



SPN Responds to Children, Adolescents and Families' Exposure to E-Cigarettes, Nicotine, and Tobacco Smoke in the United States

The Society of Pediatric Nurses joins a multitude of professionals speaking out about the dangers of exposure to electronic cigarettes (e-cigarettes), nicotine, and tobacco smoke for children, adolescents and their families. In the US, tobacco smoking remains the leading cause of preventable death (Centers for Disease Control and Prevention [CDC], 2020b). Tobacco smoking has been on a steady decline for both adults (1970-2020) and youth (1985-2015); however, with the introduction of e-cigarettes there has been a significant increase in tobacco use by middle and high school aged children (Gentzke et al, 2019). The use of e-cigarettes under the age of 14 is associated with a higher likelihood of initiating tobacco smoking or marijuana (Dai & Clements, 2018; Jaber et al., 2018; McCabe et al., 2018; Vogel et al, 2018) and having the potential to create another generation addicted to tobacco (Barrington-Trimis et al., 2018; Curran et al., 2018; Dai et al., 2018; McCabe et al., 2018).

There is *no safe level* of tobacco exposure, either through personal use, secondhand smoke or thirdhand smoke (American Academy of Pediatrics [AAP], 2015). Tobacco smoke is a known carcinogen associated with disease and death in smokers and nonsmokers (CDC, 2020b). Adverse health outcomes linked to tobacco smoke exposure for the developing fetus include: congenital malformations and preterm birth. Adverse health outcomes linked to tobacco smoke exposure for infants and children include: sudden infant death syndrome (SIDS), cancer, childhood obesity, asthma, otitis media, pulmonary diseases, and neurocognitive problems (AAP, 2015).

Secondhand smoke exposure is side stream smoke, that is, a mixture of chemicals emitted in smoke from a burning cigarette, as well as the smoke exhaled from the lungs of smokers (Kleier et al, 2017). While parents are responsible for over 90% of children's exposure to tobacco smoke, other relatives living in the household may also contribute. Tobacco smoke in indoor areas (homes, hotel rooms, cars, etc.) produces poor air quality as a result of increased levels of particulate matter (Bohac, et al, 2017; McEvoy & Spindel, 2017). Childhood health consequences linked with secondhand smoke exposure include: otitis media, adverse effects on lung function, and lower respiratory illness (U.S. Department of Health and Human Services, 2014).

Thirdhand smoke is the residue byproduct of tobacco smoke pollutants that attach and accumulate on surfaces (e.g., clothing, hands, furniture) (Mahabee-Gittens et al., 2019). Children may have thirdhand exposure from contact surfaces, and preschool children may be more likely to ingest nicotine from surfaces given their hand to mouth practices (Northrup et al., 2019).

E-cigarettes appeal to youth because of their sleek designs and fruit flavorings. E-cigarettes are marketed to entice youth to buy them and falsely advertised that they are safer than cigarettes (AAP, 2019). Additives in cigarettes (menthol) and e-cigarettes (flavorings) make tobacco appealing (AAP, 2017; CDC, 2020b). Health risks associated with e-cigarettes and nicotine include the potentially toxic substances and carcinogens found in vaping liquids which may cause damage to the lungs, brain and even death (AAP, 2019; Sommerfield et al., 2018).

E-cigarettes may contain liquid nicotine; a highly concentrated form of nicotine. Children are at greatest risk of liquid nicotine poisoning due to their size. Since 2011, there has been an increase in calls to poison control centers related to liquid nicotine. Liquid nicotine poisoning can occur through ingestion, through the skin or through inhaling too much vapor (American Association of Poison Control Centers [AAPC], 2017). Exposure to liquid nicotine can cause seizures, bradycardia, and hypotension that may eventually be fatal. The Child Nicotine Poisoning Prevention Act of 2015 was signed into law to ensure that manufacturers created child protective packaging for liquid nicotine products.

The primary addictive component of tobacco is nicotine. Repeated nicotine exposures become associated with daily environmental cues, producing long term changes in dopaminergic signals in the reward/reinforcement brain centers that eventually results in addiction (AAP, 2017). Children and adolescents are particularly susceptible to nicotine addiction; the earlier someone becomes addicted to nicotine the more difficult it is for them to stop (AAP, 2019). “Most adult smokers started using tobacco before the age of 18” (AAP, 2019, para. 4). Tobacco use early life is associated with a neurophysiologic dependence due to the child’s rapidly developing brain (AAP, 2017). The intake of nicotine, combined with rapid neural changes in adolescents can increase the likelihood of developing physical dependence and greater difficulties with cessation (Townes et al, 2017). Due to the rapid advances in nicotine delivery products on the market, pediatric nurses need to keep abreast of new products available to youth.

Therefore, the Society of Pediatric Nurses (SPN) supports sustained implementation of proven population-based strategies as outlined by the AAP public policy statements (2015, 2019), a report from the Surgeon General (CDC, 2020a), the CDC report on *Smoking & Tobacco Use* (2020b), the World Health Organization[WHO] (2020) *Report on the Global Tobacco Epidemic*. Additionally, SPN supports the regulation of tobacco products in coordination with the Food and Drug Administration [FDA] (2019). SPN supports reducing tobacco use, increasing smoking cessation programs, and social/environmental changes to reduce secondhand and thirdhand smoke exposure for youth.

About the Society of Pediatric Nurses

Founded in the mid 1980’s, the Society of Pediatric Nurses (SPN) represents a worldwide network of over 3,000 pediatric nurses across 28 specializations from across the United States and across the world. SPN provides educational resources, practice resources, publications, events, seminars, industry data and research and networking opportunities that are developed specifically for those within the pediatric nursing industry and help to support job excellence and success in their practice setting.

For more information, please visit www.pedsnurses.org

References

- American Academy of Pediatrics [AAP]. (2017). Nicotine and tobacco as substances of abuse in children and adolescents. *Pediatrics*, *139*, e1-e13. doi: 10.1542/peds.2016-3436.
<https://pediatrics.aappublications.org/content/pediatrics/early/2015/10/21/peds.2015-3109.full.pdf>
- American Academy of Pediatrics [AAP]. (2019, Jan.). *Policy Statement: E-cigarettes need stronger regulations to prevent youth access and use*. <https://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/AAP-Policy-Statement-E-Cigarettes-Need-Stronger-Regulations-to-Prevent-Youth-Access-and-Use.aspx>
<https://pediatrics.aappublications.org/content/139/1/e20163436/tab-article-info>
- American Academy of Pediatrics [AAP]. (2015, Oct.). Public policy to protect children from tobacco, nicotine, and tobacco smoke. *Pediatrics*, *124*(5),1474.
- American Association of Poison Control Centers [AAPC]. (2017). *Tobacco and liquid nicotine*.
<https://aapcc.org/prevention/tobacco-liquid-nicotine>
- American Lung Association. (2017). *Smokefree air laws*.
<https://www.lung.org/our-initiatives/tobacco/smokefree-environments/smokefree-air-laws.html>
- Barrington-Trimis, J. L., Kong, G., Leventhal, A.M., Liu, F., Mayer, M., Cruz, T.B. Krishnan-Sarin, S., & McConnell, R. (2018). E-cigarette use and subsequent smoking frequency among adolescents. *Pediatrics*, *142*(6). <http://pediatrics.aappublications.org/content/142/6/e20180486>
- Bohac, D. L., Waldhart, E., Zhou, Z., & Hewett, M. (2017). Personal vehicle secondhand smoke exposure for various ventilation modes. *Tobacco Regulatory Science*, *3*(4), 492-503.
- Centers for Disease Control and Prevention. [CDC]. (2020a). *Smoking cessation: A report of the Surgeon General*.
<https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf>
- Centers for Disease Control and Prevention. [CDC]. (2020b). *Smoking & tobacco use*.
<https://www.cdc.gov/chronicdisease/resources/publications/aag/tobacco-use.htm>
- Child Nicotine Poisoning Prevention Act of 2015, (2015). Pub. L. No. 114-116, § 142, (2016).
<https://www.congress.gov/bill/114th-congress/senate-bill/142>
- Curran, K. A., Burk, T., Pitt, P. D. & Middleman, A. B. (2018). Trends and Substance use associations with e-cigarette use in US adolescents. *Clinical Pediatrics*, *57*(10), 1191-1198.
- Dai, H., Catley, D., Richter, K. P., Goggin, K. & Ellerbeck, E. F. (2018). Electronic Cigarettes and future marijuana use: A longitudinal study. *Pediatrics*, *141*(5): e20173787.
- Dai, H. & Clements, M. (2018). Trends in healthcare provider advice on youth tobacco use, 2011-2015. *American Journal of Preventive Medicine*, *55*(2), 222-230.
- Food and Drug Administration [FDA] (2019). *Tobacco products*. <https://www.fda.gov/tobacco-products>
- Gentzke, A.S., Creamer, M., Cullen, K.A., Ambrose, B.K., Willis, G., Jamal, A., & King, B. (2019). Vital signs: Tobacco product use among middle and high school students-United States, 2011-2018. *Morbidity and Mortality Weekly*, *68*(6), 157-164.
<https://www.cdc.gov/mmwr/volumes/68/wr/pdfs/mm6806e1-H.pdf>
- Jaber, R.M., Mirbolouk, M. DeFillippis, A.P. Maziak, W. Keith, R., Payne, T. Nasir, K. (2018). Electronic cigarette use prevalence, associated factors, and pattern by cigarette smoking status in the United States from NHANES (National Health and Nutrition Examination Survey) 2013-2014. *Journal of the American Heart Association*, e008178. doi:10.1161/JAHA.117.008178
- Kleier, J.A., Mites-Campbell, M., & Henson-Evertz, K. (2017). Children's exposure to secondhand smoke, parental nicotine dependence, and motivation to quit smoking. *Pediatric Nursing*, *43*(1), 35-39.
- Mahabee-Gittens, E.M., Matt, G.E., Hoh, E., Quintana, P.J.E., Stone, L., Geraci, M.A., Wullenweber, C.A., Koutsounadis, G.N., Ruwe, A.G., Meyers, G.T., Zakrajsek, M.A., Witry, J.K., & Merianos, A.L. (2019). Contribution of thirdhand smoke to overall tobacco smoke exposure in pediatric patients: Study protocol. *BMC Public Health*, *19*, 491-500.
- McCabe, S.E., West, B.T. & McCabe, V.V. (2018). Associations between early onset of e-cigarette use and cigarette smoking and other substance use among US adolescents: A national study. *Nicotine & Tobacco Research*, *20*(8), 923-930.
- McEvoy, C.T., & Spindel, E.R. (2017). Pulmonary effects of maternal smoking on lung development, respiratory morbidities, and life long lung health. *Paediatric Respiratory Reviews*, *21*, 27-33.
- Northrup, T.F., Stotts, A.L., Suchting, R., Khan, A.M., Green, C., Quintana, P.J.E., Hoh, E., Hovell, M.F., & Matt, G. (2019). Medical staff contributions to thirdhand smoke contamination in a neonatal intensive care unit. *Tobacco Induced Diseases*, *17*, p1-9.

Sommerfeld, C.G., Weiner, D.J., Nowalk, A. & Larkin, A. (2018). Hypersensitivity pneumonitis and acute respiratory distress syndrome from e-cigarette use. *Pediatrics*, 141(6), e20163927.

Towns, S., DiFranza, J. R., Jayasuriya, G., Marshall, T., & Shah, S. (2017). Smoking cessation in adolescents: Targeted approaches that work. *Paediatric Respiratory Reviews*, 22, 11-22.

U.S. Department of Health and Human Services. (2014). *The health consequences of smoking – 50 years of progress: A report of the Surgeon General*.
<https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>

World Health Organization[WHO]. (2020). *WHO report on the global tobacco epidemic 2019*.
https://www.who.int/tobacco/global_report/en/

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