therapy to the racial and ethnic background of the patient once the diagnosis is made.



Figure 1: Kawasaki Disease symptoms (conjunctivitis, strawberry tongue, rash, palmar erythema) in a white child (13, 14).



Figure 2: Kawasaki Disease symptoms in a Brazilian child with a medium-to-dark complexion (13, 15).

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Congenital Measles

Measles (rubeola) is a highly contagious and potentially fatal disease caused by viral respiratory infection. It is a vaccine-preventable disease and was almost completely eradicated in the United States at one point (19). However, due to declining vaccination rates, there has been a worldwide resurgence between 2017-2019. Fortunately, between 2020-2021, the case numbers dropped once more, which was attributed to social distancing with the COVID-19 pandemic (20). Despite this positive news, there is a growing concern that outbreaks will occur once again as restrictions ease and the number of unvaccinated children increases (21). Measles symptoms begin 7-14 days after exposure and include high fever (above 101° F), maculopapular rash, and at least one of the three C's: cough, coryza, conjunctivitis (19, 20). But vaccinated individuals can have mild-to-no symptoms. Thus, diagnosis depends on detection of specific IgM antibodies in the serum or fluid or viral RNA in bodily fluids (20). Acute management for measles includes vitamin A supplementation, which is a potent immune system enhancer that reduces the risk of blindness and death by 87% for children under two years (22, 23). It is also imperative to monitor and treat secondary bacterial infections with antibiotics. However, since there is no specific antiviral therapy, disease control largely depends on vaccine-driven prevention (21). Recognizing the measles rash and other characteristic symptoms is essential for early diagnosis and treatment (23). The rash begins on the face and spreads to the neck and upper trunk, followed by the lower trunk and extremities. The lesions on the face may become confluent and the palms and soles are rarely involved. After 3-4 days, the rash changes to a purple-brown color and begins to fade with desquamation (24).

The measles rash can be misdiagnosed in brown skin tones because it appears hyperpigmented and can resemble petechiae (See Figure 3). In black skin, it may be completely missed as it can be difficult to identify, except for its rough and textured surface (see Figure 4). In contrast, the rash is more distinctly visible on lighter skin and appears erythematous (25). The danger of a late diagnosis in the neonatal period is an increased risk of subacute sclerosing panencephalitis (SSPE), a degenerative neurological disease. Measles infection before 1 year of age can cause SSPE due to the immaturity of the brain (26). Thus, measles is often more deadly in infants and young children (28). Other complications include otitis media, laryngotracheobronchitis, and pneumonia as the virus destroys epithelium, which favors bacterial superinfections (27). Pregnant women and infants under 1 year are among the highest-risk groups for these life-threatening complications because of their inability to receive the MMR vaccine (19). When an infected pregnant woman transmits the virus to her fetus, this is known as congenital measles. It is further defined as the presence of the measles rash at birth or within the first 10 days of life. Mothers who become infected with measles late in pregnancy can also transmit the virus postpartum. Newborns with measles display a more severe and rapidly progressive form of SSPE (28). Regarding MMR vaccination prior to pregnancy, a study on maternal vaccine acceptance found that Black and Hispanic women are less confident in vaccine safety and efficacy and less likely to perceive the risk of acquiring vaccine-preventable diseases (29). These results suggest that congenital measles may consequently be more prevalent in minority populations, however further research is required. In summary, to correctly identify the measles rash when it presents on skin of color, healthcare providers should have a high index of suspicion based on the patient history and vaccination status. Prevention is the most critical component of treatment, and it begins with communication. Providing families with evidence-based information regarding vaccines will help them make informed decisions and clear misconceptions (19). Lastly, implementing a nationwide “catch-up vaccination campaign” would help alert parents to the urgency of resuming their child’s immunization schedule as it was disrupted by the pandemic. With these strategies in place, we can better address treatment disparities and improve health outcomes.



Figure 3: Comparison of measles rash in a white and Filipino infant (16, 17).

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Figure 4: Nigerian child with measles rash covered by calamine lotion (18).

Conclusion

Kawasaki Disease and congenital measles can be fatal in pediatric populations if left untreated. Both diseases share a characteristic maculopapular rash, however this skin finding, along with other symptoms, varies among different racial and ethnic groups. Healthcare providers should be aware of potential treatment resistance to Kawasaki Disease in black children and the risk of congenital measles in black and Hispanic newborns with unvaccinated mothers. Physicians can use this information to help guide their diagnosis and management, which can be useful in vague or unclear clinical presentations. The clinical course of these diseases, particularly in neonates, requires swift recognition and treatment within a certain timeframe, otherwise, there can be deadly consequences. One way to address this issue is by incorporating health education, open dialogue, and family engagement in discussions about preventing the spread of highly infectious diseases. Another solution is to update dermatologic literature to include more images of skin conditions in patients with a darker complexion. This is especially necessary for diseases that have a higher incidence in brown or black skin. For instance, African American children with atopic dermatitis are more likely to develop eczema herpeticum, a medical emergency, than white children. The research shows that due to

decreased healthcare utilization in black communities, the disease presentation becomes more advanced than what may be shown in textbooks. Increased disease severity also occurs because darker skin tends to mask the associated erythema, further delaying care (30). An organization that aims to promote awareness of this problem is The Skin of Color Society, which educates providers and the public on dermatologic diseases in skin of color to help achieve health equity. Better health outcomes will then translate into a stronger relationship of trust between the patient and their physician.

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The impact of structural health inequities on the AAP's 2022 Policy: Breastfeeding and the Use of Human Milk

Saba Saleem BS, Kristina Burger BS

Introduction

Over the past decade, extensive research has highlighted the health benefits of breastfeeding in both infants and their mothers. In premature infants, it decreases the incidence of chronic lung disease, necrotizing enterocolitis (NEC), sepsis, and the length of the NICU stay [2]. In term babies, breastfeeding is associated with a lower incidence of diarrhea, gastroenteritis, asthma, allergies, ear infections, respiratory illnesses, thrush, and sudden infant death syndrome [2]. As these infants slowly grow into adulthood, the positive implications are a higher IQ, better eyesight, and a decreased incidence of leukemia, obesity, and Type 1 and 2 Diabetes [2]. Similarly, breastfeeding mothers experience immediate advantages, including increased oxytocin, decreased postpartum depression, and improved weight loss. As they reach menopause, breastfeeding reduces the incidence of osteoporosis, heart disease, T2DM, and breast, uterine, and ovarian cancers [2,3]. Thus, breastfeeding improves short-term health outcomes and provides long-term protection against chronic diseases [3]. This translates into cost-savings and a lower fiscal burden on the U.S. healthcare system [4,5]. However, in this discussion, we will address how past and current U.S. policies regarding parental leave are hindering this economic progress. We will also investigate how structural determinants of health block adherence to guidelines set by the *American Academy of Pediatrics* (AAP) regarding breastfeeding and the use of human milk [6].

2012 AAP Guidelines

In March 2012, the AAP released a policy statement that strongly encouraged new mothers to exclusively breastfeed for six months with continued breastfeeding for at least one year to experience the widespread health benefits [2]. Less than a year prior to this recommendation, the AAP also published a study that contributed to the growing evidence that new mothers who delay their time to return to work have a longer duration of breastfeeding [1]. Considering these findings, it was reasonable to expect a structural change in parental leave policies that complemented the 2012 guidelines. Unfortunately, this did not occur. To this day, the United States is one of six countries worldwide and the only wealthy nation that does not have a formalized federal policy to guarantee paid parental leave to workers [7,8]. The Family and Medical Leave Act (FMLA), established in 1993, provides up to 12 weeks of unpaid leave for new parents. However, unpaid leave is not a feasible option for most people, and 44% of U.S. workers do not qualify for benefits through FMLA [8]. This is because FMLA eligibility requirements are to work for a company with at least 50 employees within a 75-mile radius, to be employed for at least one year, and to complete 1,250 hours within the last 12 months [14]. FMLA ineligibility disproportionately affects families of color [8]. As of 2022, only 11 individual U.S. states provide some form of paid family and medical leave, but the length and qualification requirements drastically vary between states [9]. This failure to enact a uniform policy protecting parental leave is reflected in mothers struggling to meet the 2012 AAP guidelines and in staggering U.S. healthcare spending costs.

The Center for Disease Control (CDC) found that for infants born in 2011, only 27% were breastfeeding at 12 months. After the AAP guidelines were released in 2012, it was found that for infants born in 2013, this percentage rose to 30.7% and of that, only 22.3% of moms were exclusively breastfeeding until six months [10,11]. In response to this stagnation, the Healthy People 2020 objectives aimed to increase worksite lactation support programs and live births in facilities that provide care for lactating mothers and their babies. It also sought to reduce the proportion of breastfed newborns who receive formula supplementation within the first 2 days of life [10,11]. However, despite these initiatives and increased access to lactation specialists, it was found that for infants born in 2019, only 35.9% were breastfeeding at one year with 24.9% of moms exclusively breastfeeding until six months [12]. The reality is that more than half of new mothers stop exclusively breastfeeding at three months, which coincides with the typical length of maternity leave in the United States [8,12]. Of the American women who work during pregnancy, 52% of women work until the time of delivery and 59% of them are

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back to work within three months of giving birth [14,15]. This is because American women, compared to their non-U.S. counterparts with protected maternity leave, are more apprehensive about taking advantage of these benefits due to their perceived impact on future employment, career advancement, and gender equity [14]. The financial implications of this are profound. As of 2020, the United States spends \$4.1 trillion dollars each year on healthcare with 31% of this reflected in hospital care services [13]. Paid parental leave is a straightforward solution to this high fiscal spending. It promotes better health outcomes and behaviors and is associated with a 47% reduced risk of infant re-hospitalization and a 51% reduced risk of re-hospitalizing mothers after delivery [8,16]. This would help mitigate in-hospital care spending.

2022 AAP Guidelines

A decade after the 2012 guidelines, the AAP issued a revised policy statement in June 2022 regarding breastfeeding and the use of human milk. The new policy aligns with the World Health Organization (WHO) recommendations and extends the recommended breastfeeding duration to at least two years [17]. This extension helps ensure that mothers who choose to breastfeed beyond one year do not feel ashamed, judged, or alienated [18]. The history of negative attitudes toward breastfeeding can be traced back to infant formula companies using marketing techniques described as “unacceptably pervasive, misleading, and aggressive” by the Director-General of WHO [21]. Nevertheless, cultural differences and sociodemographic factors (occupation, education level, age, marital status) play considerable roles in breastfeeding initiation rates and health disparities. It was found that African American and American Indian populations are less likely to initiate breastfeeding compared to non-Hispanic white and Hispanic people [17]. Yet, in contrast, the U.S. Bureau of Labor Statistics recorded higher access to paid leave for African American parents (41%) compared to Hispanic parents (23%) [8]. This may seemingly contradict the previous assumption that access to paid parental leave will improve breastfeeding rates. However, it is important to note that parental leave, while significant in dictating maternal and child health outcomes, is not the only driving factor [15]. It has been reported that African American mothers experience structural racism and barriers to care, seen through a lack of social support and inadequate counseling by healthcare providers, at higher levels than any other group. This is associated with earlier cessation of breastfeeding [22]. Similarly, low-income, young (age less than 20 years), or low-education (high school or less) mothers also have lower rates of breastfeeding [17, 20]. The downstream consequences are health inequities across racial, ethnic, and socioeconomic classes.

The recommendation to extend the breastfeeding duration to two years has encountered criticism from some mothers. Mothers already feel pressure to pump more frequently due to the ongoing formula shortage crisis. However, current workplace policies do not give moms adequate time to accomplish this, nor do they support a breastfeeding duration past one year [19]. The Fair Labor Standards Act (FLSA) is a federal law that requires employers to provide “reasonable break time” for nursing employees to express their breast milk, but this provision is only for one year after the child’s birth [23]. Furthermore, the FLSA does not require these breaks to be compensated, which forces working moms to utilize their allotted break time to provide milk [23]. On average, a working mom should be pumping for 15 minutes every 3-4 hours [24]. Understandably, there is a palpable frustration among these mothers, who felt inadequate for being unable to reach 2012 guidelines. Under these circumstances, the new guidelines are simply unattainable without policy changes.

Discussion

During the height of the COVID-19 pandemic, one study examined how “lactation in quarantine” magnified the pre-existing inequities regarding breastfeeding. The author summarized the key issues by stating that “in the United States, most people feed their children human milk against all odds in the absence of universal basic income, paid parental leave for at least 6 months, paid lactation leaves and breaks, affordable housing, universal health care, equal access to high-quality, non-discriminatory, and culturally appropriate healthcare (including lactation support), sliding fee childcare programs, and more” [25]. Our suggested action plan to address these issues incorporates policy, hospital, and individual provider changes.

The primary item for change on a policy level is for lawmakers to update the Family and Medical Leave Act (FMLA) to expand eligibility and provide paid leave for women who undergo childbirth. It has been 29 years since this legislation was implemented, but it falls severely short of guaranteeing basic protection to new mothers and families. The current eligibility criteria based on work site, number of employees, and duration of employment unfairly exclude vulnerable populations, particularly women who are part-time workers or receiving welfare assistance [14].

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The modifications on a hospital level include promoting equitable postpartum breastfeeding support to alleviate racial disparities. An example is the Baby-Friendly Hospital Initiative developed by The World Health Organization (WHO) and United Nations Children's Fund (UNICEF). This includes interventions that provide a prenatal infant feeding plan, postpartum educational video with teach-back, cue-based feeding log, breastfeeding education guidelines, and team engagement [26]. Additionally, facilitating videoconferencing between mothers and the hospitalized premature infant helps improve their pumping experience and connect the whole family to the infant [27].

The developments on a personal and healthcare provider level are to increase awareness of implicit and systemic bias to help improve the structural and social landscape surrounding lactation. The research supports that having pediatricians communicate with families about the benefits of breastfeeding increases the initiation, duration, and exclusivity. Furthermore, peer-supported interventions by Women, Infant, and Children (WIC) programs also improve breastfeeding and reduce disparities [17, 20].

Conclusion

The period from conception through the first few years of life is critical for family development. However, the only federal legislative guarantee of job protection during this time is 12 weeks of unpaid leave for about half of the U.S. workforce [15]. The lack of uniform laws to protect growing families further solidifies health inequities. The children most at risk of not being breastfed, being born preterm or low birth weight, or dying in the first years of life, are those whose parents cannot take time off work [15]. We are paying a financially heavy price for this social injustice done to society's most vulnerable members. The United States is the highest-spending country on healthcare worldwide. Yet, it has the lowest life expectancy and the highest rate of chronic disease, suicide, hospitalizations from preventable causes, and avoidable deaths compared to 10 other high-income nations [28]. However, all hope is not lost. When other countries, such as Norway, converted from 12 weeks of unpaid parental leave to 18 weeks of paid job-protected leave, the benefits observed in child development lasted for decades [15]. Therefore, while the 2022 AAP guidelines are a step in the right direction, the most pressing need is for policy changes that provide paid parental leave and paid lactation breaks. By shifting our focus to address these structural issues, we will alleviate disparities and provide more reasonable expectations for mothers in achieving the new guidelines.

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Comparison of Occupational Therapy and Osteopathic Manipulative Treatment in Neonatal Intensive Care Units

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Introduction

Premature babies are those born before 37 weeks' gestation and can be further characterized as late preterm (34-37 weeks), moderate preterm (32-34 weeks), very preterm (28-32 weeks), and extremely preterm (less than 28 weeks) [4]. Due to their smaller size and low birthweight (less than 2,500 grams or 5 lbs. 8 oz), these babies experience complications such as difficulty feeding, hypothermia, anemia, hypoglycemia, apnea, and respiratory distress from surfactant deficiency, infection, necrotizing enterocolitis, patent ductus arteriosus, retinopathy, and increased risk of intraventricular hemorrhage [1,2]. For this discussion, we will focus on the use of Occupational Therapy (OT) and Osteopathic Manipulative Treatment (OMT) for improving breast or bottle feeding, promoting weight gain, reducing reflux and jaundice, regulating body temperature, achieving developmental milestones, correcting plagiocephaly, and reducing the length of stay of premature babies in the NICU. Many premature infants born before 35 weeks' gestation have oral feeding difficulties and cannot latch properly, which makes it harder for them to gain weight [2]. A low birth weight contributes to 60 to 80% of all neonatal deaths due to increased susceptibility to infection, hypothermia, and hypoxemia [3, 21]. According to guidelines set by the *American Academy of Pediatrics*, the three major physiologic criteria for hospital discharge of preterm infants are autonomous oral feeding that results in proper weight gain, maintenance of appropriate body temperature in a home environment, and mature respiratory control for sufficient oxygenation [5]. Thus, these clinical indicators allow us to assess the effectiveness OT and OMT in achieving these criteria and supporting the development of preterm infants.

Occupational Therapy

Occupational therapists who work in the NICU have the unique opportunity to provide habilitation to a very fragile patient population. The objectives of occupational therapy are to make proactive changes to the environment to promote healthy development and optimal growth, help organize behaviors, and foster trust and attachment with the caregiver [60, 61]. To accomplish these goals, *The American Journal of Occupational Therapy* states that "knowledge of neonatal neurodevelopment, neurobehavioral organization, the musculoskeletal system, and advanced age-appropriate feeding practices and techniques is essential" [6].

OT interventions enhance growth by helping premature infants acquire developmental skills, such as feeding at the breast or bottle. Each intervention also supports calm and organized behavior for improved sleep, which leads to weight gain in these patients. Feeding interventions emphasize positive experiences to increase dietary intake and enhance the infant's suck, swallow, and breathing coordination. The goal is for them to receive full oral feeds via breast or bottle and be discharged home [22]. To monitor this progress, the day-to-day assessment examines the infant's muscle tone, reflexes, behavioral responses, and positive feeding experiences. Parent education is provided during all these activities as well. Techniques commonly used by occupational therapists include infant touch and massage, myofascial release, and assessment of feeding skills with a focus on caregiver education [23]. Occupational therapists also use neurodevelopmental treatment to enhance proper positioning if the baby has thumb adduction due to increased tone or club feet. For these issues, soft splints are recommended during the NICU stay and an orthopedics referral is given at discharge. Lastly, OT encourages the parents of high-risk infants to engage in kangaroo care. This technique promotes breastfeeding, pain management, physiological regulation, parental self-efficacy, and bonding [24].

Neonatal Massage

Neonatal massage is used by occupational therapists to enhance the parasympathetic nervous system, which improves circulation and digestion. By increasing vagal activity and gastric motility, infant massage helps promote weight gain [26]. It also stimulates lymphatic circulation to boost immune function, regulates sleep-wake cycles to increase alertness, provides neuroprotection, and decreases stress hormones to improve parent-infant attachment. Educating caregivers about performing infant massage when the baby is stable (weight above 1500 grams) improves their confidence and encourages more direct participation in the neonate's care. Overall, this technique helps decrease the length of stay in the NICU [23, 25]. To perform a neonatal massage, different motions can be utilized. The most common motion is gliding, which relaxes and stretches the muscles. It is performed by keeping the fingers together and gliding the hand down along the span of the body or limb, while the palmar side maintains contact. Another motion is kneading, which is using

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the finger pads to apply firm strokes to the area. In this, both hands perform an action that is similar to kneading dough [25, 27]. Contraindications to neonatal massage include infection, bleeding, skin disorders, autonomic medical instability, and fractured bones [26]. Sick preterm infants, such as those suffering from necrotizing enterocolitis, often have poor tolerance to external stimulation and require minimal handling care. It is imperative to avoid fluctuations in blood pressure and unsynchronized breathing with a ventilator that can be induced by handling [26].

Figure 1: Neonatal massage depicting the gliding motion.
Source: Emanate Health Queen of the Valley Hospital, NICU
Myofascial Release



An additional practice that is beneficial for babies in the NICU is myofascial release (MFR). Myofascial release can be used by occupational therapists with additional, specialized training. This technique utilizes fascia, the connective tissue that forms a continuous three-dimensional web throughout the entire body, to enhance function and support. Fascia envelops every muscle, nerve, blood vessel, and organ [28]. Premature infants tend to overuse muscles due to poor positioning, which can lead to the development of tight fascia that further worsens their posture. MFR aims to increase tone and range of motion and decrease asymmetry and tenderness due to irritability. To perform this hands-on technique, the restriction is identified, and gentle pressure is slowly applied in that direction to lengthen the fascia. The stretch is held until a release is felt, and then there is a reassessment of the tissue's mobility. The goal of stretching fascia is to break down abnormal collagenous crosslinks and allow relaxation by reducing molecular colloidal friction drag. Contraindications to MFR are hypotonia, systemic or local infection, open wounds, or if the neonate is febrile. [15, 16, 29].



Figure 2a: Assessment of shoulder to examine tone and identify the restrictive barrier, shown in superior direction.

Figure 2b: Treatment of shoulder, using indirect MFR to apply a gentle pressure inferiorly into the position of ease.
Source: Emanate Health Queen of the Valley Hospital, NICU
Neurodevelopmental Treatment

Neurodevelopmental treatment is used to reduce abnormal postures and movement patterns in premature infants. The goal is to encourage them to normalize their posture and improve sensory stimulation [32, 33]. Treatment is based on the concept that muscle tone is changeable, and it dictates posture and coordination [31]. A common issue for neonates is that they demonstrate thumb adduction and maintain this position due to increased tone. Occupational therapists will passively re-position the thumb and improve overall movement. Soft thumb splints can be used when the baby is sleeping to support the desired position [31]. Another problem that can occur for premature infants is club feet. In

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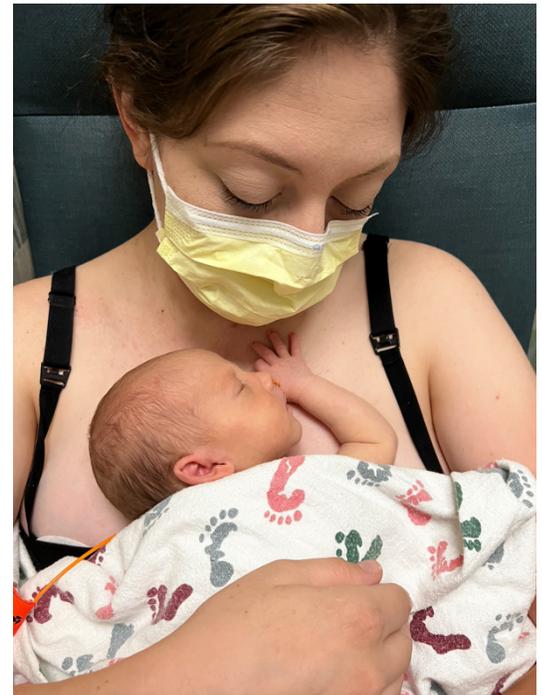
treating this, the first step is to assess ankle movement to see if it can be brought to midline. Placing the ankle and hip at midline through passive range of motion promotes eversion, and this position should be maintained when the baby is at rest. If the therapist is unable to bring the ankle to midline, then re-positioning with kinesiotape may be used to improve circulation [31, 32]. For both scenarios, follow-up care with Orthopedics is required. However, the most important factor in the treatment plan for thumb adduction and club feet is caregiver education. It is essential to teach parents about proper positioning, home exercise plans, and how to provide passive range of motion throughout the day, depending on the baby's adjusted age [30, 31].

Kangaroo Care

Kangaroo Mother Care is a technique in which the baby is positioned in skin-to-skin contact with the caregiver's chest for variable periods of time. Occupational therapists utilize this technique in the NICU to help promote breastfeeding for premature infants. Furthermore, skin-to-skin care significantly increases the mother's milk production and is associated with a longer duration of breastfeeding [24]. It has also been shown to reduce maternal stress, anxiety, and postpartum depression. This is significant because between 28 and 51% of parents with babies admitted to the NICU have reported symptoms of acute stress and post-traumatic stress disorder [7]. Kangaroo care increases parental satisfaction and improves both sleep organization and duration of quiet sleep for neonates. It has also been shown to decrease the perception of pain during procedures, such as endotracheal tube placement or other forms of life-saving therapy [24].

Figure 3: Mother utilizing “kangaroo care” or skin-to-skin contact with neonate.

Source: *Emanate Health Queen of the Valley Hospital, NICU*



In summary, occupational therapy for premature infants includes the following modalities: neonatal massage, myofascial release, neurodevelopmental treatment, skin-to-skin, and most importantly, caregiver education. The focus of these treatments is weight gain, improving oral feeding, decreasing hospital length of stay, enhancing neuroprotection, and promoting parental bonding. Parent education for developmental care protocols is emphasized because it builds their confidence when interacting with their infant.

Osteopathic Manipulative Treatment

Osteopathic physicians are trained to treat musculoskeletal disorders by using manual contact to correct structural imbalances, improve circulation, and relieve pain caused by muscle, bone, or tendon misalignment [8]. By using this hands-on approach, Osteopathic Manipulative Medicine (OMM) promotes the body's intrinsic ability for self-healing. Osteopathic Manipulative Treatment (OMT) uses various forms of neuromuscular stimulation, ranging from passive massage to applying an active force to manipulate the muscles, soft tissue, and joints [8]. The objectives of OMT for premature infants during the first few days of life are to gain weight, improve latching and physiological function, reduce reflux and constipation, increase range of motion, treat jaundice, and achieve homeostasis, such as temperature regulation, if it has been altered by somatic dysfunction [2,9,19, 64]. OMT serves as complementary medicine to help reduce the newborns' length of stay in the NICU [10]. As these hospitalized infants reach term gestational age, OMT can also assist in reaching developmental milestones, or improve cosmetic appearance for positional plagiocephaly and torticollis [9]. The immediate indications of OMT's success are macroscopic changes to the affected area that are discovered on re-examination [11]. More gradual indications of success, such as weight gain or improved oral feeding, may occur 1-2 weeks after treatment [2,9].

OMT begins with the osteopathic structural exam, which helps the physician identify somatic dysfunction [11]. Somatic dysfunction is defined as “restriction in joints, muscles, and fascia that can affect blood supply, lymph flow, and nervous system function” [11]. It is associated with abnormal palpatory findings, known as tissue texture changes, asymmetry,

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altered range of motion, and tenderness (TART). Acute somatic dysfunction is characterized by warm, erythematous, boggy tissue in the affected area. Restriction can cause sharp pain and asymmetry without anatomic compensation. Chronic somatic dysfunction can cause tissue to be cool, dry, or ropey. Dull pain and asymmetry with anatomic compensation are characteristic of this type of dysfunction [11]. OMT techniques used for premature infants focus on improving acute somatic dysfunction.

Due to the delicate nature of preterm infants in NICU, the techniques utilized are often indirect and passive. An indirect technique moves the restriction into a position of ease and a passive technique does not involve the patient in the treatment. Instead, the physician manipulates the dysfunction, without incorporating patient assistance [12]. Commonly used indirect and passive techniques in this population are soft tissue, myofascial release (MFR) and balanced ligamentous tension (BLT) [9,18]. These techniques have been shown to improve oxygenation, achieve developmental milestones, and reduce symptoms of jaundice, GERD, and torticollis [17, 35, 37, 38, 39, 43]. These gentle techniques can be combined with Cranial OMM techniques, such as v-spread and condylar decompression, to treat infants with positional plagiocephaly and latching issues, respectively [44,45, 46, 48].

Soft Tissue

Soft tissue of the thoracic spine is similar to the gliding motion used in neonatal massage by occupational therapists. While the patient lies prone, the osteopathic physician will first assess the paraspinal musculature for TART changes, which indicates the presence of somatic dysfunction. Upon identifying the somatic dysfunction, the physician can employ a unilateral prone pressure to the area, known as perpendicular stretching. This is done by placing the thenar eminence lateral to the spinous processes of the vertebrae and contacting the medial border of the injured paraspinal tissue. The other hand is placed on top for additional support. Then, anterior and lateral pressure is applied to induce perpendicular stretch. This force can be a sustained pressure until tissue release is noted, or rhythmic kneading for a few seconds at a time [41].

Almost all premature infants born less than 35 weeks' gestation will have elevated total serum and plasma bilirubin levels. Most neonates experience physiologic jaundice in the first few days of life, which is typically harmless. However, jaundice seen in premature infants can be pathologic due to higher levels of bilirubin. Hyperbilirubinemia is treated with phototherapy or exchange transfusions. The major risks are acute bilirubin encephalopathy or kernicterus [42, 43]. One study found that infant massage in full-term babies significantly lowered total serum bilirubin compared to infants who received standard care [43]. This may be due to massage therapy and soft tissue techniques increasing parasympathetic tone through vagal nerve stimulation, which increases the frequency of bowel movements. This allows neonates to pass greater amounts of bilirubin-containing meconium [34, 43]. Neonatal massage and soft tissue also increase blood flow throughout the intestines, further improving waste product excretion [34, 39, 43].



Figure 4: Soft tissue of the thoracic spine demonstrating the perpendicular stretch motion.

Source: Claire Oosterbaan, MS-4

Myofascial Release

MFR is a technique provided by both occupational therapists and osteopathic physicians. As discussed previously, MFR is a gentle form of stretching and compression that reduces fascial restrictions and uneven tightness [16]. For infants, these restrictions are often linked to in-utero position or if induction of labor, C-section, forceps, or vacuum-assisted delivery occurred [15]. MFR can help infants with respiratory distress by releasing the fascia around the diaphragm. This allows for improved oxygenation of the blood supply. This diaphragmatic fascial restriction can be caused by the baby's rotational twist in the birth canal [17]. MFR can also help infants reach developmental milestones, such as improved head control and sitting up without support. This can be done by releasing restrictions around the sternocleidomastoid muscle (SCM), which can occur from a twisted neck in-utero or gastroesophageal reflux. If this presentation occurs after birth, it is known as acquired torticollis [40]. Releasing the shortened muscle helps improve the infant's head posture and cervical spine mobility and supports symmetrical cranial bone growth [17].

Balanced Ligamentous Tension

Balanced Ligamentous Tension (BLT) is based on the theory that ligaments provide both proprioception and an anatomical framework that guides the muscle response for joint positioning and subsequent motion [36]. BLT seeks a "balance point" for the joint or somatic dysfunction by inducing the lowest possible strain to the affected area. This allows the body to restore function to the injured tissue [18]. The first step is disengagement, which means the physician applies either compression or decompression to disengage the somatic dysfunction. The next step is to find the balance point by moving the somatic dysfunction through the range of motion in every direction to discover its restrictions. The third step is to monitor the affected area once it is brought to the balance point. The last step is tissue release, where an increase in temperature and joint mobility occurs at the site of the somatic dysfunction to indicate healing [18].

BLT can treat a variety of conditions, but the two we will focus on are congenital muscular torticollis and reflux. Congenital torticollis is present at birth and is commonly associated with fibrosis of the SCM or birth defects such as Klippel-Feil Syndrome [40]. A case study published by the *International Journal of Osteopathic Medicine* discovered that BLT has the potential to treat congenital muscular torticollis rather than resorting to invasive surgery [38]. Similarly, a study conducted in Italy investigated if using indirect OMT procedures, such as BLT, on premature infants in the NICU would decrease either incidence of gastrointestinal dysfunction or length of stay [37]. Gastrointestinal dysfunction incidence was defined as the number of episodes of vomiting, regurgitation, and gastric reflux and the frequency of stooling and enema administration per patient care encounter [37]. They discovered that premature infants who received BLT had statistically significant fewer episodes of both gastrointestinal dysfunction and days in the NICU compared to the routine care group. For the OMT group, the average number of daily gut symptoms was 28 and the average length of stay was 28 days. For the routine care group, the average number of daily gut symptoms was 60 and the average length of stay was 55 days [37].

Figure 5: OMT for torticollis in a pediatric patient. Techniques used can be a combination of MFR and BLT.

Source: Claire Oosterbaan, MS-4

Paraspinal Inhibition

Paraspinal inhibition is a technique that aims to restore the imbalance between the sympathetic and parasympathetic nervous system. It does this by utilizing the relationship between the thoracic paravertebral musculature and its encompassed sympathetic ganglia [62]. While the patient is supine, the physician applies intermittent pressure to the paravertebral muscles of the lower thoracic and lumbar spine by simultaneously flexing their metacarpophalangeal joints and approximating the palms and finger pads. This position is held until warmth and softening are appreciated along the entire lower thoracic and lumbar musculature and surrounding fascia. This treatment affects the sympathetic ganglia that resides within the targeted paraspinal region, leading to medullary-induced inhibition of sympathetic outflow

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and allowing parasympathetic function to predominate [63]. This treatment was initially used to treat and prevent postoperative ileus in adults by increasing colonic transit time and quickened passage of stool [62].

Healthy full-term neonates commonly pass their first stool within 24-48 hours after birth; however, premature infants often take several days. Functional ileus of prematurity is the delayed passage of meconium that occurs in very low birthweight (VLBW) infants. This predisposes them to intestinal perforation with an increased risk of morbidity and mortality [64]. Delayed passage of meconium can be a sign of diseases such as cystic fibrosis or Hirschsprung's disease, or it can be caused by medications, anorectal malformations, and maternal conditions like gestational diabetes [65]. To use paraspinal inhibition for heightened sympathetic activity in premature infants, the technique is modified with a gentle, static pincer grasp to accommodate for their smaller paravertebral muscular and overall size [66]. Although further research is needed to investigate this treatment for ileus of prematurity, there is clinical anecdotal evidence that suggests that modified paraspinal inhibition can hasten the passage of meconium and flatus in premature infants. This serves to decrease the risk of perforation and relieve neonatal abdominal discomfort.

Figure 6: Paraspinal inhibition in a pediatric patient.

Source: Claire Oosterbaan, MS-4

Cranial OMM: V-spread



Cranial OMM is based on the theory that cranial sutures are mobile in relation to the skull [49, 50]. Just as TART changes indicate somatic dysfunction in the body, the cranial rhythmic impulse (CRI) provides information on dysfunction of the primary respiratory mechanism (PRM). The PRM is an interrelated unit of the cranial bones, sacrum, dural membrane, and cerebrospinal fluid [49, 50,

51]. The normal rate of movement for CRI is 8-14 times per minute. This is felt on palpation as widening and narrowing of the skull by the osteopathic physician [49, 50]. Known factors that increase CRI include vigorous exercise, fever, and OMT, while those that decrease CRI are stress, chronic infection, fatigue, and depression. There are also various cranial strain patterns, separated into physiologic and pathologic categories [13]. These patterns are similarly assessed through palpatory findings by the osteopathic physician, in which the relationship between the sphenoid and occiput and their rotation around different planes is appreciated [49, 50]. Many Cranial OMM techniques that target specific strain patterns or decreased CRI exist. A simple, yet effective and commonly used one is V-spread, which aims to separate restricted or impacted cranial sutures. It is performed with the patient in a supine position and the physician seated at the head of the table. The physician places two fingers on each side of the restricted suture to create a V-shape. Then, a distracting force and separating traction is applied and held until a release is felt. This spreads the restricted suture and allows for decompression and realignment [50, 51].

Positional, or deformational, plagiocephaly is when an infant has a flattened head shape due to fusion of the coronal suture, which causes the forehead and brow to stop growing [52, 54]. Fusion of this suture and subsequent flattening occurs when there is repeated pressure on one part of the head, such as when babies sleep supine in one position. The supine sleeping position is encouraged because it decreases the risk of sudden infant death syndrome (SIDS), however, the tradeoff is an increased risk of plagiocephaly for premature infants who spend extended periods of time in a fixed position while they recover in the NICU [9, 53]. Other common causes of positional plagiocephaly are congenital torticollis and the infant's position in the womb being affected by a multiple gestation pregnancy or if the mother has a small uterus [53, 54]. Treatment for plagiocephaly includes exercises, varying sleep positions, and wearing a corrective helmet to direct the regrowth of the baby's skull. However, to receive the most benefit from the helmet, most babies need to wear it for 23 hours a day for 3-6 months [14, 53]. For parents who have anxiety regarding the use of a helmet, the V-spread technique can be used as a complementary or alternate form of care, depending on the degree of flattening. One study found that infants with nonsynostotic occipital plagiocephaly (NSP) had a significant decrease in cranial vault asymmetry, skull base asymmetry, and transcranial vault asymmetry. This was after receiving Cranial OMT, in addition to standard positioning recommendations, for 8 weeks [48].

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Figure 7: V-spread in a pediatric patient. This technique is typically used for positional plagiocephaly in an infant.

Source: Claire Oosterbaan, MS-4

Cranial OMM: Condylar Decompression

Another type of Cranial OMM technique is condylar decompression. The purpose of this technique is to decompress the occipital condyles and balance tension at the hypoglossal canal to normalize cranial nerve XII function [49, 50, 51]. This technique is performed with the patient in the supine position and the physician seated at the head of the table. The physician's forearms should be on the table to establish a fulcrum, while the patient's head rests in their palms. The physician uses their index and middle fingers to contact the condylar processes on both sides and then applies a gentle cephalad and lateral traction. This traction is maintained until a release is felt [50, 51].



It is well-known that premature infants who receive breast milk have a shorter length of stay in the NICU and decreased risk of necrotizing enterocolitis, sepsis, feed intolerance, lung disease, retinopathy of prematurity, neurocognitive delays, and readmission rates [55]. However, almost 50% of mothers stop breastfeeding in the first month, even with the help of lactation consults, due to biomechanical issues [46, 56, 57]. It is reported that the ability to swallow develops at 13 weeks' gestation and the ability to suck at 18 weeks' gestation. However, the suck and swallow coordination does not occur until 32-34 weeks' gestational age [20]. Thus, premature infants born before 35 weeks' gestation struggle with nipple feeding, which requires coordinated suck and swallow [2, 56]. This suck and swallow coordination depends on cranial nerves IX, X and XII for intrinsic muscles of the tongue to function properly [56]. One study found that infants who received Cranial OMM, such as condylar decompression, in addition to the mother receiving regular lactation consultations, had better nipple feeding and a higher LATCH score, compared to the control [46, 47].



Figure 8: Condylar decompression in a pediatric patient. This technique is typically used for improved latching in an infant.

Source: Claire Oosterbaan, MS-4

Osteopathic manipulative treatment for premature infants includes the following modalities: soft tissue, MFR, BLT, paraspinal inhibition, V-spread, and condylar decompression. These techniques have been shown to help reduce jaundice and GERD, induce passage of meconium, reach developmental milestones, correct torticollis and plagiocephaly, and improve oxygenation and latching. Osteopathic physicians use palpation to identify somatic dysfunctions and manipulation to improve physiologic function. OMT can be offered as a less invasive and cost-beneficial adjunct to the standard of care that is provided for these conditions.

Discussion

Premature infants often have stressful and adverse experiences in the NICU. They are exposed to many procedures, some of which are very painful, and various stimuli (bright light, noise, and temperature fluctuations) that heighten their sympathetic nervous system [34]. Additionally, the parasympathetic nervous system remains underdeveloped since its completion does not occur until the third trimester. However, research studies from the last decade demonstrate that gentle touch can reduce the amount of cortisol produced and dampen sympathetic tone in premature infants [34]. Occupational therapy and osteopathic manipulative treatment capitalize on this knowledge by employing gentle techniques, such as MFR, neonatal massage in OT, and soft tissue and paraspinal inhibition in OMT, to increase vagal activity leading to parasympathetic stimulation. By doing this, these techniques increase gastric motility and effectively treat gastroesophageal reflux and jaundice [34, 43]. They also help improve immune function, oral feeding, and range of motion, and lead to weight gain, resulting in a faster NICU discharge [58].

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Occupational therapy differs from OMT in that it emphasizes neurodevelopmental treatment, kangaroo care, and caregiver involvement. Family bonding and parental participation in this social component of the infant's care leads to better outcomes for the neonate and mother. In contrast, premature infants who experience a lack of maternal touch have higher levels of negative emotions [34]. One study found that the negative consequences of an epigenetic change (methylation of serotonin transporter gene, SLC6A4) were intensified during NICU-related stress for very preterm newborns [59]. Therefore, there is a need for future studies to investigate how the absence of parents due to hospital policy changes in response to the COVID-19 pandemic affected the days to discharge for preterm infants.

Osteopathic manipulative treatment focuses on correcting somatic dysfunction found during the physical assessment. The techniques that are specific to OMT include balanced ligamentous tension, paraspinal inhibition, V-spread, and condylar decompression. The treatment plan does not center around parental involvement to the same degree that it does for occupational therapy. Instead, there is a growing emphasis to incorporate OMT as adjuvant therapy into the standard of care for the NICU. Osteopathic physicians who perform OMT should work in coordination with different specialists, such as lactation consultants or physical therapists, to improve biomechanical sucking difficulties and positional plagiocephaly [34, 46]. Furthermore, a systemic review with meta-analysis demonstrated OMT as a safety procedure with the potential to reduce the number of days of hospitalization for premature infants [34]. Although several studies have shown the positive influences of OMT, it is also important to note their limitations and the need for further research. For instance, the case study that suggested BLT may be more effective than surgery in treating congenital muscular torticollis admitted that investigating torticollis patients without abnormal cranial strain patterns is also warranted [38]. This comparison would be helpful in analyzing the overall validity. Similarly, the study that examined the use of Cranial OMT for nonsynostotic occipital plagiocephaly used a small sample size (n=12), which affects its reliability [48].

Conclusion

The objectives for occupational therapy and osteopathic manipulation treatment are similar in that they both address dysfunction to promote healing and redirect the body towards homeostasis. In the fragile population of premature newborns, the techniques of neonatal massage, MFR, Kangaroo Care, soft tissue, BLT, paraspinal inhibition, V-spread, and condylar decompression, all provide a noninvasive and gentle treatment option. While many techniques of OT and OMT are similar, the main differences are that OT places a larger emphasis on social components of parental education and bonding as part of the therapeutic approach, while OMT relies more on the physical technique to address somatic dysfunction and restore health.

A common core tenant between both approaches is the importance of touch. Whether it is the soft tissue technique of OMT or the neonatal massage by OT, these treatments rely on a therapeutic touch via techniques such as gliding or kneading to promote healing. Furthermore, techniques like Kangaroo Care are also highly dependent on touch as its benefits are seen with utilizing skin-to-skin contact.

These techniques have shown numerous benefits cultivating with the shortening of NICU stays for newborns, however, they are still underutilized in most settings. Moving forward, steps need to be taken to encourage these treatment modalities not only in the NICU but in all newborn physical exams when indicated as they are quick, noninvasive methods that are proven to prevent, treat, and improve outcomes for patients.

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Consider attending the 2022 AAP National Conference.
There are 2 days of SOOPe sessions with AOA 1-A AND AMA CREDITS AVAILABLE

Section on Osteopathic Pediatricians Program
Osteopathic SCREENing – An osteopathic perspective on screens and social media

Saturday October 8, 2022 (H0151) Anaheim Convention Center (ACC) 254
1:00PM-5:30PM PDT

01:00PM	Welcome and Introduction <i>Moderator: Kimberly Wolf, DO, FAAP, FACOP</i>
01:05 PM	Social Media Impacts on Parents of Young Children <i>Jordan Beckett, DO</i>
02:05 PM	Mental Health Effects of Media on Kids <i>Free Hess, DO</i>
03:05 PM	Break
03:15 PM	Likes, reels and influencers: the impact of social media on disordered eating, diet culture and the thin ideal <i>Jaime Taylor, DO</i>
04:15 PM	Upper Crossed Syndrome <i>Jordan Keys, DO</i>
05:30PM	Adjourn

Sunday October 9, 2022
8:00 AM-12:30PM PDT Anaheim Convention Center (ACC) 254

08:00AM	Welcome and Introduction Day 2 Moderator: Kimberly Wolf, DO, FAAP, FACOP
08:15 AM	Predators and Sextortion Free Hess, DO

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09:15 AM	Break
09:30 AM	Parental Controls and More <i>Free Hess, DO</i>
10:30 AM	Osteopathic Techniques to Optimize Mental Health Joanna Kramer, DO, FAAP
12:30PM	Adjourn

Co-sponsored by the Philadelphia College of Osteopathic Medicine. The program will offer 9 AOA 1-A CME credits. See all meeting details at <https://aapexperience.org/>.

Continuing Education Credit:

Physicians: The Philadelphia College of Osteopathic Medicine is accredited by the American Osteopathic Association of medical education for physicians. The Philadelphia College of Osteopathic Medicine designates this program for a maximum of 9 hours of AOA Category 1-A credits and will report CME and specialty credits commensurate with the extent of the physician's participation in this activity.

As the meeting gets closer, our staff will email forms and include all directions for claiming your CME credits. Please reach out to our staff at jburke@aap.org with any questions you have about the meeting. Thank you!

Thank you to Kim Wolf, DO, FAAP, for planning these programs and to all of our amazing faculty!

Jackie Burke
Sections Manager
AAP Division of Pediatric Practice
Department of Primary Care and Subspecialty Pediatrics
630.626.6759
jburke@aap.org
Dedicated to the Health of All Children

Protecting and defending the rights of DO's

The AOA steps in when DOs and osteopathic students face professional barriers to training, licensure and credentialing.

Though osteopathic medicine is one of the fastest-growing health care professions in the country, DO physicians and students still occasionally encounter professional barriers related to access to training, licensure and credentialing. When these situations arise, the AOA steps in with the goal of ensuring all DOs enjoy the rights and respect they have earned as osteopathic physicians.

Need assistance?

If you are a DO or osteopathic student member of the AOA in need of professional advocacy or support, please send us an email at do-discrimination@osteopathic.org.

For more information or to join the section . . .

visit our [website](#) or [collaboration site](#)

AAP Section on Osteopathic Pediatricians & the AAP Mentorship Program

Overview

Mentorship is an important tool for professional development and has been linked to greater productivity, career advancement, and professional satisfaction. There is an opportunity among DO pediatricians to mentor each other on training choices, focused career development, professional development and guidance. The AAP recognizes that mentorship is critical in helping to nurture and grow future leaders and that a mentorship program is key to career development. The AAP Mentorship Program seeks to establish mentoring relationships between trainees/early career physicians and practicing AAP member physicians. Connect with others and strengthen the field of pediatric osteopathic medicine.

What are the **goals**?

The AAP Section on Osteopathic Pediatricians (SOOPe) and AAP Mentorship Program aim to promote career and leadership development. Physician mentors and mentees both benefit. Physician mentors will have opportunities to further develop leadership skills and learn about emerging trends from the next generation of their peers. Physician mentees will gain a trusted advisor and learn methods to enhance career training and advancement.

How does it **work**?

Participants will complete an online mentor/mentee profile form. The profile form collects information on education, training, subspecialty interests, practice/professional/clinical interests, and the amount of time the participant is willing to commit; these factors all facilitate the matching process. Mentor/mentee pairs will have the ability to meet traditionally in person (if they choose a local match) or use one of several online tools to meet virtually.

What is the **time commitment**?

The program offers opportunities for long-term (one full academic year) or short-term “flash” mentoring. Mentors/mentees will be asked to set regular phone meetings to discuss mentee goals, objectives, and progress. Mentors/mentees should also answer all communications in a timely manner.

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AAP Section on Osteopathic Pediatricians & the AAP Mentorship Program

How can I **find another DO**?

You can search for other users in the Mentorship program as a mentor or mentee easily. Simply filter by the 'designation' field and look for those with the 'DO' credential.

Who can **participate**?

All national AAP members in good standing are invited to participate. Visit <http://bit.ly/2wluh3N> for information about how to become an SOOPe member or renew your membership.

How do I **get involved**?

Visit <http://bit.ly/22rvQVx> to access the AAP Mentorship Program. You'll be asked to sign in with your AAP login and password. You can sign up to be a mentor, mentee or both, as well as long-term or flash mentoring.

How do I **get more information**?

- Send an email to mentorship@aap.org.
- Visit <http://bit.ly/2eHOcRj>.

Visit the **SOOPe**
aap.org/do

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SEEKING CANDIDATES FOR OPENINGS ON SECTION ON OSTEOPATHIC PEDIATRICIANS EXECUTIVE COMMITTEE

The AAP Section on Osteopathic Pediatricians (SOOPe) has three openings for executive committee member positions beginning November 1, 2023. Executive Committee positions help to steer the current and future activities of the SOOPe.

Leadership responsibilities include:

1. Reviews all relevant material before meetings. Makes contributions and voices objective opinions on issues.
2. Attends all meetings and conference calls (1-2 face to face meetings each year = travel paid by AAP) (conference calls, 1 hour each quarterly).
3. Take the lead in section activities appropriate to expertise and to serve on a subcommittee as necessary.
4. Carries out individual assignments made by the chairperson and/or staff.
5. Represents the section in meetings of other sections, committees, or organizations as directed by the Academy.
6. Serves as spokesperson on behalf of the Academy to the media, outside organizations, and others as requested by the Academy.
7. Discloses potential conflicts of interest.

SOOPe upholds the [AAP Statement on Diversity and Inclusion](#) and encourages individuals of diverse backgrounds and perspectives to apply for the Executive Committee. The SOOPe values all forms of diversity which may include (but not limited to) differences in age, race, ethnicity, geography, religion, socioeconomic status, language, immigration background, sexual orientation, gender identity, special health care need, politics, and other attributes.

This is a voluntary position but travel to AAP National Conference is covered by the Section.

If you are a member of SOOPe and are interested in a 3-year executive committee position, please send a bio-sketch to Jackie Burke at jburke@aap.org by December 1, 2022.

Thank you.

Have an Issue?

Join the Section on Osteopathic Pediatricians Listserv
by contacting jburke@aap.org

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