



**T A P A**  
 TENNESSEE ACADEMY OF  
 PHYSICIAN ASSISTANTS

# PA Pulse

*The heartbeat of TAPA*

*Bridging the Future of Healthcare*

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## **From the President**

Over the last few years, I have had the opportunity to talk to many PA leaders across the country. After these conversations, I am always left with the same impression - we live in a great place to be a PA.

There are so many states who have not accomplished the things that we have in Tennessee. Specifically, in the last few years we have been able to pass legislation to have our own PA licensing board, be a part of the PA licensing compact, and decrease barriers to access for care for our patients. Also, we are one of a small number of states where we have parity with nurse practitioners. I think we sometimes take for granted how these issues as a whole impact our profession in our state. However, it only takes one conversation with a PA from another state to appreciate what we have here. Of course, there is still a long list of things we would like to achieve to make things even better, but TAPA members have worked hard to accomplish the things that we have.

In September, Katherine Moffat and I were asked to come speak at the AAPA's Leadership and Advocacy Summit about how TAPA continues to have such successful PA Days on the Hill in our state. AAPA's opinion is that we have one of the best in the country. A few concepts we shared with the group was that consistency from year to year is important. Also, we do not want to only visit legislators when we have a big bill that we are asking for their support on. It is important to visit them every year so that they get to know us and our profession. I have noticed, over the many years that I have attended these events on Capitol Hill in Nashville, that more and more legislators know us by name and they know our profession.

Another important strategy in having a successful PA Day on the Hill is making connections with PA programs in our state. We have great PA programs in Tennessee with many great PA educators and students. Student involvement in meeting legislators and advocating about our profession is an invaluable tool that will benefit them throughout their careers. Many PA programs in Tennessee encourage their students to attend PA Day on the Hill, and it is always rewarding to see the next generation of PAs being excited to get involved.

In 2024, we had almost 300 people in attendance at TAPA's PA Day on the Hill, and they completed close to 100 visits with legislators in one day. We also had amazing media coverage from one side of the state to the other

*See President, page 2*

*Mission - TAPA's mission is to promote accessible, quality healthcare, and to advance the education, profession and practice of physician assistants in Tennessee.*

### *Vision*

*Protecting and empowering the practice of physician assistants in Tennessee.*

*President, continued from page 1*

that helped raise awareness of PAs and the issues we are working on.

The successes we have had would not have been possible without the hard work and dedication from many PAs from across the state. I am grateful to know many of them and count them as friends. We have a great group of PA leaders in our state, and we also have great leadership from our TAPA director and staff. There is so much work to do that we could not possibly do it without them. While we have a lot of great PA leaders in the state, we would love to have more become involved. A few easy ways to get involved are to make plans to attend our PA Day on the Hill on Feb. 19, 2025, join a TAPA committee, donate to the PAC fund, or run for office.

All PAs in the state of Tennessee get to reap the rewards of our legislative wins, but there is much work to do. We want to make sure that we continue to enjoy the practice environment that we have fought hard for, so please get involved.

Marie Patterson, PA-C, DHSc  
TAPA President

## SAVE THE DATE

TAPA has some exciting events planned for 2025! Be sure to mark these dates on your calendar and plan to attend.

### **PA Day on the Hill**

Feb. 19, 2025  
Tennessee State Capitol  
Nashville, Tenn.

### **FallFest**

Oct. 6-10, 2025  
Gatlinburg Convention Center  
Gatlinburg, Tenn.

## Support TAPA PAC

*By Donald A. (Don) Black, PA-C, MPAS, DFAAPA;  
TAPA PAC Chair*

First of all, I want to thank all of you who worked so hard and diligently to bring about TAPA's legislative success this year. This success would not have happened without your numerous emails, letters, phone calls, legislative visits and your contributions to our political action committee (PAC) fund - and of course the exhaustive efforts of Katherine Moffat, Alexanderia Honeycutt and John Williams. All Tennessee PAs owe you a big THANK YOU.

TAPA is distributing approximately \$25,000 in contributions to our legislative partners (senators and representatives) this year. We are grateful to each and every legislator for all their efforts of influence and work within the various committees that brought about a favorable outcome for PAs in 2024.

As you know, our work is not done. There are other issues of legislative constraints in our scope of practice that are still present that we need to work on when the time is right.

History tells us the TMA and others will be ever present, observing and monitoring what those "physician assistants" are up to next. Whether the scrutiny is obvious early on or not, we can rest assured we are always under the microscope.

Thank you to the many PAs listed in this issue of the newsletter who are supporting the PAC this year. If you are not on that list, please consider giving generously to our PAC fund either in small monthly contributions or in a large annual contribution.

Ongoing PAC contributions are depleting the majority of our PAC funds to date, so therefore, we must replenish them for our upcoming and future legislative endeavors. Your monetary contributions will contribute to our legislative success.

If you need assistance making a contribution, or if you have questions, please contact the TAPA office at (615) 463-0026 or info@tnpa.com. You can also reach me at donaldblack46@yahoo.com or my phone (931-338-1828). Thank you for supporting TAPA PAC!

## 2024 TAPA PAC Contributors

(Received Jan. 1-Sept. 30, 2024)

If you haven't yet contributed to the PAC this year, please visit [www.tnopa.com/political-action-committee](http://www.tnopa.com/political-action-committee) to make either a one-time donation or sign up for monthly donations.

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## 2024 Poster Presentations

Each year, TAPA offers PAs and PA students the opportunity to showcase their research at the Poster Presentation session at FallFest. Below are the abstracts of the research presented at FallFest 2024.

### Academic Performance, Physical Activity and Well-Being Among Physician Assistant Students: A Cross-Sectional Study

*Rachel L. Clark, MPH, PA-S; Ashley T. Ford, PA-S; Kristen H. Sickle, PA-S; and Kandi Pitchford, PhD, CHES, CIC; Garret Faugot, MMS, PA-C, AE-C*

**Background:** Physical activity positively affects various aspects of health, including physical, mental, and emotional well-being, and has been linked to improved academic performance. However, a significant portion of students fail to meet recommended activity levels.

Despite efforts to address this issue, research indicates that graduate-level students' physical activity rates align with national averages, suggesting sedentary behavior potentially increases alongside academic demands. Similarly, Physician Assistant (PA) programs are characterized by rigorous didactic and clinical phases, leaving little time for physical activity, potentially compromising both health and academic outcomes.

**Purpose:** This research intended to investigate the impact of physical activity on both academic performance and overall health within the context of PA education.

**Methods:** A 26-item survey instrument was developed to gather self-reported data encompassing demographics, physical activity routines, academic achievements, and perceptions of physical, mental/emotional, and social well-being. Outcome-based assessments incorporated a modified version of the Physician Assistant Education Association (PAEA) survey on overall subjective well-being, along with the World Health Organization (WHO) global physical activity questionnaire (GPAQ). Survey distribution involved email communications to 315 PA program directors and dissemination across three social media platforms, reaching approximately 5,510 students.

Academic, continued from page 3

**Results:** Of the 870 responses (16% response rate, 91% completion rate), the final validated sample consisted of 793 PA students (54.85% didactic, 45.15% clinical). Comparison of demographics to PAEA data revealed notable findings, including significant gender differences ( $p < .001$ ) favoring female representation. Racial disparities were evident ( $p < .001$  to  $.007$ ), with varied regional attendance ( $p < .001$  to  $.211$ ) and age differences ( $p < .003$ ). Weekly hours in class or rotations varied, with significant associations with program phase ( $p < .001$ ). Study time correlated with phase ( $p < .001$ ), as did lecture attention ( $p < .001$ ) and social activity level ( $p < .001$ ). GPA showed preferences for moderate activity, with associations with frequency and duration ( $p < .001$  [Frequency];  $p = .034$  [Duration]). However, no significant relationship was found between GPA and vigorous activity.

Chi-square tests highlighted links between physical activity and overall health (all  $p < .001$ ), stress levels ( $p = .002$ ), and social activity ( $p = .001$  [Frequency of moderate-intensity],  $p = .035$  [Frequency of vigorous-intensity],  $p = .018$  [Duration of vigorous-intensity]). Regarding BMI, no significant association was found for several factors ( $p = .079$  to  $.404$ ), except for vigorous activity ( $p = .024$  [Frequency];  $p = .006$  [Duration]).

**Conclusion:** The study suggests that increased frequency and longer duration of moderate-intensity physical activity is related to enhanced academic performance, overall physical wellbeing, and improved mental and emotional health of PA students. Moreover, higher frequency, rather than longer duration, of moderate-intensity activity appears to be linked to lower stress levels and greater social engagement.

Additionally, our findings show that physical activity levels among students in PA programs are less than the recommended guidelines by the World Health Organization (WHO) for achieving optimal health, mirroring trends seen in the broader US and global populations.

## Acute Clinical Outcomes in STEMI Patients Treated with Cangrelor and a Subsequent Oral P2Y12 Receptor Inhibitor

*Ellen Davis, PA-S; Bryan Otley, PA-S; Nicholas Michalek, PA-S; Jon Lewis, PharmD, BCPS*

**Purpose:** Guidelines published by the American College of Cardiology/American Heart Association and the European Society of Cardiology for ST-segment elevation myocardial infarction (STEMI) treated with percutaneous coronary intervention (PCI) differ regarding P2Y12 receptor inhibitor recommendations for initiating antiplatelet therapy. Cangrelor, the only parenteral P2Y12 receptor inhibitor on the market, is recommended for initial antiplatelet therapy in European guidelines, but not in American guidelines. The objective of this research is to analyze morbidity and mortality outcome differences between the two different P2Y12 receptor inhibitor recommendations.

**Methodology:** Researchers conducted a systematic literature review to analyze major adverse cardiovascular events and major bleeding outcomes for cangrelor and subsequent P2Y12 receptor inhibitors for patients with STEMI and PCI.

**Results:** A total of 194 trials were identified via PubMed and Medline. Three trials satisfied the ad hoc inclusion/exclusion criteria and quality assessment analysis and were included in the results of this study. Cangrelor and a subsequent P2Y12 receptor inhibitor had no statistically significant differences when compared to monotherapy oral P2Y12 receptor inhibitor therapy regarding efficacy, morbidity, and mortality.

**Conclusions:** Comparable outcome results in morbidity and mortality indicate that dual therapy does not worsen patient outcomes. However, efficacy of subsequent P2Y12 receptor inhibitors does not confer a statistically significant benefit. Cangrelor offers benefits to specific patient populations. Parenteral administration is beneficial for patients in which oral medication administration is not a feasible option and for patients who receive concomitantly administered opioids, which slow GI tract motility and therefore absorption of oral P2Y12 receptor inhibitors in the acute setting.





## Aerobic Exercise as an Adjunctive Therapy in Depression Treatment

Reagan N. Ashworth, PA-S, Tessa A. Garst, PA-S, Lauren V. Osias, PA-S, Mark Azel, DMSc, MPAS, PA-C, Diana Pruitt, MHS, PA-C

**Background:** Depression is a prevalent mental health disorder that has significant morbidity and mortality when treatment is not achieved. In order to address this, it is necessary to seek a more holistic approach when treating depression. The role of physical activity as an easily accessible and cost effective treatment option is thought to be attractive but needs evidence-based research to prove to clinical providers its efficiency. Aerobic exercise has been shown to improve depressive symptoms and overall psychological and physiological health, including improvement in the cardiorespiratory system.

**Purpose:** Search current research for duration, frequency, type, and intensity of exercise programs that clinical providers can prescribe as adjunctive therapy for patients with depression.

**Methods:** Evidence based clinical research (EBCR) of English studies and literature from the past 10 years with set inclusion criteria was conducted. Research took place between September 2023 and February 2024. Identified articles were screened thoroughly for eligibility. A review process of quality assessments and data extractions was conducted. Three articles were analyzed, compared, and set the foundation for the results section and discussion.

**Results:** All articles found positive associations between adding aerobic exercise to antidepressant treatment and improvement in depressive symptoms. While continuing depression medication, participants of the intervention group added exercise into their lifestyle. The intervention group was compared to the control group who did not exercise. There is a consistently positive finding that those who participate in exercise have an improvement in depressive symptoms.

**Conclusion:** This EBCR found that aerobic exercise has therapeutic effects in participants with depression being treated with medications. Exercise therapy has comparable benefits to traditional medication as it is cost-effective and avoids adverse drug effects. Moderate intensity aerobic exercise that is performed at least 3 times per week, averaging more than 150

minutes per week reduces depressive symptoms and improves overall health and cognitive function.

Group exercise and surveillance enhances outcomes. There is a multidisciplinary component to prescribing exercise regimens that will promote greater compliance, knowledge, and safety.

**Keywords:** depression, aerobic exercise, adjective therapy, multidisciplinary care, cost effective

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## Does Provider Education about Dying Lead to Reduced Stress Surrounding a Death Event? Tara Corwell, PA-S

**Purpose:** This research endeavors to explore the current literature as it relates to healthcare practitioner education on the topics of death and dying, specifically to assess the efficacy of education on hospice care and whether this education improved patients' understanding of their disease processes, whether patients felt they benefitted from palliative care, and whether healthcare workers felt they improved as practitioners after being exposed to education about how to handle terminally ill patients and their care.

**Methodology:** This research systematically reviews articles published in Medline, PubMed, and Google Scholar and was conducted from October 2023 through February 2024.

**Results:** Eight hundred and fifty-two articles were initially identified. Of these articles, 5 met the inclusion/exclusion criteria and quality assessment expectations and were assimilated for the results of this research. 5 out of 5 of the articles were associated with positive benefits regarding education on death, access to palliative care services, and promoting discussions of death.

**Conclusions:** Medical students and members of the healthcare team reported increased positive sentiment regarding communications with terminally ill patients after receiving education on handling death. Patients expecting to die felt more at ease after understanding their disease process and how hospice care can help. Additionally, family members/caregivers had a more well-managed grieving process after receiving education on disease progression and earlier access to hospice resources.

## Effect of Sleep on Academic Performance During Physician Assistant School

*Emily G. Covert, PA-S, Shelby A. Bass, PA-S, Kaicey A. Pritts, PA-S, Kandi Pitchford, PhD, CHES, CIC, & Diana Pruitt, PA-C*

**Background:** A PA degree is earned during a high-intensity, fast-paced, and academically challenging graduate-level program that can be anxiety-inducing for students. The exam schedule and amount of material can be overwhelming and result in a disruption of healthy sleep patterns.

**Purpose:** This research is intended to determine if there is a correlation between physician assistant students' sleep schedules and their overall academic performance.

**Methods:** Current didactic year PA students across the US through convenience and snowball sampling methods were asked to complete an anonymous survey about their sleep habits and performance in their medical education and pharmaceutical courses. This survey was developed on the SurveyMonkey platform and based off a similar study using pharmacology students. This survey was then piloted with 10 current PA students who met inclusion and exclusion criteria. After minor alterations, the approved survey was open to participants for 6 weeks. After the collection was complete, a statistician analyzed the results. Descriptive statistics and correlation analysis were calculated. In addition, a Chi-squared test was performed to assess associations between study variables, and a T-test was used to compare mean results.

**Results:** The final sample was 234 respondents, resulting in a 75% completion rate. There was no correlation found when comparing academic performance to the amount of sleep before exams, grade point average, daytime sleepiness, sleep in an average week, or wake time. There was a significant difference ( $<0.0001$ ) between hours of sleep before an exam versus an average week.

**Conclusion:** The results of this research allow PA programs and students to see the significant differences in sleep before an exam. Future recommendations for research include the use of a real-time study over multiple weeks using an easy tracking method to improve response accuracy and account for variables such as weeks with and without examinations/competencies. Accessing a larger sample size would also help improve external validity.

## Factors Influencing United States Parent/Guardian's Decision for Early Infant Medical Circumcision

*Kristen I. Jones, PA-S, J. Brienne Taylor, PA-S, Emilia M. Tuminello, PA-S & Dr. Mark A. Azel, Aaron C. Harris, PA-C, Dr. Kandi Pitchford*

**Background:** It is current practice in the United States to provide the option to parents to circumcise their newborn males while still in the hospital, however there are no definitive guidelines available in any reputable sources such as the American Academy of Pediatrics (AAP), Centers for Disease Control (CDC), or United States Preventive Services Task Force (USPSTF) to help guide parents and clinicians in their decisions. Ultimately, it seems the consensus on recommendation and counseling is left to the provider. The ambiguity of these recommendations leaves parents and clinicians at a potential impasse as to the surgical decision for their newborn male.

**Purpose:** This research sought to assess factors that are most influential on the parental decision for or against newborn circumcision in the United States. We hope with this data, clinicians can better appeal to a parent's concerns and more effectively educate parents on this medical decision.

**Methods:** A retrospective study was conducted from October 2023 to July 2024 to assess influential factors on parental decisions for or against infant male circumcision. A self-reporting survey on Survey Monkey was distributed by word of mouth, QR codes, social media, and email. The study population included parents who are at least 18 years of age of males who are at least 4 weeks of age or older and were born in the USA. Intellectus software was utilized for statistical analysis.

**Results:** A total of 75 respondents completed the survey. Of the study variables, the most influential factors in favor of Early Infant Medical Circumcision (EIMC) were in order: hygiene, health, the father was circumcised, and cosmetic appearances. The most influential factors against EIMC were that the procedure was not medically necessary and that the child had no input in the decision. Only 37.33% found the AAP guidelines helpful with the majority being self informed.

*Factors, continued from page 6*

**Conclusions:** Based on responses, it was concluded that a more in depth conversation needs to be had between providers and parents/guardians to assess all influencing factors, risks, benefits, and concerns. There was a severe lack of information given to parents by providers, including the AAP guidelines and conversations about risks and benefits of circumcision prior to decision making. Providers were also found to be biased towards encouraging circumcision rather than against it, as reported by parents.

### **Metabolic Syndrome Related Cancer Mortality in the US, Stratified by Social Vulnerability Index (SVI), and Associated Trends Based on Urbanization, Gender, Race and Ethnicity**

*Brianna Arko, PA-S*

The purpose of this research project is to study metabolic syndrome related cancer mortality in the US, stratified by Social Vulnerability Index (SVI), and associated trends based on urbanization, gender, race and ethnicity.

Data was gathered from Centers for Disease Control (CDC) Wonder of age adjusted death rates with underlying cause of death related to malignant neoplasms, and correlation with multiple cause of death of hypertension, diabetes, obesity, and metabolic disease by county, selecting for urbanization, gender, race/ethnicity [2009-2019].

A secondary pull was gathered to compare state age adjusted death rates by gender and race/ethnicity by year for the same time span. SAS was utilized to separate the data into quintiles based on the Centers for Disease Control and Prevention Agency for Toxic Substances and Disease Registry Social Vulnerability Index (CDC/ATSDR SVI), and run descriptive statistics, ANOVA and t-test analysis for significance.

Age adjusted death rate generally increases with quintile, excepting nonmetro urbanization. Greatest overall increase of age adjusted death rate, from quintile 1 to quintile 5, is found in

black and male patient profiles. With exception of quintile 1, black patient profile has the largest individual range within each quintile. Paired t-test analysis finds female patient profile is the only variable that appears to have a significant negative magnitude age adjusted death rate, regardless of quintile.

Black patient profile appears to have the largest significant positive magnitude age adjusted death rate, significant in all 5 quintiles. Between-quintile effects for one-way ANOVA age adjusted death rate means were analyzed to indicate that quintiles 4 and 5 were significantly different from all other quintiles. Quintiles 1, 2, and 3 were not found to be significantly different from each other.

This patient population has more male white participants than any other profile, consistent throughout quintile. Black, other, and nonhispanic ethnicities trend to a larger population as quintile increases, with such low population in quintiles 1 and 2 that statistical validity might be adversely impacted.

Overall, age adjusted death rate increases with increasing SVI quintile. Black, male patient profiles are significantly associated with higher age adjusted death rates. Female patient profiles are significantly associated with lower age adjusted death rates. Black patient profile has the largest significant positive magnitude age adjusted death rate in all 5 quintiles. Black patients in areas with medium or high risk of social vulnerability have disproportionately higher than average prevalence of dying from cancer when also diagnosed with metabolic syndrome.

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## Music Therapy Should Be Added To Guidelines In The Treatment of Traumatic Brain Injury

*Yanai Almalem, PA-S, Katie E. Jennings, PA-S, Lindsey M. Sullivan, PA-S, Garret Faugot, PA-C, Mark Azel, DMSc, PA-C*

**Background:** Traumatic brain injuries (TBIs) are a common condition affecting 27-69 million people annually. Such an injury can lead to cognitive, mood-based, neurological, or a combination of symptoms that can persist long-term and change a person's quality of life. TBIs have standardized treatments and therapeutic regimens that have been shown to improve outcomes. Musical forms of therapy have proven beneficial but are not part of standard practice. **Purpose:** This research examined the use of Neurological Music Therapy (NMT) as an adjunct therapy in treating TBIs. This paper aims to evaluate the benefits of implementing music therapy into current TBI treatment guidelines based on recent controlled studies and stimulate progress in our understanding and use of NMT.

**Methodology:** The current literature on NMT was evaluated and assessed for its efficacy in a systematic review performed from October 2023 to December 2023. This was conducted to better understand NMT and whether it improved patient outcomes. The researchers screened the literature of several peer-reviewed databases for studies using NMT in TBI management, evaluated their procedures and results, and outlined them in this review.

**Results:** Three studies were included in this research to demonstrate that NMT enhances outcomes of TBI patients, especially in executive function, and that these improvements can be sustained long-term. This review aims to prompt further research on how NMT can help people with TBIs and encourage medical professionals to try it as an adjunct treatment to the TBI standard of care.

**Conclusion:** The researchers concluded that NMT has demonstrated improved executive function in patients with diagnosed TBIs. It appears that NMT can be an adequate adjunct resource in the standard of care for TBI patients.

## Should Ablative Therapy be First Line Treatment for Patients with Atrial Fibrillation?

*Nicholas Clark, PA-S, Robert Lonis, PA-S, Thomas Nola, PA-S, Mark Azel, PA-C, and Gary Lethco, MD*

**Background:** Atrial Fibrillation (AF) is a major medical condition that affects millions of people. The standard for AF treatment in the past has been pharmacologic management. We performed an evidence-based clinical review (EBCR) to investigate if catheter ablation (CA) is more effective as a first line therapy for AF management rather than the current pharmacologic standard of care.

**Purpose:** This research aims to discover if CA is a superior form of treatment for AF using multiple parameters to measure patient outcomes.

**Methods:** In this EBCR we identify three studies that best represent the various patient outcomes for CA versus pharmacologic management for AF using the Critical Appraisal Skills Programme (CASP) assessment tool to evaluate each paper's quality. We analyzed stroke/transient ischemic attack (TIA) occurrence, left ventricular ejection fraction (LVEF), arrhythmia recurrence, patients needing subsequent cardioversion, medication complications, hospitalizations, quality of life (QoL), and adverse events. All endpoints were compared between patients that received CA and patients that received pharmacologic therapy for AF management.

**Results:** This research shows a significant improvement when using CA over pharmacologic management for AF in stroke/TIA occurrence ( $p = 0.035$ ; RR = 0.61 [95% CI, 0.386 to 0.965]; I = 0.0%), left ventricular ejection fraction ( $p = 0.000$ ; WMD=5.39 [95% CI, 2.45 to 8.32]; I<sup>2</sup> 84.4% and MD = 7.72, 95% CI [4.78, 10.67];  $P < 0.00001$ ), arrhythmia recurrence (relative risk [RR], 0.40; 95% confidence interval [CI], 0.31–0.52;  $P=0.00001$  and RR 1.82, 95% CI [1.33, 2.49];  $P = 0.0002$ ), the subsequent need for cardioversion (RR 0.59, 95% CI [0.46, 0.76];  $P < 0.0001$ ), complications in medical treatment (RR 1.95, 95% CI [0.52, 7.25];  $P = 0.32$ ), hospitalizations (RR 0.54, 95%CI [0.39, 0.74];  $P = 0.0002$ ), quality of life (MD 11.13, 95% CI



*Ablative, continued from page 8*

[2.52–19.75];  $P = 0.01$ ) and adverse events (RR 0.54, 95%CI [0.39, 0.74];  $P = 0.0002$ ).

**Conclusions:** AF is a serious heart condition that millions of individuals are forced to deal with. Our results show CA is a superior initial treatment modality for AF when compared to pharmacologic management. CA shows improvement in multiple aspects of patient quality of life following an AF diagnosis. When CA is used as first line treatment it can reduce the burden of care more drastically compared to treating the patient with rate or rhythm control medication, which has been the mainstay of treatment for years.

**Keywords:** Catheter Ablation (CA), Rate Control, Antiarrhythmic Drug Treatment (ADT), Rhythm Control, Atrial Fibrillation (AF), Quality of Life, First Line

### **The Integration of Artificial Intelligence Sensor Technology into the Management and Reduction of Diabetic Foot Ulcers: Taking a Step in the Right Direction**

*Samantha J. Adler, PA-S, Jessica R. Halford, PA-S, Megan E. Kirk, PA-S, Kandi Pitchford, PhD, CHEC, CIC, & Kimberly Gebhart, MPAS, PA-C*

**Background:** Diabetic foot ulcer (DFU) complications continue to represent a major health obstacle, not only in cost but in quality of life for diabetic patients with or without polyneuropathy, despite current research and updates to standard care. Continuous DFU monitoring has been at the forefront of recent research to aid in bridging the gaps between in-person clinic visits and providing real-time data to providers of at-risk patients who may need earlier clinic follow-ups. This has the potential to prevent the occurrence of diabetic foot ulcers by alerting providers of early signs of inflammatory skin changes and allowing for prompt evaluation and management to reduce or mitigate wound development.

**Purpose:** This research sought to evaluate and determine the use of AI-based technology in the management of DFUs and its potential role in decreasing associated health burdens.

**Methods:** Three researchers searched three databases using predetermined key terms, inclusion, and exclusion criteria. Because this research is relatively new, there were not many studies regarding this subject. Only one article was found to have met the criteria from the initial search.

An independent faculty researcher was involved and found two additional studies. All three articles were reviewed and approved for quality by two of three researchers. Then a data extraction was performed and reviewed by another researcher.

The primary outcomes assessed were plantar 2-point temperature differences, rate of wound development, amputation rate, ulcer severity, number of visits paid to outpatient podiatry clinic, hospitalization rates, device accuracy, and participant disposition and adherence.

**Results:** This research found statistically significantly lower rates in development of DFU when monitoring plantar temperature differences between 2 points (95% CI 0.859-1.20,  $p < .001$ ); Cohen's  $d = 0.79$ ; 95% CI 0.76–0.81;  $P = 0.0$ ), rate of wound development ((RRR) 0.68; 95% CI 0.52-0.79; (NNT) 5.0;  $P < 0.001$ ), amputation rate (RRR 0.83; 95% CI 0.39-0.95; NNT 41.7;  $P < 0.006$ ), severity of foot ulcers (RRR 0.86; 95% CI 0.70-0.93; NNT 15.3;  $P < 0.001$ ). Moreover, it found a decrease in the number of visits paid to outpatient podiatry clinics (RRR 0.31; 95% CI 0.24-0.37; NNT 0.46;  $P < 0.001$ ) and hospitalization rates (RRR 0.63; 95% CI 0.33-0.80; NNT 5.7;  $P < 0.002$ ) with the addition of AI-based at-home monitoring devices to the patient's current care plan.

**Conclusions:** The results of this research suggest that AI technology could play a vital role in the prevention, management, and treatment of diabetic foot ulcers.

Implementing AI technology as an adjunct to the current standard of care practices could provide significant benefits through continuous monitoring, earlier detection, and proactive prevention of DFUs before their development. This could help reduce the health burden and financial cost, as well as improve patients' quality of life.