REPORTS OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH

The following reports, 1–3, were presented by S. Bobby Mukkamala, MD, Chair.

1. CSAPH SUNSET REVIEW OF 2007 HOUSE POLICIES

Reference committee hearing: see report of Reference Committee E.

HOUSE ACTION: RECOMMENDATIONS ADOPTED
REMAINDER OF REPORT FILED

At its 1984 Interim Meeting, the House of Delegates (HOD) established a sunset mechanism for House policies (Policy G-600.110). Under this mechanism, a policy established by the House ceases to be viable after 10 years unless action is taken by the House to retain it.

The objective of the sunset mechanism is to help ensure that the American Medical Association (AMA) Policy Database is current, coherent, and relevant. By eliminating outmoded, duplicative, and inconsistent policies, the sunset mechanism contributes to the ability of the AMA to communicate and promote its policy positions. It also contributes to the efficiency and effectiveness of House of Delegates deliberations.

At its 2012 Annual Meeting, the House modified Policy G-600.110 to change the process through which the policy sunset review is conducted. The process now includes the following:

> (1) As the House of Delegates adopts policies, a maximum ten-year time horizon shall exist. A policy will typically sunset after ten years unless action is taken by the House of Delegates to retain it. Any action of our AMA House that reaffirms or amends an existing policy position shall reset the sunset "clock," making the reaffirmed or amended policy viable for another 10 years. (2) In the implementation and ongoing operation of our AMA policy sunset mechanism, the following procedures shall be followed: (a) Each year, the Speakers shall provide a list of policies that are subject to review under the policy sunset mechanism; (b) Such policies shall be assigned to the appropriate AMA Councils for review; (c) Each AMA council that has been asked to review policies shall develop and submit a report to the House of Delegates identifying policies that are scheduled to sunset. (d) For each policy under review, the reviewing council can recommend one of the following actions: (i) Retain the policy; (ii) Sunset the policy; (iii) Retain part of the policy; or (iv) Reconcile the policy with more recent and like policy; (e) For each recommendation that it makes to retain a policy in any fashion, the reviewing Council shall provide a succinct, but cogent justification. (f) The Speakers shall determine the best way for the House of Delegates to handle the sunset reports. (3) Nothing in this policy shall prohibit a report to the HOD or resolution to sunset a policy earlier than its 10-year horizon if it is no longer relevant, has been superseded by a more current policy, or has been accomplished. (4) The AMA Councils and the House of Delegates should conform to the following guidelines for sunset: (a) when a policy is no longer relevant or necessary; (b) when a policy or directive has been accomplished; or (c) when the policy or directive is part of an established AMA practice that is transparent to the House and codified elsewhere such as the AMA Bylaws or the AMA House of Delegates Reference Manual: Procedures, Policies and Practices. (5) The most recent policy shall be deemed to supersede contradictory past AMA policies. (6) Sunset policies will be retained in the AMA historical archives.

In this report, the Council on Science and Public Health (CSAPH) presents its recommendations on the disposition of the House policies from 2007 that were assigned to it. The CSAPH's recommendations on policies are presented in the Appendix to this report.

RECOMMENDATION

The Council on Science and Public Health recommends that the House of Delegates policies that are listed in the Appendix to this report be acted upon in the manner indicated and the remainder of the report be filed.

APPENDIX - Recommended Actions on 2007 House Policies and Directives

Policy/ Directive Number	Title	Recommended Action and Rationale
D-10.993	Grade-Level Railroad Crossings	Sunset. Accomplished. Letters were sent to the Chair of the National Transportation Safety Board and the Administrator of Federal Railroad Administration informing them of AMA's policy advocating study evaluating methods of limiting grade-level railroad crossing accidents and providing AMA staff contact information for further discussion if organizations willing.
D-30.993	A Call for Framework Convention on Alcohol Control	Sunset. Accomplished. Staff assisted APHA Alcohol, Tobacco and Other Drug Abuse Section in preparation of a resolution calling for framework convention which was submitted and approved by APHA. Staff also sent materials and made presentation to a European meeting of medical associations on alcohol policy and discussed resolution with organizations working with the WHO and they requested that the framework convention concept not be promoted until after a new WHO initiative on alcohol is formulated and passed (they indicated promoting the framework convention would result in no alcohol initiatives passing the WHO's World Health Assembly).
D-60.974	Emotional and Behavioral Effects of Video Game and Internet Overuse	Sunset (1), (2), (4) and (5). Accomplished. Retain (3), and change to AMA Policy reading: "Our AMA supports increased awareness of the need for parents to monitor and restrict use of video games and the Internet and encourage increased vigilance in monitoring the content of games purchased and played for children 17 years old and younger."
D-60.975	Early Literacy Programs	Retain and change to AMA Policy reading: "Our AMA encourages physicians to participate in early literacy programs to promote literacy development, educate parents on child development, and strengthen family interactions, so that these programs become a common part of child health care as a foundation for school readiness."
D-95.985	Substance Use Disorder is a Disease	Sunset. CSAPH Report 8-A-08 was prepared on this subject.
D-95.986	Background on the Organization "Physicians and Lawyers for National Drug Policy" (PLNDP)	Sunset. Membership material and organizational information were sent out via Federation e-news. The PLNDP no longer exists.
D-120.963	Patient Access to Off-Label Use of Avastin	Sunset. Letter was sent to CEO of Genentech seeking policy reversal re: not to supply Avastin to compounding pharmacies. Genentech CEO responded that mutual accommodation had been agreed to between company and ophthalmologists (AAO) on this issue.
D-120.967	Accutane "I Pledge" Program	Sunset. Communications with staff at American Academy of Dermatology explored interest and feasibility of such a survey.
D-120.994	Isotretinoin	Sunset. Membership encouraged to participate in voluntary educational programs on isotretinoin.
D-135.990	Health Hazards Due to Military Exposure to Depleted Uranium	Sunset. Superseded by AMA Policy H-445.994.
D-135.991	Radioactive/Chemical Waste and Radiation in the Environment	Sunset. Superseded by the following AMA Policies: H-135.981, H-135.989, H-135-966, H-135.982, and H-455.994.
D-150.982	Fresh Meat Color Preserving	Sunset. FDA Food Safety and Modernization Act was signed into law on January 4, 2011.
D-150.984	Eating Disorders and Promotion of Healthy Body Image	Sunset (1). Accomplished. Retain (2) and change to AMA Policy reading: "Our AMA supports increased funding for research on the epidemiology, etiology, diagnosis, prevention, and treatment of eating disorders, including research on the effectiveness of school-based primary prevention programs for pre-adolescent children and their parents, in order to prevent the onset of eating disorders and other behaviors associated with a negative body image."
D-245.995	Support of Sudden Infant Death Syndrome (SIDS) Research	Sunset. Letter was sent to the National Association of Medical Examiners supporting the need for additional research on SIDS and encouraging coroners and medical examiners to collect tissue samples for research purposes from infants who have died unexpectedly to the extent permissible by law.

Policy/ Directive Number	Title	Recommended Action and Rationale
D-250.989	Support of the Nightingale Declaration for a Healthy World by 2020	Sunset. Letter of support was sent.
D-370.988	Hematopoietic Stem Cell Transplantation: Utilization of and Minority Representation on the National Bone Marrow Donor Registry	Sunset. A letter has been sent encouraging expansion of National Marrow Donor Program efforts to increase awareness by both physicians and patients of the Registry, reduce the time and cost of stem cell procurement and increase number of donated umbilical cord blood units, particularly from minorities. Also, Policy H-370.974 encourages efforts to increase the number of bone marrow donors, especially minorities.
D-385.969	FDA Regulation of Stereotactic Breast Biopsy	Retain. Ongoing issue. This item was referred for decision and the Board adopted the following: "Our AMA will monitor the activities and recommendations of the National Mammography Quality Assurance Advisory Committee and the Food and Drug Administration pertaining to interventional mammography procedures and respond as appropriate."
D-420.995	Use of Serotonin Reuptake Inhibitors in Pregnancy	Sunset. Label has been changed to reflect new data.
D-440.949	Dysmetabolic Syndrome and Type 2 Diabetes in Children	Sunset. Contact was made with the American Academy of Pediatrics, sections on Endocrinology, Hematology/Oncology, Nephrology, Pulmonology, and Rheumatology. The AAP is updating clinical practice guidelines on type 2 diabetes in children and adolescents and is interested in including the AMA in the collaboration for the updating of these documents.
D-440.950	Support National Coalitions that Advocate for Increased Federal Funding for the Centers for Disease Control and Prevention	Sunset. The AMA became an official partner of The Campaign for Public Health and signed on to a letter to Congressional appropriations committees with 500 organizations to increase the CDC's FY08 budget.
D-450.972	Empowering Patients, Improving Quality	Sunset. PCPI staff were informed of the request. As of 2017, PCPI is no longer part of the AMA.
D-470.994	Requirement for Daily Free Play in Schools	Sunset. Superseded by H-470.961.
D-490.977	Use of Tobacco Industry-Sponsored Cessation and Prevention Materials	Retain, and change to AMA Policy reading: "Our AMA urges (1) that when physicians and health organizations provide information or materials on tobacco to patients and consumers, such information and materials should come from credible and trustworthy sources with expertise in tobacco control; and (2) physicians and health organizations to avoid providing to patients and consumers information or materials on tobacco that come from tobacco companies or other groups aligned with the tobacco industry."
D-515.997	School Violence	Sunset. Surgeon General issued an Update to the Youth Violence Report in 2014.
D-515.998	Resources for Victims of Domestic Abuse in the Adolescent Population	Sunset. Many resources for adolescent victims of abuse are now available, including "Love is not Abuse," a teen domestic violence and abuse prevention curriculum high school edition by Fifth and Pacific Companies, Inc. with periodic updates, including cyber abuse. Also, Policy H-515.965 addresses intimate partner violence in detail.
H-5.982	Late-Term Pregnancy Termination Techniques	Retain. Still relevant.
H-10.990	Fluorescent Markings on Train Cars	Retain. Still relevant.
H-15.957	Flooding	Retain with change in title to read: "Automobile Entrapment ~~Flooding~~." Automobile entrapment is still an issue. "
H-15.977	Seat Belts in Taxicabs	Retain. Not all states require seat belt usage in taxis.
H-30.943	Alcoholism and Alcohol Abuse Among Women	Retain in part with change in title to read as follows: "Alcohol Use Disorder and Unhealthy Alcohol Use Among Women." "The AMA recognizes the prevalence of unhealthy use of alcohol ~~abuse, and dependence~~ among women, as well as current barriers to diagnosis and treatment. The AMA urges physicians to be alert to the presence of alcohol-related problems among women and to screen all patients for alcohol use disorder ~~abuse~~ and dependence. The AMA encourages

Policy/ Directive Number	Title	Recommended Action and Rationale
		physicians to educate women of all ages about their increased risk of damage to the nervous system, liver and heart disease from alcohol and about the effect of alcohol on the developing fetus. The AMA encourages adequate funding for research to explore the nature and extent of ~~alcoholism~~ alcohol use disorder and unhealthy alcohol use among women, effective treatment modalities for women with ~~alcoholism~~ alcohol use disorder and unhealthy alcohol use, and variations in alcohol use ~~and abuse~~ among ethnic and other subpopulations. The AMA encourages all medical education programs to provide greater coverage on alcohol as a significant source of morbidity and mortality in women."
H-30.944	National Alcohol Screening Day	Retain. AMA supports this event and encourages our members to participate in this annual event taking place the first Thursday of the first full week in April.
H-30.958	Ethyl Alcohol and Nicotine as Addictive Drugs	Retain. Still relevant.
H-30.995	Alcoholism as a Disability	Retain in part as follows with change in title to read: "Alcohol Use Disorder as a Disability ~~Alcoholism as a Disability~~."(1) The AMA believes ~~it is important for professionals and laymen alike to recognize~~ that ~~alcoholism~~ alcohol use disorder is in and of itself a disabling ~~and handicapping~~ condition. (2) The AMA encourages the availability of appropriate services to persons suffering from multiple disabilities ~~or multiple handicaps~~, including ~~alcoholism~~ alcohol use disorder. (3) The AMA endorses the position that printed and audiovisual materials pertaining to the subject of people suffering from both ~~alcoholism~~ alcohol use disorder and other disabilities include the terminology "~~alcoholic~~ person with alcohol use disorder and other ~~multiple~~ disabilities." ~~or "alcoholic person with multiple handicaps."~~ ~~Hopefully,~~ ~~t~~This language clarification ~~will~~ is intended to reinforce the concept that ~~alcoholism~~ alcohol use disorder is in and of itself a disabling ~~and handicapping~~ condition.
H-30.997	Dual Disease Classification of Alcoholism	Sunset. Accomplished.
H-35.984	Proper Visual Identification of Nonphysicians Who See Patients	Retain. Some states still have no laws requiring identification of credentials.
H-45.982	Laser Lights	Sunset. In 2012, PL 112-95 was signed, "FAA Modernization and Reform Act of 2012" which makes it a federal crime to aim a laser pointer at an aircraft.
H-45.994	Continuation of Medical Research on Manned Space Flights	Retain. Still relevant.
H-50.980	Increasing Bone Marrow Screening	Retain. Still relevant.
H-50.981	Crossover Use of Donated Blood	Retain. Still relevant.
H-50.990	Blood Shortage and Collection	Retain. Still relevant.
H-55.989	Testicular Cancer Self-Examination	Retain. Still relevant.
H-60.950	Diagnosis and Treatment of Attention Deficit/Hyperactivity Disorder in School-Age Children	Retain in part. Modify policy to include mention of APA's DSM-5, rather than DSM-IV, to read as follows: Our AMA (1) encourages physicians to utilize standardized diagnostic criteria in making diagnosis of ADHD, such as the American Psychiatric Association's ~~DSM-IV~~ DSM-5™, as part of a comprehensive evaluation of children and adolescents presenting with attentional or hyperactivity complaints; (2) urges that attention be directed toward establishing developmentally appropriate criteria for the diagnosis and treatment of ADHD in adults; (3) encourages the creation and dissemination of practice guidelines for ADHD by appropriate specialty societies and their use by practicing physicians and assist in making physicians aware of their availability; (4) encourages efforts by medical schools, residency programs, medical societies, and continuing medical education programs to increase physician knowledge about ADHD and its treatment; (5) encourages the use of individualized therapeutic approaches for patients diagnosed with ADHD, which may

Policy/ Directive Number	Title	Recommended Action and Rationale
		include pharmacotherapy, psycho-education, behavioral therapy, school-based and other environmental interventions, and psychotherapy as indicated by clinical circumstances and family preferences; (6) encourages physicians and medical groups to work with schools to improve teachers' abilities to recognize ADHD and appropriately recommend that parents seek medical evaluation of potentially affected children; and (7) encourages further research on the relative risks and benefits of medication used to treat ADHD, including evaluation of the impact of labeling changes on access to treatment and physician prescribing.
H-60.981	Adolescent Health	Retain. Still relevant.
H-60.988	The Dangers of Shaking a Child	Retain. Still an issue.
H-75.995	Contraceptive Advertising	Retain. Still relevant.
H-95.953	Informing Physicians About the Potential Misuses of Dextromethorphan	Sunset. Accomplished.
H-95.969	Drug Abuse in the United States – Treatment Effectiveness and Capacity – A Preliminary Report	Retain. Still an issue.
H-95.983	Drug Dependencies as Diseases	Retain. Still an issue.
H-100.984	News Media Access to New Scientific Developments	Sunset. Accomplished.
H-115.970	Usage of Brand and Generic Name for Prescription Medications	Retain. Still an issue.
H-115.974	Prescription Labeling	Retain. Still relevant.
H-115.982	Sample Medication Packaging	Retain. Still valid.
H-130.951	Heat-Related Illness	Retain. Still an issue.
H-130.976	On-Site Emergency Care	Retain. Still valid.
H-130.977	Trauma Center Efficacy	Retain. Still relevant.
H-135.943	Expansion of Hazardous Waste Landfills Over Aquifers	Retain. Still an issue.
H-135.953	Expense of Biohazardous Waste Removal	Retain. Still an issue.
H-135.985	Environmental Protection and Safety in Federal Facilities	Retain. Still relevant.
H-135.999	Federal Programs	Retain. Still relevant.
H-150.943	Reducing Trans Fats	Retain. Still an issue. Although trans fats have been greatly reduced, they are still in many foods.
H-150.962	Quality of School Lunch Program	Retain. Still relevant.
H-150.988	Caffeine Labeling	Retain. Caffeine amounts are still not required on labels.
H-170.969	Teaching Preventive Self-Examinations to High School Students	Retain in part with change in title to read: "High School Health Curricula." "The AMA supports the development of comprehensive high school health curricula in conjunction with local medical societies and health departments. This curriculum should include instruction in appropriate evidence-based physical self examination~~(s) of the skin, breasts, testes and other systems~~."
H-170.984	Healthy Living Behaviors	Retain. Still relevant.
H-245.972	Breast Milk Banking	Retain. According to the Human Milk Banking Association of North America, 26 milk banks currently exist, but that number is not enough to meet the needs of all babies who need donated breast milk.

Policy/ Directive Number	Title	Recommended Action and Rationale
H-245.986	Infant Mortality in the United States	Retain in part. Delete (1) and (2) as WHO now has the WHO Indicator and Measurement Registry (IMR), which promotes interoperability through the SDMX-HD indicator exchange format and allows incorporation of appropriate international standards such as SDMX MCV (Metadata Common Vocabulary), ISO 11179 (Metadata Registry), DDI (Data Documentation Initiative and DCMES (Dublin Core). The Core health indicators is a set of 100 indicators prioritized by the global community to provide concise information on the health situation and trends, including responses at national and global levels. Retain (3) and (4) as they are still applicable.
H-245.987	International Infant Mortality Data	Retain in part. (1) can be sunset based on modification of H-245.986 (above). (2) is still valid and should be retained. Policy to read as follows: The AMA ~~(1) supports taking actions that would influence the World Health Organization to adopt a standard methodology for collecting infant mortality data. Such standardized data would permit more accurate comparison of the U.S. infant mortality rate with that of other countries; and (2)~~ supports taking steps to make the public aware that baseline data differences exist in comparison studies, so that information presented for political purposes may be misleading.
H-245.994	Inclusion of Overseas Beneficiaries in WIC	Retain. Program has been expanded to include Germany, England, Belgium, Netherlands, Italy, Spain, Japan, Korea, Turkey, Portugal, Central America and Ireland, but not all countries.
H-245.998	Infant Mortality Statistics	Retain. Still an issue.
H-250.986	AMA and Public Health in Developing Countries	Retain. Still relevant.
H-345.979	Evaluation of Delirium	Retain. Still an issue.
H-370.988	Regulation of Tissue Banking	Retain. Still valid.
H-420.975	Reduction in Prenatal Care Visits	Sunset. Guidelines now exist for everyone at all risk levels, and the AMA generally avoids endorsing the guidelines of specific organizations.
H-420.976	Alcohol and Other Substance Abuse During Pregnancy	Retain. Still relevant.
H-420.981	Fetal Alcohol Syndrome Warning Legislation	Retain. S.2060 was introduced in 114th Congress (2015-2016), but not passed.
H-425.975	Promoting Prevention Strategies in Waiting Rooms	Retain. Still relevant.
H-425.976	Preconception Care	Retain. Still relevant.
H-430.990	Bonding Programs for Women Prisoners and their Newborn Children	Retain. Still relevant.
H-440.861	National Diabetes Education Program	Retain. Still valid.
H-440.867	School Bus Safety	Retain. Still relevant.
H-440.868	Expedited Partner Therapy	Retain. Although expedited partner therapy is permissible in 38 states, it is only potentially allowable in 8 states, and it is prohibited in 4 states.
H-440.871	Collaboration Between Human and Veterinary Medicine	Retain in part. Sunset (6). Retain (1), (2), (3), 4), and (5) with change in (1) to read as follows: "Our AMA (1) supports ~~an initiative designed to promote~~ collaboration between human and veterinary medicine;"
H-440.885	National Health Survey	Sunset. Starting in 2013, the NHIS surveys the population annually and includes questions on sexual orientation, gender identity, and sexual behavior.
H-440.886	State Tracking of HIV/AIDS and Other Serious Infectious Diseases	Retain in part as follows: Delete (1) in part and retain (2) to read as follows: (1) Our AMA encourages ~~state medical associations to support state legislation to establish requirements for reporting and case follow-up for HIV/AIDS and other serious infectious diseases, nationwide. S~~ specific statutes ~~must~~ be drafted that, while protecting to the greatest extent possible the confidentiality of patient information: (a) provide a method for warning unsuspecting sexual partners, needle-sharing partners, or other close contacts; (b) protect physicians from liability for failure to

Policy/ Directive Number	Title	Recommended Action and Rationale
		warn the unsuspecting third party; but (c) establish clear standards for when a physician should inform the public health authorities; (2) Our AMA will assist states in their efforts to take whatever actions are necessary to allow blood banks and health departments to share information for the purpose of locating and informing persons who have any transmissible bloodborne disease.
H-440.904	Food-Borne Illness	Retain. Still valid.
H-440.905	Confidentiality, Counseling, and Treatment in the Tuberculosis Screening of Health Care Workers	Retain. Still valid.
H-440.906	Immunization of Health Care Workers with Varicella Vaccine	Sunset. 2014 CDC Guidelines incorporate immunization guidelines for health care workers with varicella vaccine.
H-440.913	Cellular Phone Location of 911 Emergency Calls	Sunset. FCC Phase II E911 rules require wireless service providers to provide more precise location information to Public Safety Answering Points; specifically, the latitude and longitude of the caller. Wireless service providers are required to file with the FCC a list of counties, or portions of counties, that they seek to exclude from the location accuracy requirements only where wireless carriers determine that providing location accuracy is limited or technologically impossible because of either heavy forestation or the inability to triangulate a caller's location.
H-445.990	Hospital and Medical Facility Communications with Scientific Content	Retain. Still relevant.
H-445.997	Interviews with News Media	Retain in part. Change "spokesmen for medicine" and "medical spokesmen" to "health professionals" to read as follows: Our AMA: (1) recommends that, when ~~spokesmen for medicine~~ health professionals cooperate with the media in the production of news stories and documentaries, every effort should be made to provide media personnel with additional information and medical authentication of materials being prepared for presentation to the public; and (2) urges media personnel to seek such assistance from ~~medical spokesmen~~ health professionals being interviewed for their program material.
H-450.958	Support for Development of Measures of Quality	Retain as still relevant with change in title to read: "Support for Ongoing Development of Measures of Quality"
H-455.978	Nuclear Regulatory Commission Medical Use Program	Retain. Still relevant.
H-460.978	Communication Among the Research Community, the Media and the Public	Retain. Still relevant.
H-460.979	Use of Animals in Research	Retain. Still relevant.
H-460.981	University-Industry Cooperative Research Ventures	Retain. Still relevant.
H-460.985	Support for Use of Animals in Teaching, Product Safety Testing and Research	Sunset. Superseded by AMA Policies: H-460.979, H-460.989, H460.932, H-460.974, and H-295.957.
H-470.961	Requirement for Daily Free Play in Schools	Retain. Still an issue in some schools.
H-470.999	Youth Fitness	Retain in Part. Name changed in June, 2010 to "President's Council on Fitness, Sports, and Nutrition" to read as follows: The AMA (1) approves in principle the aims and objectives of the ~~President's Citizens Advisory Committee on the Fitness of American Youth~~ President's Council on Fitness, Sports, and Nutrition and urges its member physicians to cooperate in the promotion of properly developed and soundly conceived plans and programs for youth fitness, and (2) requests the constituent associations and their member local medical societies to work cooperatively with reputable professional and other ethical groups interested in the improvement of youth fitness.
H-480.963	Folk Remedies Among Ethnic Subgroups	Retain. Still relevant.
H-480.970	Latex Allergy Warning	Retain. Still an issue.

Policy/ Directive Number	Title	Recommended Action and Rationale
H-480.990	The Transfer of Technology	Sunset. Based on 30-year old Health Policy Agenda (HPA) long defunct. No longer necessary.
H-480.991	Allocation of Privileges to Use Health Care Technologies	Sunset. Based on 30-year old Health Policy Agenda (HPA) long defunct. No longer necessary.
H-515.962	Renewed Focus on Domestic Violence	Sunset. Domestic violence is addressed in detail in Policy H-515.965.
H-515.968	Informing the Public and Physicians About Health Risks of Sedative Hypnotics, Especially Rohypnol	Retain. Still an issue.
H-515.989	Evidence of Standards for Child Sexual Abuse	Sunset. As of April, 2016, there is "A National Protocol for Sexual Abuse Medical Forensic Examinations—*Pediatric*"
H-520.989	Elimination of Anti-Personnel Landmines	Retain in part. In September of 2014, the US announced a new policy. Retain 1(a), (2), and (4) to read as follows: Our AMA: (1) urges the US government to (a) renounce its claimed exceptions to a ban on anti-personnel landmines, ~~b) effectuate through the United Nations an international ban on the product, stockpiling, sale, transfer, or export of these weapons, (c) establish a hemispheric landmine free zone in support of the Organization of American States position, and (d) sign the Ottawa Treaty banning all anti-personnel landmines by December 1997;~~ (2) encourages the US government and all members of the United Nations, as well as other interested charitable and medical organizations to contribute funds for the care, treatment and rehabilitation of landmine trauma victims; ~~(3) will work with the US Delegation to the United Nations to ban the manufacturing, trade, and use of all landmines;~~ and ~~(4)~~ (3) endorses a domestic and international ban on the manufacture, stockpiling, sale and use of anti-personnel landmines, and urges the President and the US Congress to work toward the achievement of this goal.
H-525.994	Quality of Pap Smear Analysis	Retain. Laboratory quality is still an issue.

2. EMERGING DRUGS OF ABUSE ARE A PUBLIC HEALTH THREAT

Reference committee hearing: see report of Reference Committee E.

HOUSE ACTION: RECOMMENDATIONS ADOPTED IN LIEU OF RESOLUTION 507 REMAINDER OF REPORT FILED
See Policies H-95.940 and D-95.970

INTRODUCTION

"New psychoactive substance(s)" (NPS) refers to emerging designer drugs of abuse. The term was standardized by the United Nations Office on Drugs and Crime (UNODC) and is used by the U.S. Drug Enforcement Administration (DEA) and the enforcement agencies of other countries who monitor the development of such drugs.[1] A recent report from the UNODC confirms that NPS have become a phenomenon of transnational organized crime with a significant global impact; 102 countries have reported the emergence of NPS.[2] The ease of global e-commerce allows for anonymity and circumvention of law enforcement and public health controls.

The term "new" in NPS does not necessarily refer to novel chemical entities that have been newly synthesized; it also includes substances in existing pharmacological classes that are subject to abuse, but are not currently scheduled under international drug control conventions or federal or state statutes. For example, many NPS were designed as research tools or as candidates for drug approval that subsequently failed; synthetic pathways are often published in journals or found in patent applications. These compounds are ingested with the intent to mimic the effects of a wide range of psychoactive substances, including prescription opioids, cannabinoids, stimulants, hallucinogens, and central nervous system (CNS) depressants. NPS are sold as "legal highs" and alternatives to

established drugs of abuse or as ways to "beat drug tests."[3] NPS may be 100 times more potent (or more) than existing pharmaceuticals but few, if any, have undergone formal pharmacological or toxicological testing.

Various classes of NPS have been associated with occurrences of adverse public health events around the United States. Heroin adulterated with the synthetic opioid carfentanil was linked to 174 opioid overdoses in six days in Cincinnati, Ohio.[4] Synthetic cannabinoids have been connected to the mass intoxication of individuals in a New York City neighborhood referred to as a "Zombie" outbreak.[5] With the increasing availability of NPS not only via the Internet, but in gas stations, convenience stores, adult stores, and smoke shops, effective prevention and treatment interventions will require broad cross-disciplinary approaches and cooperation among many stakeholders. The Council on Science and Public Health initiated this report to bring attention to this public health threat and offer recommendations to address it.

CURRENT AMA POLICY

AMA Policy H-95.940, "Addressing Emerging Trends in Illicit Drug Use," supports (1) assessing, monitoring, and disseminating information on emerging trends in illicit drug use; (2) developing continuing medical education on emerging drugs of abuse and; (3) expedited federal efforts to deem emerging drugs illegal. AMA policy recognizes substance use disorders, including addiction, as diseases and a public health hazard and supports a federal drug policy that is weighted more toward demand reduction rather than a law enforcement approach to address this problem (Policies H-95.976, H-95.975, H-95.981, H-95.983).

METHODS

English-language articles were selected from a search of the PubMed database through January 2017 using the search term "emerging drugs of abuse," coupled with "synthetic cannabinoid," "synthetic cathinone," "stimulant," "novel synthetic opioid," "fentanyl," "empathogen," "psychedelic," "dissociative," "depressant," and "public health;" and the search term "public health approach" in combination with "addiction" (not "gambling"), "substance misuse," and "drugs." Additional articles were identified from a review of the references cited in retrieved publications. Searches of selected medical specialty society and international, national, and local government agency websites were conducted to identify clinical guidelines, position statements, and reports.

NEW PSYCHOACTIVE SUBSTANCES (NPS)

NPS Regulation

NPS exist in a gray area between legal and illegal, and constitute an international policy challenge. A control framework has been developed by the UNODC to identify chemical classes, structural analogues, and specific substances that are prohibited from manufacture, distribution, and sale.[6-8] Establishing new controls in a timely manner is challenging because only a limited number of NPS have been reviewed and addressed by international drug convention members, each of which has their own national control regulations that may differ.

In early 2016, the European Union's European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) was monitoring more than 560 NPS, more than double the number of total drugs controlled under the UN conventions. In 2015, 100 of the compounds monitored by EMCDDA were detected for the first time, and more than 380 (70%) of those monitored were detected within the last 5 years.[1,9] In October 2015, the Chinese government controlled 116 new substances; carfentanil also is now a controlled substance in China.[10] The Japanese National Institutes of Health Sciences is a leader in surveying and identifying NPS; as of April 2015 Japan had scheduled 858 synthetic cannabinoids (SCs), making them illegal.[11,12]

In the United States, NPS are regulated using a rulemaking process under the Controlled Substances Act (CSA).[13] This rulemaking process can be initiated by United States Attorney General, at the request of the Secretary of the Department of Health and Human Services (HHS) with the concurrence of the U.S. Food and Drug Administration (FDA) and the National Institute on Drug Abuse (NIDA), or on the petition of any interested party. Most NPS are temporarily placed onto schedule I of the CSA when they are first properly determined to be biologically active and a threshold of data is obtained by the DEA. Temporary scheduling is effective for two years, which can be extended for an additional year if proceedings to permanently control the substance are initiated. After scientific and medical evaluation and a period of public comment, a final rule regarding substance scheduling can be issued. State policy

makers have added specific chemicals and their analogues to their controlled substance schedules, and have created civil and criminal penalties that target NPS manufacturers and sellers.

Two standard approaches to identifying NPS for regulation exist in the United States. A neurochemical approach is used by the DEA, certain states (Iowa, Maryland, Texas), and other jurisdictions (District of Columbia). To assign a substance to schedule I using this approach, the substance must demonstrate receptor binding characteristics and be active in functional assays similar to an existing member of designated chemical classes. This approach theoretically eliminates the need to continually update schedules each time a new compound is discovered; it is limited to the binding site(s) recognized by the statute in each jurisdiction and by uncertainty about the level of proof necessary to satisfy the statutory requirement. The alternative method for regulation is the analogue approach, which requires that a substance be both substantially similar structurally to an existing Schedule I or II controlled substance, and that it has, or is intended to have, a substantially similar effect on the body as the scheduled substance. This approach covers every molecule as long as it is structurally similar to at least one schedule I or II substance. No clear guidance exists on what constitutes "substantially similar," and some substances have failed this test because of "lack of structural similarity," despite otherwise having the pharmacologic attributes of an NPS.[14] The legal and scientific communities recognize the need to clarify and simplify language around scheduling and also have identified a "language barrier" surrounding this issue as a challenge to overcome.

NPS Epidemiology

NPS usage is difficult to capture and is likely underreported because these drugs emerge quickly, may have a transient period of use, and are difficult to individually track and identify. Experts warn that because of the dynamic nature of the NPS market, many of the existing epidemiological indicators of drug use are poorly suited to measure or monitor the use of emerging substances. For example, including specific questions about the use of NPS in national surveys is difficult because these surveys often take years to plan and poison center data is often limited by the absence of analytical confirmation and reliance on secondary reporting of clinical features.[15]

NPS Pharmacology

Up to thirteen categories of NPS have been described by global authorities based on chemical structure.[1] Not all drugs in a chemical class produce the same pharmacological effects; for example, the phenethylamine category includes central nervous stimulants, d-lysergic acid diethylamide (LSD)-like hallucinogens, and 3,4-methylenedioxy-methamphetamine (MDMA)-like stimulant empathogen-entactogens (drugs that produce feelings of empathy, openness, and being touched). Furthermore, the same pharmacological effect can be produced by drugs from different categories; for example, many synthetic cathinones, substituted phenethylamines, and piperazines are central nervous system stimulants.

This report will focus on six broad categories based on pharmacological and clinical effects: synthetic opioids, synthetic cannabinoids, stimulants, hallucinogens (psychedelics and dissociatives), CNS depressants, and others (Table 1).

Synthetic Opioids. Serious adverse events, overdoses and deaths have been increasingly attributed to NPS opioids in recent years, the vast majority of which are fentanyl analogues (Table 1).[16-33] From 2014 to 2015, the death rate from synthetic opioids other than methadone increased by 72% in the United States, most likely illicitly manufactured fentanyl, and potentially other NPS opioids.[34] Fentanyl, its analogues, and other synthetic opioids are particularly concerning because they have recently been linked to numerous clusters of deaths around the United States. Carfentanil was linked to 174 opioid overdoses in six days in Cincinnati;[4] a cluster of deaths has been attributed to acetylfentanyl in Rhode Island;[35] illicit fentanyl has been marketed as cocaine and resulted in an overdose cluster in Connecticut;[36] counterfeit Norco® (hydrocodone/acetaminophen) contaminated with fentanyl in Sacramento led to over 50 overdoses and 12 deaths;[37,38] and counterfeit Norco® in San Francisco (that was actually fentanyl and promethazine, which potentiates the CNS depressant effects of opioids) resulted in another public health threat.[39]

NPS synthetic opioids are generally selective mu-opioid receptor (MOR) agonists and former candidates for regulatory approval as therapeutic agents. The potency of these compounds varies greatly with some analogues having only slightly higher potency than morphine and others having significantly greater potency. For example U-47,700 is 7.5 times more potent, while carfentanil is 10,000 times more potent than morphine.[40-42] Knowledge about the majority of fentanyl analogues and other recent opioid-like NPS is limited because they have not been studied in

humans. Even studying them in model systems is difficult because of their extraordinary potency which places researchers who handle them at high risk for harm from accidental exposure.[40]

China and Mexico are the primary source countries for many NPS opioids.[3,43-46] These compounds are being substituted for heroin and other opioids (such as hydrocodone), are being used to adulterate heroin and other non-opioid drugs of abuse, and are being sold on the street. Not only are they desired by those seeking relief from opioid withdrawal, they are gaining popularity as drugs of choice among recreational opioid users.[32,36] The DEA expects the designer NPS market, particularly designer fentanyls, to continue to expand as novel products attract new users.[3] In its 2016 annual Emerging Threat Report, 60% of the NPS opioids were identified for the first time.[47] Public warnings have been issued cautioning the public and law enforcement officials about the danger of the potency of NPS opioids and the fact that high or multiple doses of naloxone may be needed to reverse their effects in the event of an overdose.[36,44] A recent review details the structure-activity relationships of fentanyl-related compounds and derivatives,[48] which unregulated laboratories in China continue to develop.[49]

Synthetic Cannabinoids. SCs are the largest category among NPS and have become colloquially known by the names of previously "branded" products K2 and Spice (Table 1). SC products typically contain one or more compounds dissolved in a solvent and sprayed on a plant material, sometimes with flavorings such as bubblegum or strawberry, which is then smoked. The laced plant material is often placed in branded packets, labeled as "not for human consumption" in order to circumvent drug laws, and sold as "herbal incense."[3] These products also are being increasingly sold in liquid forms for e-cigarette cartridges.[3,50] The chemical structures of SCs vary greatly and new derivatives are emerging constantly. SCs have been associated with clusters of outbreaks of adverse events including severe delirium and "zombielike" altered mental status.[5,51,52]

A wide variety of SC chemical compounds exist that likely activate multiple pharmacological pathways causing diverse and unexpected adverse effects.[53,54] SCs are mainly cannabinoid receptor 1 (CB_1) agonists intended to mimic the effects of Δ^9-tetrahydrocannabinol (THC), however, some also have affinity for the peripheral cannabinoid receptor 2, CB_2.[54-56] Most SCs are full agonists, as opposed to the partial agonist activity of THC. They have higher affinity for cannabinoid receptors and act more rapidly at these receptors than does THC. Cannabis or cannabis plant extracts contain other cannabinioids including cannabidiol (CBD), which appears to possess anxiolytic or antipsychotic properties that can attenuate the psychotomimetic properties of THC. Because SCs exist in pure form, they generally result in more intense psychotomimetic effects than does use of herbal cannabis.[57] It is noteworthy that SCs are associated with severe psychosis, agitation, and intense sympathomimetic effects.[58] Additionally, many SCs have potent active metabolites which can cause prolonged adverse effects.[58] Considering the potency of the compounds, the risks of misuse and addiction are a concern.[54] Recent reviews summarize structure-activity, epidemiology, pharmacodynamics, metabolism, clinical implications, and adverse effects of SCs.[12,55,58-63]

Stimulants. The category of NPS stimulants contains many classes of chemical structures with varying pharmacological effects and varying potency (Table 1). Convention has been to compare them to relatively well-studied stimulants.[64-66] Some compounds mimic amphetamine (classic psychostimulants) to produce arousal and stimulation. Others mimic MDMA ("Molly"), are empathogen-entactogens, and are used mainly to enhance sociability.[65] Still other NPS stimulants are intended to mimic cocaine or methylphenidate.[66-68]

A number of agents among the NPS stimulants commonly known as "bath salts" (usually synthetic cathinones) or "plant food" are sold as "research chemicals," and are labeled as "not for human consumption" in attempts to circumvent drug laws.[66] These chemicals are usually powders, crystalline mixtures, or pressed into tablets. Often NPS stimulants are mixed with cocaine or methamphetamine and many have become substitutes for MDMA, unbeknownst to users. Some common NPS stimulants in the news recently have been the different "bath salts," methylenedioxypyrovalerone (MDPV), mephedrone, and alpha-PVP ("Flakka").[69-71] It is not uncommon for users to be consuming multiple NPS stimulants in a product and to be unaware of the identity of the compound(s) they are using.

NPS stimulants alter synaptic concentrations of the neurotransmitters dopamine, norepinephrine, and 5-hydroxytryptamine (5-HT, otherwise known as serotonin) by inhibiting and/or inducing transport (reuptake) proteins to varying degrees.[65] The pharmacologic properties of NPS stimulants account for their potential to trigger patterns of misuse and addiction.[72] Adverse effects of NPS stimulants are reported to be similar to those of other stimulants.[65] However, their use may lead to serotonin syndrome, violence, homicidal combative behavior, self-mutilation, coma, and death.[64,66,73] Recent reviews summarize the neuropharmacology and adverse effects of NPS stimulants.[64,65,74,75]

Hallucinogens. Two distinct subcategories of NPS hallucinogens have emerged: psychedelics which are designed to have LSD-like activity, and dissociative agents which are purported to have phencyclidine (PCP) or ketamine-like pharmacologic effects (Table 1).

In addition to being LSD analogues, many NPS psychedelics are also members of the phenethylamine or tryptamine chemical classes and have multiple pharmacologic profiles. For example, some phenethylamines such as the NBOMe-series of drugs are stimulants as well as psychedelics.[64] This pharmacologic effect has been described as MDMA and LSD fusing together, thus producing new psychedelic substances.[76] NPS psychedelics generally affect extracellular serotonin concentrations.[64,65] As a result, serotonin syndrome and sympathomimetic toxicity are concerns.

Full pharmacologic profiles of many NPS psychedelics have not yet been elucidated; however, some analytical and animal model behavioral characterizations are beginning to emerge for individual compounds.[77,78] Receptor studies performed on individual NPS psychedelics reveal varied pharmacodynamic properties with respect to receptor affinity and activation of signaling pathways; drug users anecdotally recognize, respond to, and report on these differences.[64,79,80] A litany of over 230 psychedelic compounds, including synthesis instructions, bioassays, and dosages exists in two books, PiHKAL and TiHKAL, published by psychopharmacologist Alexander Shulgin (Shulgin is credited with discovering most of the cataloged psychedelic compounds).[81,82] Because the effects of these drugs vary dramatically, users can theoretically choose the experience they desire based on onset, duration, and relative potency to a compound such as LSD. Some of these inherent properties lead to dangers; for example, in the case of Bromo-DragonFLY, very high potency coupled with delayed onset has resulted in re-dosing and subsequent toxicity.[83] Note that Shulgin has attained cult-hero status among users of these compounds; his books frequently glorify use of these products for recreational purposes – the neologism PiHKAL stands for "phenylethyamines I have known and loved," and TiHKAL stands for "tryptamines I have known and loved."

NPS dissociative drugs are primarily analogues of PCP and ketamine ("Special K") and as such are principally uncompetitive N-methyl-D-aspartate (NMDA) receptor antagonists.[64,84,85] Many of the known PCP and ketamine analogues were developed through legitimate research and their structures exist in peer-reviewed and patent literature. However, re-emergence of NPS dissociative agents has occurred through online forums – with forum members collaboratively planning, synthesizing, and characterizing rationally designed compounds, including methoxetamine, with online "research chemical" vendors subsequently selling the compounds.[79,80,84] Little data on behavioral and psychological effects exist; however, anecdotal reports note effects comparable to PCP and ketamine although with varying degrees of intensity and duration.[86] Inconsistent data on withdrawal symptoms have been recorded; anecdotal reports of "cravings" have emerged.[64] Little toxicological data exist, although some case studies have been presented.[87] A recent publication reviews the non-medical use of dissociative drugs.[84]

CNS Depressants. NPS CNS depressants consist mainly of benzodiazepine analogues (Table 1). The first compounds to emerge as NPS benzodiazepines were phenazepam ("Bonsai") and etizolam. Because these drugs are controlled substances in a few European countries, entrepreneurs derived subsequent NPS from failed therapeutic drug candidates in old pharmaceutical research to circumvent drug laws in many countries.[88-90] Similar to marketed benzodiazepines, NPS benzodiazepines have active metabolites that are also marketed as NPS (for example, the active metabolite of flunitrazepam, norflunitrazepam, is marketed on drug forums as fonazepam). A diverse range of possible modifications and the potential for development of families of novel NPS benzodiazepines has public health officials concerned about this emerging class.[89] NPS benzodiazepines have been offered as research chemicals on the Internet; investigators and public health officials speculate these are consumed not only to induce a state of intoxication, but also for self-medication of anxiety disorders.[88]

Similar to classic benzodiazepines, NPS benzodiazepines bind to the ionotropic gamma-aminobutyric acid ($GABA_A$) receptor.[64,89] NPS benzodiazepines remain one of the least-well-characterized categories of NPS. Similarity to established agents is unclear; drug disposition and elimination rates are largely unknown, which takes on increasing importance in the context of multiple dosing, use by naïve patients, and/or use in combination with alcohol and other drugs. One study evaluated pharmacokinetic properties of a single dose of flubromazepam and noted a very long half-life of more than 100 hours and detectable urinary metabolites for more than 28 days post-ingestion;[91] the activity of metabolites was not assessed in this study. Also of note is that many of these compounds have a high potency compared to traditional benzodiazepines, which could lead to unintentional overdoses; there is also concern about their use in drug-facilitated crimes, including sexual assault and robbery.[92] Additionally, complex metabolic pathways and shared metabolites could complicate clinical investigation and analytical findings.

Others. Other emerging drugs (including botanicals and other classes of psychoactive drugs that do not fit neatly into the aforementioned categories) are being sold on the gray market and cataloged on online drug forums. Etaqualone, first synthesized in 1963, has become a popular "research chemical" for sale over the Internet and is watched by the DEA.[1,93] It is an analogue of methaqualone (brand name Quaalude) and is a $GABA_A$ receptor agonist resulting in sedative and hypnotic effects. Several other methaqualone analogues cited in literature could emerge as NPS.[93]

Mitragyna speciosa is a deciduous tree indigenous to Thailand and other Southeast Asian countries. Over 25 alkaloids have been isolated from *M. speciosa* including mitragynine and 7-hydroxymitragynine, which are believed to be the primary pharmacologic constituents. Kratom is the colloquial name of the dried plant material of *M. speciosa.* Its active components are not classified as opioids but have been identified as partial MOR agonists and competitive kappa- and delta-opioid receptor antagonists.[94-96] *M. speciosa* leaves are often chewed fresh, but dried leaves in powder form are also available and are swallowed, brewed into a tea, or smoked. In low doses kratom is reported to have stimulant effects, while at high doses it can have sedative-narcotic effects. Kratom has been available for purchase as an herbal preparation, and there have been reports of adulteration of kratom products with O-desmethyltramadol and 7-hydroxymitragynine.[97,98] Traditionally *M. speciosa* has been used by Southeast Asian laborers to alleviate fatigue or as a mood enhancer and/or analgesic. More recently, in addition to recreational use, kratom has been touted as an antidepressant, anxiolytic, anti-inflammatory, analgesic, and alternative to methadone or buprenorphine for medication-assisted treatment of opioid use disorder.[94,95] Pharmacological studies evaluating kratom are limited, but are beginning to emerge.[99] The DEA recommended kratom for inclusion on schedule I of the CSA in early 2016, but public opposition led to reconsideration. The 8-factor analysis used in the decision not to add kratom to schedule I of the CSA concluded that kratom has substantially lower harmfulness and abuse potential than opioids and that its consumption is primarily motivated by its perceived benefits as a natural "home remedy" and alternative to conventional medicines for a variety of ailments.[95]

Ayahuasca is a brew of two plants, *Psychotria viridis*, which contains *N,N*-dimethyltryptamine (DMT), primarily a serotonin modulator, and *Banisteriopsis caapi*, which has monoamine oxidase inhibiting (MAOI) properties and is orally active.[100] Ayahuasca administration is characterized by a modified state of awareness where users experience deep introspection and increased insight, dream-like imagery, enhanced emotions, and recollection of personal memories.[100,101] Ayahuasca use originated as an Amazonian medicinal, spiritual, and cultural practice, but the experience has since spread into non-indigenous syncretistic and recreational practices worldwide. The globalization of ayahuasca has raised both public health and legal concerns.[102,103] Although DMT is on the UNODC international conventions scheduled list, no plants containing the drug are currently included on the list.[6-8] Some reports suggest that ayahuasca may have therapeutic effects for the treatment of substance use disorders and psychotherapeutic interventions.[101,104] Recent reviews discuss the pharmacology and therapeutic potentials of ayahuasca.[101,105]

Dietary supplements (DS) sold for weight-loss purposes are among the most adulterated DS on the market and are the third most prevalent group of supplements that require recalls of products containing unapproved pharmaceutical ingredients.[106] Several synthetic NPS stimulants have appeared in DS over the last several years, perhaps in an effort to replace Ephedra after it was banned.[107] Many are added to DS in the guise of a plant ingredient on the label. Some of the more noteworthy stimulants include the structurally similar 1,3-dimethylamylamine (DMAA) and 1,3-dimethylbutylamine (DMBA), which are labeled as geranium and Pouchong Tea, respectively, and have been associated with adverse health effects;[108-113] β-methylphenethylamine (BMPEA), often labeled *Acacia rigidula*, is the subject of an FDA study;[114,115] and N,α-diethyl-phenylethylamine (N,α-DEPEA), a methamphetamine analogue isomer which was labeled as dendrobium, has been the subject of several news stories.[116] A recent review discusses several NPS sympathomimetic stimulants that have been detected in DS.[107]

NPS Market

A UN World Drug Report on the world drug problem, published before a special session of the General Assembly, includes a detailed market analysis for each class of NPS; noteworthy are the numerous ways and forms in which they are marketed and the many different user groups engaged with NPS.[117] The UNODC and the DEA agree that the market for NPS will continue to expand and that the Internet is transforming the drug trade and allowing for global access to these emerging compounds.

Trafficking and selling NPS has a high profit margin. They are sold mostly on the surface Internet by major online marketplaces that advertise their products and accept payment by major credit and debit cards and online payment

services or direct bank transfers through product websites. The anonymity, low-cost, scope, and apparent reliability of these websites makes it a challenge for law enforcement to seize the thousands of unmarked small packages being shipped to individuals all over the world. Research has been conducted detailing online cryptomarkets, the anonymous global Amazon-like marketplaces that seem to be a primary wholesale source of NPS on the deep web, and suggests likely growth in the coming years in sales and continued resilience to law enforcement.[118]

NPS TREATMENT CHALLENGES

NPS have been increasingly associated with hospital emergencies, acute adverse health consequences, and drug-induced deaths.[119] Individuals rarely know the dose and identity of the drug they are taking. Furthermore, other considerations include variable purity and potency of the active ingredient and the potential presence of adulterants or contaminants.

Treating NPS intoxication is limited by the lack of inexpensive and rapid screening tests to confirm the presence of most NPS. Very few, if any, NPS are detected by standard immunoassay urine drug screens, and with limited availability of reference standards, developing laboratory-validated analytical methods is a challenge. Even when analytical methods are developed, the rapid appearance of NPS on the market limits test reliability and the ability of laboratories to keep up. For individuals with histories suggestive of drug misuse, particularly opioids and benzodiazepines, physicians should be aware of this limitation and carefully assess "false-positive" urine drug testing results, much like medical review officer protocols advise.[32,92]

To add to these clinical challenges, some NPS (synthetic cannabinoids for example) have a short detection window in biological fluids, doses are low, the compounds are extensively metabolized, and little to no parent compound is excreted in urine.[12] Fentanyl and fentanyl analogues pose a threat not only to users, but also to health care professionals, law enforcement personnel, and postal service employees since minuscule amounts of the drug are lethal and can be inadvertently inhaled or absorbed through the skin.[3]

NPS AND PUBLIC HEALTH

Public health approaches have been used to successfully address outbreaks of NPS overdoses. When such approaches have been successful, pre-existing coordinated relationships among multiple groups (law enforcement, emergency medical services personnel, forensic laboratories, public health officials, social service providers, and hospital emergency department physicians and personnel) have allowed for a rapid and comprehensive response to a given outbreak and its sequelae.

For example, an extended pattern of SC use in Anchorage, Alaska was eventually contained through the use of multiple collaborative interventions.[51] In New York, New York, a "Zombie" outbreak caused by a new NPS was identified and characterized within 17 days, including the successful development of reference standards for the laboratory detection of emerging substances and their metabolites. This was made possible because of close collaboration among medical professionals who documented clinical histories, additional background and drug paraphernalia provided by law enforcement, and reliable analysis performed by laboratories.[5] Finally, a rapid and controlled public health response involving multiple health care providers reduced the impact of an outbreak of fentanyl laced cocaine in New Haven, Connecticut and mitigated more severe public health consequences.[36]

Although coordinated responses like the ones mentioned do exist, most strategies and solutions for illicit drugs remain compartmentalized and disconnected; examples of such surveillance programs are detailed below. A need for a multifaceted, collaborative multiagency approach to combat NPS use exists. This approach, as well as increased NPS surveillance and early warning systems informed by laboratories, and epidemiologic surveillance tools resulting in actionable information that can quickly reach law enforcement, public health officials, emergency physicians, and vulnerable populations will aid in mitigating the growing NPS problem.[34,120]

Surveillance

Public health and law enforcement agencies are both tasked with protecting individuals, but have different philosophies and use different methods. For example, the term "surveillance" in a public health context refers to systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event; in law enforcement surveillance generally means the observation of people or premises during the course of an

investigation. Recently, law enforcement entities have started to align their efforts more closely with public health objectives in an effort to combat the public health threat posed by emerging drugs of abuse.

The Council of State and Territorial Epidemiologists (CSTE) released a position statement in 2008 stating that the "identification and quantification of the determinants and human health consequences of use and abuse of substances is an essential first step in prevention."[121] At that time, substance abuse had no devoted categorization under the CSTE organizational structure and was not addressed in previous capacity assessments. The position statement called for the development of performance measures for addressing substance abuse within five years. In its 2013 National Assessment of Epidemiology Capacity, CSTE reported that less than 12 percent of states had substantial capacity for substance abuse epidemiology (by this time, a formal CSTE category), 43 percent of states had no capacity, and most states had no plans to develop capacity despite the fact that substance abuse problems contribute directly to the leading causes of death in the U.S. CSTE noted part of the reason for states' unwillingness to develop capacity in the area of substance abuse was "turf issues" with other agencies and a perception among politicians that treatment-based efforts are sufficient to combat the problem. CSTE recommends the development of a strategy to increase the epidemiologic capacity to address substance abuse at the local, state, and national levels and to encourage more effort to publicize successes and to expand the role of epidemiology in the program area.[122] Accordingly, in 2015, the SAMHSA Center for Behavioral Health Statistics and Quality (CBHSQ) incorporated a Community Epidemiology Team with deployment capacity to respond to local outbreaks related to drug use. In 2016, CBHSQ/SAMHSA began phase two of this project in partnership with CSTE to identify and promote a core set of behavioral health indicators intended to contribute to a national behavioral health surveillance system capable of responding to community-level needs. CSTE has a capacity assessment underway.

The National Drug Early Warning System (NDEWS) is funded by NIDA and administered by the Center for Substance Abuse Research (CESAR) at the University of Maryland. CESAR monitors emerging substance use trends. Its activities help enable health experts, researchers, and citizens to better respond to potential outbreaks of illicit drug use and to identify increased use of NPS.[123] NDEWS builds on what was formerly the NIDA Community Epidemiology Work Group (CEWG), monitoring not only local data from the CEWG program, but also incorporating a national perspective to monitor emerging issues.

Role of the DEA. In the United States, the DEA is tasked with identifying new drugs of abuse and determining the need to appropriately schedule and classify them in collaboration with the FDA and NIDA. Temporarily scheduling a new NPS by the DEA requires a threshold of data regarding that drug. In the current landscape of constantly emerging NPS, obtaining the relevant and appropriate amount of data from users who have experienced adverse events and overdoses can be challenging. Emergency department physicians are limited by drug testing capabilities at their facilities and may not collect appropriate specimens for testing and positive identification of NPS. Outbreaks may not be recognized, and medical examiner and coroner offices strained by increasing cases may not perform comprehensive toxicology screens on all cases and may miss NPS identifications. Additionally, reference materials may not be available in laboratories to identify new emerging compounds.

As new NPS emerge, the DEA collaborates with the Chemistry and Drug Metabolism Section (CDM) at NIDA. When data for regulation via the neurochemical approach are needed, CDM obtains purified drug samples from the DEA and performs the appropriate assays. The data obtained are quickly published to provide laboratories and regulating bodies around the world with needed information. The CDM also collaborates with universities worldwide and governmental forensic institutes, with the goal of circulating information to hospitals and laboratories as rapidly as possible and to share information about chemical structures with commercial reference standard manufacturers.[12]

The DEA Special Testing and Research Laboratory (STRL) has an Emerging Trends Program to analyze NPS for enforcement and intelligence purposes. However, a formal identification is made only when authenticated reference material is available for comparison. This is a limitation because many NPS may go undetected. When reference material is not available, the drug is identified as "substance unconfirmed." Throughout periods in the same calendar year, the landscape of drugs detected can change dramatically.[124,125] STRL also has a Reference Materials Program through which reference standards are synthesized and characterized. Information about NPS chemical structures are subsequently shared with law enforcement, forensic, and public health communities.

The DEA National Forensic Laboratory Information System (NFLIS) systematically collects results from federal, state, and local forensic laboratories to evaluate how substance use varies geographically. More than 300 state and

local forensic laboratories in the United States exist, performing nearly two million drug analyses each year. The data in the most current yearly report include 50 state systems and 101 local or municipal laboratories/laboratory systems (representing a total of 277 individual laboratories) and federal data from DEA and U.S. Customs and Border Protection laboratories.[126] An NFLIS special publication on 2C-phenethylamines (mostly NPS stimulants and hallucinogens) reported a 295 percent increase in their identification from 2011 to 2015.[127] An NFLIS Brief reported a 15-fold increase in fentanyl reports submitted to laboratories between 2013 and 2015 and that the majority of fentanyl drug reports resulted from clandestinely produced and trafficked fentanyl, not fentanyl diverted from traditional pharmaceutical sources.[128]

Complications from emerging drugs of abuse, such as acetylfentanyl, frequently surface initially in emergency departments. Prompt recognition and treatment can help reduce morbidity and mortality. The American College of Emergency Physicians published an information paper highlighting the complexity of the NPS problem and providing a listing of surveillance sources for healthcare providers.[129] The National Drug Control Strategy recommends the pursuit of innovations in data collection that reach beyond traditional methods in an effort to keep up with the rapidly evolving drug culture. For example, scanning social media and using Internet search tools to understand local trends can augment local emergency department data, and technologies that estimate drug use within communities in real-time can complement traditional epidemiological survey studies.[10]

Fusion Centers

Data fusion involves the exchange and analysis of information, previously siloed, from multiple sources such as law enforcement, public safety, public health/health care, and the private sector, with the end goal of developing meaningful and actionable intelligence and information. Additionally, updates can be provided based on re-evaluation of data in the context of new information. Across the nation, fusion centers have been established to facilitate the sharing of information among multiple agencies and to build intelligence capabilities. It should be noted that fusion centers operate in accordance with existing state and federal privacy laws and requirements.[130-132] Both the Centers for Disease Control and Prevention (CDC) and the Association of State and Territorial Health Officials agree that reliable data are critical in order for public health and law enforcement agencies to effectively carry out their mission.[133] Because these organizations share a responsibility to protect the public, the CDC lists "information sharing" as one of the 15 capabilities for national public health preparedness standards that are used to assist public health departments in strategic planning.[134]

Generally, fusion centers have focused on bioterrorism, but their applications also include intelligence gathering and risk assessment for other hazards, including NPS, in order to protect the security of the country. Drug-specific fusion centers are being developed to better understand the scope of the drug problem in local communities and to enhance prevention, treatment, and enforcement efforts.

In New Jersey, the Drug Monitoring Initiative (DMI) is a successful example of a drug-specific fusion center.[135] The DMI was initiated by the NJ State Police in response to an exponential rise in drug overdoses. The goal is to better understand the scope of the problem through continuous statewide monitoring of drug activities. Continuous statewide monitoring of drug activities and creation of an "information sharing environment" enables law enforcement, community services, and public health experts to better understand trends, patterns, implications, and threats from illicit drug activity on both the supply and demand side. This process allows for intelligence-led policing, investigative support for law enforcement, and intelligence-led outreach for treatment and prevention efforts. DMI also has established a list of best practices, including a monthly conference call involving representatives from 48 states in order to provide information to other law enforcement, public health, and fusion centers across the country. Additionally, a basic drug recognition course is offered for law enforcement first responders and health partners so they are informed about emerging drug trends and able to share the information. Four additional sites in the United States are currently being modeled after DMI. See Appendix 1 for a summary sheet outlining the DMI program.

Interventions Directed at Preventing or Reducing Harm

Educational campaigns are effective at reducing harms from NPS.[136] Drug checking is another harm reduction strategy utilized by drug users to evaluate the contents of pills or powders after obtaining them. Some users will seek illicit drugs despite the known risks of substitution and adulteration, for example as with MDMA. The availability of commercially available kits allows users to distinguish MDMA from other compounds, such as bath salts, before

use. Commercially available drug checking kits, although limited by the methods used to check the drugs, are an effective strategy to test contents of pills and powders for validity and/or the addition of contaminants or adulterants. The rationale is that if prevention campaigns have failed, this harm reduction strategy could result in more informed user decisions.[119,137]

CONCLUSIONS

The rate of NPS development and emergence is dramatically outpacing our ability to identify and regulate such substances. The UNODC and the DEA agree that NPS will continue to pose a global threat to health, and overdoses, other serious adverse events, and deaths will continue to occur. Agreement also exists around the world that risks need to be highly publicized and education should be directed to correcting the perceptions that these substances are benign. Those who experiment with NPS have the ability to communicate and share experiences rapidly and globally using the Internet. As an example, the chemistry and subjective effects of the SCs contained in "Spice" products were being discussed by users in online forums at least 2 years before they were officially identified and characterized by a laboratory.[138] Drug overdose deaths in the United States involving synthetic opioid drugs such as fentanyl and carfentanil have more than doubled between 2010 and 2015 and are expected to continue increasing.[139] Continuing progress in eliminating the threat of NPS in the United States will require a comprehensive, multidisciplinary effort. Physicians, public health officials, law enforcement, first responders, and forensic laboratories all need to collaborate to decrease morbidity and mortality related to emerging drugs of abuse. Data systems need to be adaptable and utilized cooperatively by federal, state, and local agencies to derive actionable intelligence, and intelligence must be used in real-time to alert stakeholders of drug-related incidents. The frequent emergence of new NPS with unknown dangers and high death tolls, especially NPS opioids, are a distinct challenge that will require a concerted and coordinated effort and response to improve outcomes.

RECOMMENDATIONS

The Council on Science and Public Health recommends that the following be adopted and the remainder of the report be filed:

1. That Policy H-95.940, "Addressing Emerging Trends in Illicit Drug Use," be amended by addition and deletion as follows:

   Addressing Emerging Trends in Illicit Drug Use
   Our AMA: (1) recognizes that emerging drugs of abuse, especially new psychoactive substances (NPS), are a public health threat;

   ~~(1)~~ (2) supports ongoing efforts of the National Institute on Drug Abuse, the Drug Enforcement Administration, the Centers for Disease Control and Prevention, the Department of Justice, the Department of Homeland Security, state departments of health, and poison control centers to assess and monitor emerging trends in illicit drug use, and to develop and disseminate fact sheets, ~~and~~ other educational materials, and public awareness campaigns;

   (3) supports a collaborative, multiagency approach to addressing emerging drugs of abuse, including information and data sharing, increased epidemiological surveillance, early warning systems informed by laboratories and epidemiologic surveillance tools, and population driven real-time social media resulting in actionable information to reach stakeholders;

   (4) encourages adequate federal and state funding of agencies tasked with addressing the emerging drug of abuse health threat;

   ~~(2)~~ (5) encourages the development of continuing medical education on emerging trends in illicit drug use; and ~~(3)~~

   (6) supports efforts by ~~the~~ federal, state, and local government agencies to identify new drugs of abuse and to institute the necessary administrative or legislative actions to deem such drugs illegal in an expedited manner.

2. That our AMA participate as a stakeholder in a CDC/DEA taskforce for the development of a national forum for discussion of NPS-related issues.

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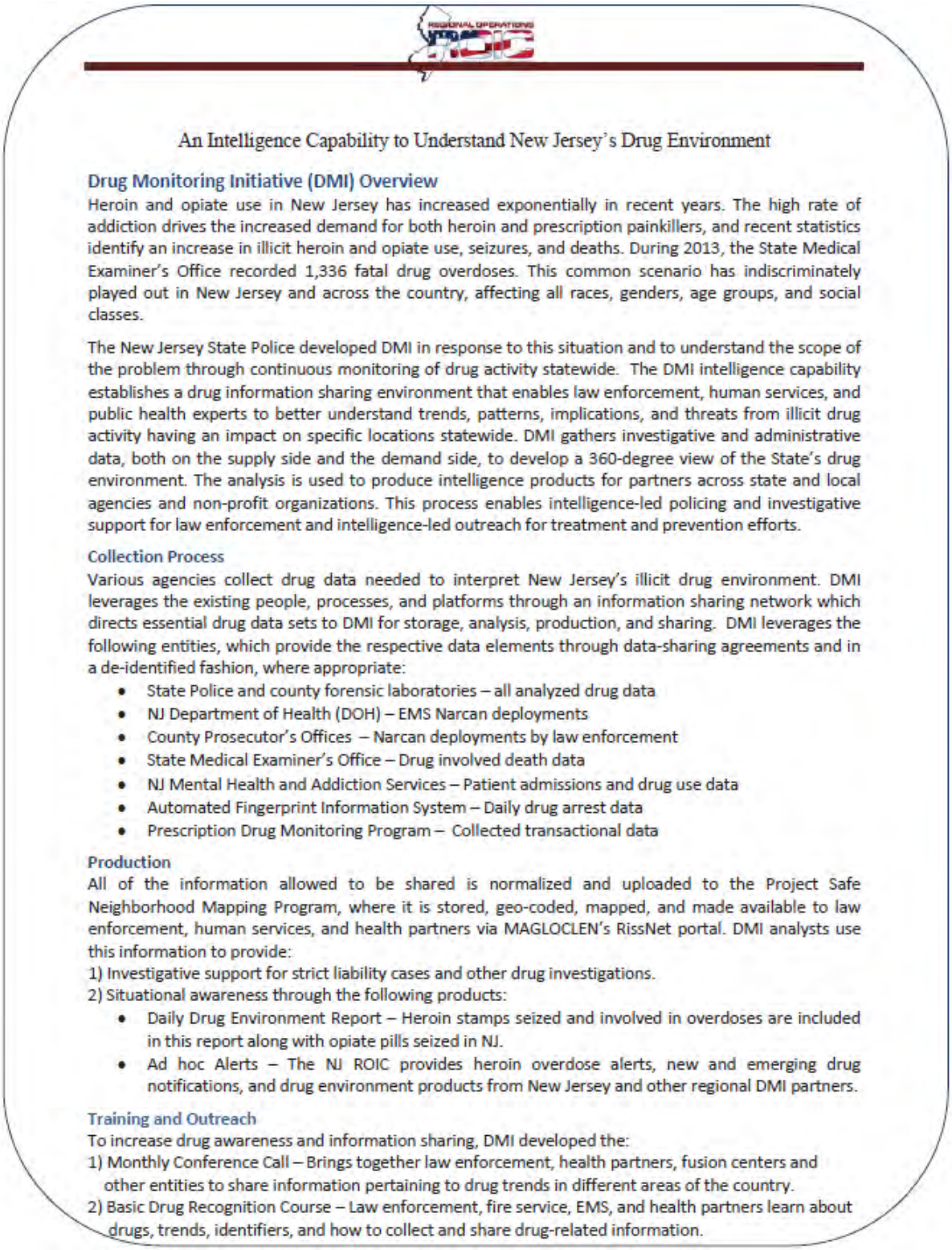
Table 1. New psychoactive substance opioids, synthetic cannabinoids, stimulants, hallucinogens, CNS depressants, and other substances.[48,55,64,65,84,89]

	Opioids	Synthetic Cannabinoids	Stimulants	Hallucinogens	CNS Depressants	Others
Sub-category			Synthetic Cathinones (amphetamine-like)[1] Empathogen-entactogens (MDMA-like)[2] Methylphenidate-like[3] Cocaine-like[4]	Psychedelics (LSD-like)[5] Dissociatives (PCP-like)[6]	Benzodiazepine-like	Plants/Extracts[7]
Selected Examples	Acetylfentanyl Acryloylfentanyl AH-7912 Butyr-Fentanyl Carfentanil Furanyl Fentanyl MT-45 Ocfentanil U-47,700 U-50488 W-15 W-18	5F-ADB-PINACA 5F-PB22 ADB-FUBINACA AM-2201 CP-47,497 FUB-NPB-22 FUB-PB-22 HU-210 JWH-018 JWH-201 JWH-370 NNEI RCS-4 UR-144 XLR-11	2-DPMP[3] 3-FMC[1] 5-APB[2] 6-APB[2] Alpha-PVP[1] Butylone[1] BZP[1] Ethylphenidate[3] Flephedrone[1] m-CPP[2] MDAI[2] MDPV[1] Mephedrone[1,2] Methcathinone[1] Methylone[1,2] Naphyrone[1] PMA[1,2] RTI-111[4] TFMPP[2]	"Fly" drugs (Bromo-dragonfly)[5] 1P-LSD[5] 2C-series[1,5] 2-MeO-diphenidine[6] 2-MK[6] 3-MeO-PCE[6] 3-MeO-PCPy[6] 4-MeO-PCP[6] 5-MeO-Dalt[5] AMT[5] Diphenidine[6] DiPT[5] DMT[5] Ephenidine[6] LSZ[5] Methoxetamine[6] Methoxydine[6] NBOMe series[1,5] N-EK[6]	3-Hydroxyphenazepam 4'-Chlorodiazepam Adinazolam Bromazolam Clonazolam Cloniprazepam Deschloroetizolam Diclazepam Etizolam Flubromazepam Flubromazolam Fonazepam Iso-flubromazepam Meclonazepam Metizolam Nifoxipam Nitrazolam Phenazepam Pyrazolam	Ayahuasca[7] *Catha edulis* (Khat)[7] Etaqualone Kratom (mitragynine)[7]
Common Street Names		Black Mamba Crazy Clown K2 Scooby Snax Spice	Bath Salts Flakka Meow Meow Sextacy (MDPV) Vanilla Sky	Benzo Fury Cimbi-5 N-bomb (NBOMe-series) Smiles	Bonsai	
Site(s) of action	MOR (primarily)	CB_1 and CB_2	NET, DAT, SERT	5-HT GPCRs[5]	$GABA_A$ Receptor	Various
Mechanism(s) of Action	Agonist	Full receptor agonists Active metabolites	Inhibit MOA reuptake transporters and increase amount of NT present; Ratio of NTs present influences drug action	NMDA Receptor[6] Agonism or partial agonism of 5-HT_{2A}, agonism of 5-HT_{2C} and 5-HT_{1A}[5] Uncompetitive antagonists[6]	Agonist	Various

MDMA, 3,4-methylenedioxy-methamphetamine; LSD, d-lysergic acid diethylamide; PCP, phencyclidine; MOR, mu-opioid receptor; CB_1, cannabinoid receptor 1; CB_2, cannabinoid receptor 2; NET, norepinephrine transporter; DAT, dopamine transporter; SERT, serotonin transporter; MOA, monoamine; NT, neurotransmitter; 5-HT, serotonin; GPCR, G-Protein coupled receptor; NMDA, N-methyl-D-aspartate; $GABA_A$, gamma-aminobutyric acid

Appendix 1: Overview of the New Jersey Drug Monitoring Initiative (DMI).



An Intelligence Capability to Understand New Jersey's Drug Environment

Drug Monitoring Initiative (DMI) Overview

Heroin and opiate use in New Jersey has increased exponentially in recent years. The high rate of addiction drives the increased demand for both heroin and prescription painkillers, and recent statistics identify an increase in illicit heroin and opiate use, seizures, and deaths. During 2013, the State Medical Examiner's Office recorded 1,336 fatal drug overdoses. This common scenario has indiscriminately played out in New Jersey and across the country, affecting all races, genders, age groups, and social classes.

The New Jersey State Police developed DMI in response to this situation and to understand the scope of the problem through continuous monitoring of drug activity statewide. The DMI intelligence capability establishes a drug information sharing environment that enables law enforcement, human services, and public health experts to better understand trends, patterns, implications, and threats from illicit drug activity having an impact on specific locations statewide. DMI gathers investigative and administrative data, both on the supply side and the demand side, to develop a 360-degree view of the State's drug environment. The analysis is used to produce intelligence products for partners across state and local agencies and non-profit organizations. This process enables intelligence-led policing and investigative support for law enforcement and intelligence-led outreach for treatment and prevention efforts.

Collection Process

Various agencies collect drug data needed to interpret New Jersey's illicit drug environment. DMI leverages the existing people, processes, and platforms through an information sharing network which directs essential drug data sets to DMI for storage, analysis, production, and sharing. DMI leverages the following entities, which provide the respective data elements through data-sharing agreements and in a de-identified fashion, where appropriate:

- State Police and county forensic laboratories – all analyzed drug data
- NJ Department of Health (DOH) – EMS Narcan deployments
- County Prosecutor's Offices – Narcan deployments by law enforcement
- State Medical Examiner's Office – Drug involved death data
- NJ Mental Health and Addiction Services – Patient admissions and drug use data
- Automated Fingerprint Information System – Daily drug arrest data
- Prescription Drug Monitoring Program – Collected transactional data

Production

All of the information allowed to be shared is normalized and uploaded to the Project Safe Neighborhood Mapping Program, where it is stored, geo-coded, mapped, and made available to law enforcement, human services, and health partners via MAGLOCLEN's RissNet portal. DMI analysts use this information to provide:

1) Investigative support for strict liability cases and other drug investigations.
2) Situational awareness through the following products:
   - Daily Drug Environment Report – Heroin stamps seized and involved in overdoses are included in this report along with opiate pills seized in NJ.
   - Ad hoc Alerts – The NJ ROIC provides heroin overdose alerts, new and emerging drug notifications, and drug environment products from New Jersey and other regional DMI partners.

Training and Outreach

To increase drug awareness and information sharing, DMI developed the:

1) Monthly Conference Call – Brings together law enforcement, health partners, fusion centers and other entities to share information pertaining to drug trends in different areas of the country.
2) Basic Drug Recognition Course – Law enforcement, fire service, EMS, and health partners learn about drugs, trends, identifiers, and how to collect and share drug-related information.

DMI Established Best Practices

- Facilitates collaboration among diverse multidisciplinary entities to address the drug problem
- Uses automated drug data collection processes to ensure a timely exchange of information
- Desensitizes information to ensure seamless and transparent information sharing
- Derives intelligence from all investigative and administrative drug data
- Incorporates subject matter experts from various disciplines into the drug intelligence production process
- Supports narcotic investigations and overdose strict liability cases
- Employs the Journey-to-Drugs methodology to understand a drug's impact on local areas
- Coordinates collection, analysis, and mapping of drug-incident data statewide
- Facilitates expedited analysis of drugs seized through forensic labs
- Uses empirical data as opposed to survey data to understand the drug environment
- Provides drug training for law enforcement, fire service, and EMS personnel
- Provides drug situational awareness for all constituents
- Tracks Naloxone administrations by law enforcement and EMS statewide to identify potential spikes in drug overdoses
- Provides real time alerts to the public, law enforcement, and healthcare partners of spikes in drug overdoses occurring in specific areas
- Creates & leverages a network of existing people, platforms, and processes

For more information on the Drug Monitoring Initiative, contact Sgt. Adam Polhemus at lpp6422@gw.nsjp.org or call 609-414-3356.

3. STRATEGIES TO REDUCE THE CONSUMPTION OF BEVERAGES WITH ADDED SWEETENERS (RESOLUTION 417-A-16)

Reference committee hearing: see report of Reference Committee D.

HOUSE ACTION: RECOMMENDATIONS ADOPTED AS FOLLOWS IN LIEU OF RESOLUTION 417-A-16 REMAINDER OF REPORT FILED
See Policies H-150.927, H-150.933, H-150.944 and H-150.960

Resolution 417-A-16, "Changing Public Policy to Assist Obesity Goals," introduced by the California Delegation and referred by the House of Delegates, asked:

> That our American Medical Association support efforts to limit the consumption of foods and beverages that contain added sweeteners, including but not limited to, ending corn subsidies for the production of high fructose corn syrup.

BACKGROUND

At the 2006 Annual and Interim Meetings of the AMA House of Delegates, two reports by the Board of Trustees addressed the issue of taxes on sugar-sweetened beverages (SSBs).[1,2] Both reports recommended that the AMA support adoption of small local, state, and federal taxes on soft drinks sweetened with caloric sugars, with a substantial portion of the revenue from these taxes being earmarked for the prevention and treatment of obesity, as well as public health and medical programs that serve vulnerable populations. However, these recommendations were not adopted. The Council on Science and Public Health (CSAPH) issued a report at the 2012 Annual Meeting examining the literature that had emerged since 2006 to determine if limiting consumption of beverages with added sweeteners is likely to improve health outcomes, and, if so, whether taxation of sweetened beverages would be an effective public health strategy to help reduce consumption.[3] Policy H-150.933, adopted from that report, supports the use of taxes as a means by which consumer education campaigns and other obesity-related programs could be financed.

This report provides an update on the health outcomes associated with the consumption of beverages with added sweeteners and examines the effectiveness of strategies that have been utilized to reduce the consumption of SSBs. Although Resolution 417-A-16 refers to efforts to reduce the consumption of foods and beverages with added sweeteners, the CSAPH has focused this report on beverages because they are a common source of non-nutritive calories ("empty calories"),[4] and represent a well-recognized target for reducing sugar consumption and addressing obesity.[5]

METHODOLOGY

Literature searches were conducted in the PubMed database for English-language articles published between 2007 and 2017 using the search terms "sugar-sweetened beverage," "diet beverage," and "artificial sweetener" with the terms "consumption," "health," "disease," and "risk." The search term "sugar-sweetened beverage" was also used with the terms "tax," "portion," "purchase," "school," "workplace," "hospital," "subsidies," "label," "packaging," "marketing," and "guidelines." To capture reports not indexed on PubMed, a Google search was conducted using the same search terms. Internet sites managed by federal and state agencies and relevant public health organizations were also reviewed. Additional articles were culled from the reference lists contained in the pertinent articles and other publications.

CURRENT AMA POLICY

The AMA has adopted a number of policies addressing obesity as a major public health problem, with several of them specifically addressing nutrition and SSBs (see Appendix). Relevant to access to SSBs, the AMA supports the availability of nutritious beverages in schools and health care facilities and supports the removal of SSBs from the Supplemental Nutrition Assistance Program (SNAP) (Policies D-150.987, H-150.960, H-150.944, D-150.978, and D-150.975). The AMA also acknowledges that taxes on SSBs are one means by which consumer education campaigns and other obesity-related programs could be financed in a stepwise approach to address the obesity

epidemic. Where taxes on beverages with added sweeteners are implemented, the revenue should be used primarily for programs to prevent and/or treat obesity and related conditions, such as educational advertising campaigns and improved access to potable drinking water, particularly in schools and communities disproportionately affected by obesity and related conditions, as well as on research into population health outcomes that may be affected by such taxes (Policy D-150.933).

Regarding subsidies, the AMA supports: (1) the creation of a new advisory board to review and recommend U.S. Farm Bill budget allocations to ensure any government subsidies are only used to help produce healthy food choices and sustainable foods and (2) efforts to ensure that federal subsidies encourage the consumption of products low in fat and cholesterol (Policies H-150.932, and H-150.944).

Regarding consumer education, the AMA: (1) encourages national efforts to educate the public about the health risks of being overweight and obese and provide information about how to achieve and maintain a preferred healthy weight, and supports requiring meaningful yearly instruction in nutrition, including instruction in the causes, consequences, and prevention of obesity, in grades 1 through 12 in public schools (Policies D-150.953 and H-170.961).

Regarding the role of the physician, the AMA: (1) supports including education in basic principles and practices of physical activity and nutrition counseling in undergraduate and graduate medical education and through accredited continuing medical education programs; (2) urges physicians to assess their patients for overweight and obesity during routine medical examinations and discuss with at-risk patients the health consequences of further weight gain; and (3) encourages physicians to become knowledgeable of community resources and referral services that can assist with the management of overweight and obese patients (Policy H-150.953).

CONSUMPTION PATTERNS

Calorically Sweetened Beverages

Definitions of terms used throughout this report can be found in Table 1, and are discussed in more detail in the Council's 2012 report.[3] SSBs generally refer to all non-alcoholic beverages that contain any amount of added caloric sweeteners, excluding 100 percent fruit and vegetable juices, infant formulas, and dietary aids for medical conditions, although some studies also exclude sweetened milk and milk substitutes.[3]

The 2015-2020 Dietary Guidelines for Americans highlight the lack of nutritional value in SSBs and make recommendations to reduce consumption, including choosing beverages with no added sugars, such as water, reducing portion size of SSBs, and drinking SSBs less often.[4] While added sugar consumption has decreased over the last several decades, it still exceeds recommended limits.[6,7] The American Heart Association (AHA) recommends that adult men consume no more than 9 teaspoons of added sugar daily, that adult women consume no more than 5 teaspoons daily, and that children consume no more than 6 teaspoons daily.[8,9] Yet the average adult consumes approximately 22, and the average child approximately 19, teaspoons daily.[8,9] Seventy percent of Americans report added sugar intake above the AHA recommended guideline of 10 percent of daily caloric consumption.[4]

Thirty-three percent of calories from added sugars are consumed in the form of beverages.[7] While SSB consumption has decreased over the last several years, it continues to exceed recommended consumption limits.[10-12] Nearly half of adults consume at least one SSB on a given day, despite the recommendation that adults should choose beverages with no added sugars.[4,11] The AHA recommends that children and adolescents limit their intake of SSBs to less than one per week,[9] but nearly two-thirds of youth consume at least one SSB on a given day.[12] Among adults, total calories consumed from SSBs decreases with increasing age, with adults aged 20-39 years consuming about three times the number of calories from SSBs as adults aged 60 years and over.[11] Among all adult age groups, men consume approximately 50 percent more calories from SSBs than women.[11] Among all youth age groups, boys consume about 35 percent more calories from SSBs than girls, although the difference in those aged 2-5 years is small.[12]

Adult men have higher mean calorie intake from SSBs than adult women across all race and origin groups. Hispanic men and non-Hispanic black men have the highest mean calorie intake from SSBs, followed by non-Hispanic white men and non-Hispanic Asian men.[11] Non-Hispanic black women have the highest caloric intake from SSBs,

followed by Hispanic, non-Hispanic white, and non-Hispanic Asian women.[11] Children also exhibit differences in calorie intake from SSBs across race and origin. Non-Hispanic white, non-Hispanic black, and Hispanic boys have higher mean calorie intake from SSBs on a given day than non-Hispanic Asian boys.[12] Non-Hispanic black girls had the highest calorie intake from SSBs, followed by non-Hispanic white, Hispanic, and non-Hispanic Asian girls.[12]

Socioeconomic status also appears to impact consumption. Among young adults, those with lower education are likely to consume more SSBs than those with higher education, and those with low and middle incomes are likely to consume more SSBs than those with high incomes.[13]

Although 100 percent fruit juice is not typically considered a SSB, it does have high sugar and calorie content.[4] However, U.S. Dietary Guidelines consider 100 percent fruit and vegetable juices as servings of fruits and vegetables, not as added sugars.[4] Furthermore, increased consumption of micronutrient-rich 100 percent juices and milk are thought to improve other health outcomes.[14] Nevertheless, attention to serving sizes is warranted. The 2015-2020 Dietary Guidelines for Americans recommend that 100 percent fruit juice be consumed within recommended food group amounts and calorie limits.[4]

Non-Calorically Sweetened Beverages

Consumption of non-calorically sweetened beverages (also referred to as low-calorie or "diet" beverages) has increased over the past several decades, with about three percent of adults consuming such beverages in 1965 compared to 15-20 percent today.[15-17] The percentages of males and females consuming diet drinks are similar in all age groups except those aged 12-19 years; consumption among females in that age group is nearly twice as high as that of males.[16] Approximately 28 percent of non-Hispanic white adults consume a non-calorically sweetened beverage on a given day compared with approximately 10 percent of non-Hispanic black and approximately 14 percent of Hispanic adults.[16] Approximately 15 percent of non-Hispanic white, approximately seven percent of non-Hispanic black, and approximately eight percent of Hispanic children and adolescents consume a non-calorically sweetened beverage on a given day.[16]

Overweight and obese adults are more likely to consume non-calorically sweetened beverages than healthy-weight adults.[17] Adults and children living in households with higher incomes are more likely to consume non-calorically sweetened beverages than those with lower incomes.[16] Similarly, consumption of low-calorie sweeteners (in both foods and beverages) is more likely among those with higher educational attainment levels.[16]

HEALTH EFFECTS OF SWEETENED BEVERAGES

Calorically Sweetened Beverages

The health effects of SSB consumption are well documented by the literature, and are reviewed in detail in the 2012 CSAPH report.[3] Figure 1 illustrates many of the known health effects of SSBs.

In both adults and children, intake of SSBs has been strongly and consistently associated with increased body weight and a number of related cardiometabolic conditions.[5,18-20] Adults with the highest SSB intake are 1.5 times more likely to be obese or overweight compared to those with the lowest intake,[21] and higher body mass index (BMI) is seen in children consuming just one SSB daily.[22] In adults and children, SSB intake is associated with increased blood pressure, triglyceride levels, total cholesterol, and fatty liver; and with decreased HDL cholesterol.[8,9,23-25] SSBs also have been associated with markers of inflammation and oxidative stress, dental caries, and kidney stones.[5,8,9,19,26]

Consumption of SSBs is related to increased risk of type 2 diabetes, cardiovascular disease, and metabolic syndrome.[19,26-31] It is expected that 20.9 million people will develop type 2 diabetes over the next 10 years in the United States, with 1.8 million cases due to consumption of SSBs.[27] Sugars in SSBs acutely increase glucose levels, a risk factor for type 2 diabetes, while fructose in SSBs promotes hepatic lipogenesis and furthers insulin resistance.[19,27] Drinking one SSB per day is associated with an 18 percent increase in incidence of type 2 diabetes, and fruit juice consumption is associated with a 7 percent increase in incidence.[27] Stroke and myocardial infarction risk also increase with incrementally increased consumption of SSBs.[30]

Beyond the strong and consistent associations of SSBs with cardiometabolic conditions, other concerns with their consumption exist. SSB consumption often displaces consumption of other foods and beverages rich in micronutrients, such as skim milk and whole fruit, and minimizes consumers' ability to meet the rest of their daily nutrient requirements without exceeding their calorie needs.[5] SSB consumption has been inversely associated with consumption of milk, calcium, fruit, and dietary fiber, and with overall dietary quality.[5]

Non-Calorically Sweetened Beverages

The health effects of non-calorically sweetened beverages also are addressed in the 2012 CSAPH report.[3] Data on the health outcomes of consuming non-calorically sweetened beverages are not as robust as that for SSBs, and continue to be mixed. Modest benefits on weight loss, prevention of weight gain, blood pressure, and inflammatory markers have been seen with the use of non-caloric (or "artificial") sweeteners.[32-34] In a trial in children, those consuming non-calorically sweetened beverages gained 35 percent less body fat than those consuming SSBs.[35] A study examining the dietary habits of those who regularly consume non-calorically sweetened beverages found that consumption is associated with more vegetable, whole-grain, and low-fat dairy consumption, but increased saturated fat and sodium intake.[36]

Others have reported an association of non-calorically sweetened beverages with body weight, cardiovascular disease, and metabolic syndrome.[30,31] One study found that at least daily consumption of non-calorically sweetened soda is associated with a 36 percent greater risk of metabolic syndrome and a 67 percent greater risk of type 2 diabetes compared with nonconsumption.[37] And among overweight and obese individuals, consumption of non-calorically sweetened beverages increases risk for end-stage renal disease.[38] However, in many cases, it is unknown whether the consumption of non-calorically sweetened beverages is causal of disease risk or is a surrogate for an unhealthy lifestyle.[30,31] Consumers of diet beverages may believe that the lack of calories allows them to consume more calories from other foods, and regular consumption of intensely sweet non-caloric sweeteners may foster a preference for sweet tastes and make less sweet, but healthier foods such as fruits, vegetables, and legumes, less appealing.[20,39]

STRATEGIES TO REDUCE CONSUMPTION

Several strategies have been implemented and/or proposed to reduce the consumption of SSBs. Most strategies are focused on SSBs, and not non-calorically sweetened beverages, since the evidence on the health effects of such beverages remains mixed. In this section, selected strategies are summarized.

Limiting Access to Beverages with Added Sweeteners

Limiting opportunities to purchase SSBs has been proposed in and implemented by hospitals, medical centers, public venues, workplaces, and schools. Below are brief summaries of limited access programs. With the exception of limiting access in schools, data are generally not available to describe changes in consumption patterns or health, mostly due to the recent implementation of the programs.

Hospitals and Medical Facilities. A number of hospitals and medical facilities have banned the sale of SSBs, limiting access by patients, visitors, and employees. Most have initiated such programs as a result of the established link between added sugar consumption and obesity and other adverse health outcomes. As institutions with missions to improve health, they have "led by example" in efforts offering healthier alternative beverages.[40,41] Although data on SSB consumption or health outcomes have not been reported, sales of SSBs have declined in places with restricted access programs. For example, after Nationwide Children's Hospital in Columbus, Ohio, removed SSBs from vending machines and eateries, sales revenues for carbonated beverages declined by 17 percent while revenues for milk, juice, and coffee increased by 19, 22, and 13 percent, respectively.[40]

The movement to remove SSBs from hospitals and medical facilities is growing. The Healthy Hospital Food Initiative includes over 30 New York City hospitals that have pledged to decrease the availability and portion size of high-calorie beverages in vending machines.[41] Similarly, the Partnership for a Healthier America is an initiative of over 150 hospitals, including Kaiser Permanente, Catholic Health Initiatives, Cleveland Clinic, and Centura Health, that have committed to increasing purchases of water, unflavored milk, teas, coffee, and 100 percent fruit and vegetable juices to 80 percent of beverage spending, limiting the amount of soft drinks and other high calorie drinks sold in cafeterias and vending machines.[41] The University of California San Francisco (UCSF) hospital and campus

removed SSBs from cafeterias and vending machines beginning in 2015, and has enrolled more than 2,500 employees in a research study to track resulting health outcomes.[42]

Workplaces. Millions of American consumers purchase foods and beverages from workplace cafeterias and vending machines. Therefore, limiting access to SSBs in the workplace has been proposed as a strategy to reduce consumption, and one that workplace wellness programs have promoted. However, it is not known how many workplaces have such policies in place. The National Academies of Sciences, Engineering and Medicine (formerly the Institute of Medicine) and the CDC recommend that government agencies use nutrition standards to guide the foods and beverages sold at their buildings and workplaces, however, only approximately 3 percent of municipalities have standards in place.[43] In workplaces that have implemented restricted access programs, it is unclear how consumption and health outcomes among employees have been affected, but studies such as the one being conducted by UCSF are underway.[42] Employees have reported mixed support for restricted SSB access programs.[42,44]

Public Venues. Banning the sale of SSBs in public venues, especially those frequented by children, such as parks, recreation centers, and zoos, has been discussed as a strategy to reduce consumption. It is unclear how many of these settings have implemented such programs, or whether they have resulted in reduced SSB consumption. Carson, California, a city in Los Angeles County, recently implemented a "healthy vending policy" that changes the types of beverages available in park vending machines.[45] After implementation of the policy, only seven percent of beverages available in park vending machines were SSBs, down from 70 percent prior to policy implementation.[45] It is not known how this change has affected purchasing or consumption.

Schools. In most schools, students are able to purchase snacks and beverages outside of the federal school meals programs through a la carte options in the cafeteria, vending machines, school stores, and snack bars. Policies restricting the ability to purchase SSBs through those mechanisms have been implemented in many schools.[46] Importantly, under the Smart Snacks in School nutrition standards developed as part of the Healthy Hunger-Free Kids Act of 2010, schools are now required to follow standards for foods and beverages sold during the school day.[47] Implemented starting in the school year 2014-2015, the standards limit the sale of beverages to only plain or carbonated water, lowfat and nonfat milk, 100 percent fruit/vegetable juice, and in high schools, low- or no-calorie flavored or carbonated beverages.[47]

Several studies on the effectiveness of school SSB purchase restrictions have shown that restrictions lead to decreased consumption. In a recent study of 12 large urban school districts, students attending high schools with restricted SSB access were 28 percent less likely to consume SSBs than students in high schools without restricted access.[48] Similarly, a ban on the sale of SSBs in high schools in the Boston Public School system led to an approximately 30 percent decline in consumption.[49] Other studies on restricted access in school settings have reported results that were insignificant or mixed.[46,50,51] For example, schools that have banned only the sale of sugar-sweetened sodas, rather than all SSBs, have not experienced the same declines in consumption because students appear to compensate by consuming non-soda SSBs.[51] In addition, policies based on increasing the availability of alternative healthier beverages (such as water) without restricting access to the purchase of SSBs do not appear to impact consumption of SSBs; a recent study that assessed the impact of increasing water availability in the school cafeteria did not result in a statistically significant decrease in SSB purchases.[52] Nationwide implementation of the Smart Snacks in School nutrition standards should enable longer-term and more robust studies of consumption patterns and changes in health outcomes.

Early Childcare Centers. In young children (aged 2-5 years), high SSB intake is associated with higher BMI and obesity by the age of five years.[8] Exposure to SSBs in infants younger than 12 months also is associated with obesity by the age of six years.[8] It is therefore recommended that early childcare centers limit children's intake of SSBs. The American Academy of Pediatrics (AAP), American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education recommend that children drink water in place of fruit drinks, soda, or other sweetened drinks (but water should not be a substitute for milk at meals or snacks where milk is a required food component), and that childcare facilities provide ready access to drinking water.[53] It is also recommended that, in addition to water, facilities serve only 100 percent fruit juice or 100 percent fruit juice diluted with water to children 12 months of age or older, but that juice consumption should be no more than a total of four to six ounces a day for children aged one to six years.[54]

Thirteen states have childcare licensing laws that limit access to SSBs in childcare settings.[55] Data on the effectiveness of limiting SSB access in early childcare settings are sparse. A trial in Italian childcare centers tested a multicomponent intervention that included increased consumption of fruits and vegetables, more active play, reduced screen time, and no access to SSBs.[56] It found that children in the intervention group had better health behavior scores than those in the non-intervention group, but BMI was not affected.[56] Restricted access appears to be successful in reducing consumption; children at childcare centers that comply with SSB serving restrictions consume fewer SSBs.[57] Research is needed to determine whether restricted access policies result in improved health outcomes for young children.

Controlling Portion Sizes

Portion sizes have expanded far beyond the serving sizes used as standards for dietary guidance and food labels, making it difficult for consumers to understand how many calories they are consuming.[58,59] Reducing portion sizes through public policy has therefore become a strategy to reduce calorie consumption and fight obesity. However, initiatives have been met with opposition. In 2012, the New York City Board of Health responded to the connection between consuming SSBs and the obesity epidemic by approving a rule setting a maximum cup or container size of 16 fluid ounces for sugary drinks sold in the food service establishments subject to its jurisdiction.[60] The American Beverage Association, American Restaurant Association and other interested parties filed suit challenging the law as a violation of the separation of powers doctrine under the state constitution or to declare the regulation unlawfully arbitrary and capricious.[61]

The state Supreme Court granted the order to enjoin and permanently restrain the city from implementing or enforcing the regulation on the grounds that the New York City Board of Health exceeded the scope of its regulatory authority.[61] The New York State Court of Appeals agreed with the decision of the lower court. Since portion control for SSBs has not been implemented in any U.S. jurisdictions, studies have not been conducted to determine the effectiveness of the strategy in reducing consumption.

Redesigning Agricultural Subsidies

Federal agricultural subsidies partially finance the production of corn, soybeans, wheat, rice, sorghum, dairy, and livestock; financing of dairy and livestock are in part via subsidies on feed grains.[62,63] A large proportion of these subsidized commodities are converted into high-fat meat and dairy products, refined grains, high-calorie juices and soft drinks (sweetened with corn sweeteners), and processed and packaged foods.[62,63] Approximately 5 percent of corn is converted into high-fructose corn syrup (HFCS).[62] Incentives or support for fruit and vegetable production have traditionally not been offered.[63,64]

Evidence and opinions about the impact of agricultural subsidies on health are mixed. A number of researchers have attributed the growth in U.S. obesity rates to agricultural policies.[65] A 2002 modeling study estimated that 40 percent of the growth in BMI between 1970 and 2000 was attributable to increases in the supply of farm commodities.[66] A more recent study found that more than half of all calories consumed by adults in the U.S. originate from subsidized commodities, and further, that those consuming the highest amounts of foods made from subsidized commodities have a 14 to 41 percent higher probability of cardiometabolic risk as measured by BMI, abdominal adiposity, C-reactive protein, and lipid levels.[62] While these findings suggest that changing consumption levels of food from subsidized commodities may reduce cardiometabolic risk, they do not definitively point to agricultural subsidies as a direct cause of cardiometabolic risk. Others point out that although subsidies do impact commodity prices, they have a smaller impact on consumer prices, and therefore are not the sole factor influencing consumption.[65,67]

Overproduction and low prices are not driven by subsidies alone, but instead by a complex system of policies that promote the production of crops that lend themselves to large-scale production, easy storage, and long distance shipping.[64] Therefore, removing subsidies is not considered as an "easy fix" for overproduction and low prices.[64] Modeling studies have predicted that the elimination of agricultural subsidies would result in price decreases for all commodities except wheat and corn, resulting in a slight reduction in consumption of cereal and bakery products, but potentially increasing meat and dairy consumption since prices for livestock feed would be lower.[63,68] Sugar prices would likely decrease, resulting in lower prices of sweetened foods due to reduced caloric sweetener prices.[68] Taken together, evidence suggests that eliminating subsidies would have only a mild impact on consumption and obesity.[63] However, redesigning the subsidy system to provide increased support to farms growing sustainable,

biodiverse crops could address obesity by increasing the availability of fresh produce by bringing prices closer to those of less healthy alternatives.[62,63,69]

With regard to the increased consumption of SSBs, corn subsidies have been pointed to as a culprit since many SSBs contain HFCS, a caloric sweetener produced from corn starch. Eliminating corn subsidies has been proposed as a mechanism to drive up the price of corn, and in turn increase the prices of HFCS and SSBs, thereby potentially reducing consumption.[70] However, others note that most of the cost of HFCS is in manufacturing rather than raw materials, so while eliminating corn subsidies could result in an increase in the price of corn, the price of HFCS would likely increase only a small amount, affecting SSB prices minimally.[70]

Taxing Beverages with Added Sugars

A detailed discussion of taxing SSBs can be found in the 2012 CSAPH report.[3] Briefly, a number of U.S. and international jurisdictions have considered and/or implemented taxing SSBs as a strategy to reduce their consumption and to generate funding for obesity prevention initiatives. Sales tax approaches have little impact on purchasing and consumption; such small price increases (less than 10 percent) do not tend to influence consumer behavior.[71,72] However, excise taxes, which tax beverage producers and wholesalers and usually result in increased shelf prices, appear to be a more effective strategy to deter purchasing.[20] Excise taxes lead to an approximately 15-25 percent increase in purchase price.[73]

In the jurisdictions for which data are available, purchases and consumption of SSBs have decreased following implementation of an excise tax. For example, in January 2014, Mexico implemented an excise tax of one Mexican peso per liter (5.5 U.S. cents) to all non-alcoholic beverages with added sugar.[74,75] During 2014 and 2015, the tax resulted in a 7.6 percent decrease in sales of SSBs and a 2.1 percent increase in sales of untaxed beverages (diet sodas, bottled water; unsweetened dairy beverages, unsweetened dairy beverage substitutes, and unsweetened fruit juices).[74] In March 2015, the city of Berkeley, California, implemented an excise tax of $0.01 per ounce on the purchase of SSBs. In the time since the tax began, SSB consumption decreased 21 percent compared to a 4 percent decrease in comparison cities (nearby cities that did not have SSB taxes in place), and water consumption increased 63 percent compared to an increase of 19 percent in comparison cities.[76] And in January of 2017, the city of Philadelphia, Pennsylvania, began levying a $0.015 per ounce excise tax on SSBs. Although data on the tax's impact on purchasing and consumption are not available at this time, news outlets have reported that purchases have declined.[77,78] Oakland, California; San Francisco, California; Boulder, Colorado; and Cook County, Illinois; have passed SSB tax measures, but they have not yet gone into effect.

Although data are not yet available to directly demonstrate the health effects of reduced purchasing and consumption as a result of tax strategies, modeling studies have predicted significant improvements. Assuming a 10 percent reduction in consumption of SSBs predicted to occur following long-term implementation of the excise tax in Mexico, it is projected that approximately 189,300 new cases of type 2 diabetes, 20,400 incident strokes and heart attacks, and 18,900 deaths over 10 years among adults aged 35-94 years would be prevented.[79] Further, the reduction in consumption is projected to save $983 million (US dollars) in healthcare costs, primarily due to the prevention of diabetes cases.[79] Modeling studies have predicted that in Ireland, a 10 percent excise tax on SSBs would result in a 1.3 percent reduction in the number of obese adults.[80] Similarly, a 20 percent increase in purchase price of SSBs in the United Kingdom would result in a 1.3 percent decrease in the number of obese adults.[81] And in Germany, it is predicted that a 20 percent sales tax would result in a 4 percent reduction in obesity.[82] In all of the aforementioned modeling studies, the health impacts are predicted to affect young adults most.[79-82]

In the United States, a national $0.01 per ounce excise tax on SSBs is estimated to reduce consumption by 20 percent and BMI by 0.16 unit in youth and 0.08 unit in adults.[83] Over a 10 year span, the tax is estimated to result in 101,000 fewer disability-adjusted life years, 871,000 more quality-adjusted life years, and $23.6 billion in health care cost savings.[83] A separate study focused on preventing childhood obesity estimates that a $0.01 per ounce excise tax on SSBs implemented nationally over a 10 year period would prevent more than 575,000 cases of childhood obesity and would save more than $30 for each dollar spent on implementation.[84] The Childhood Obesity Intervention Cost-Effectiveness Study (CHOICES) has modeled the health and fiscal impacts of a $0.01 per ounce SSB excise tax in 15 large US cities, and estimates that once the tax is fully implemented in all 15 cities, 115,000 cases of adult and childhood obesity would be prevented over a 10 year period, and a 6 percent reduction of type 2 diabetes incidence could be expected over a one-year period.[85]

It is important to note that direct evidence of the impact of taxes has come from only a few sources, and that modeling has generated the bulk of predicted outcomes. Robust evidence on health impacts will need to be developed by long-term study of locations in which taxes have been implemented. Nevertheless, the initial studies in Mexico and Berkeley, California, combined with modeling studies and cost effectiveness analyses, suggest that taxing SSBs is an effective strategy to reduce purchasing and consumption, and could lead to improved health outcomes and cost savings. The Council is not aware of evidence suggesting any health harms from taxes on SSBs, but does acknowledge that economic concerns exist. SSB taxes may disproportionately burden low-income individuals for whom food costs represent a greater proportion of their income.[86] Additionally, excise taxes must either be absorbed by distributors and retailers, or passed on to consumers; both impact the financial bottom line of the distributor and retailer, potentially resulting in lower wages or layoffs for employees.[77]

Improving Consumer Information

Warning Labels. Warning labels have been utilized to inform consumers about the health hazards that may result from the consumption or use of a product. Warning labels on cigarette packages and alcohol products have been required in the United States under federal law for decades, though the content of the warnings for cigarette packages have changed over time. Several jurisdictions, including Baltimore, Maryland, and the states of California, Hawaii, New York, Vermont, and Washington have considered legislation to require warning labels on SSB packaging. Most of the proposed warning labels would include a variation of this text: “SAFETY WARNING: Drinking beverages with added sugar contributes to obesity, diabetes, and tooth decay.”

In 2015, San Francisco, California, became the first jurisdiction in the U.S. to require warning labels on advertisements for SSBs. The warning reads, "WARNING: Drinking beverages with added sugar(s) contributes to obesity, diabetes, and tooth decay. This is a message from the City and County of San Francisco."[87] The ordinance defines “advertisement” as including any logo that identifies, promotes, or markets a SSB for sale or use that is any of the following: (a) on paper, poster, or a billboard; (b) in or on a stadium, arena, transit shelter, or any other structure; (c) in or on a bus, car, train, pedicab, or any other vehicle; or (d) on a wall, or any other surface or material.[87] The American Beverage Association, California Retailers Association, and the California State Outdoor Advertising Association filed suit against the city and county of San Francisco arguing that the ordinance violated their First Amendment rights by forcing them to include a warning that they would not otherwise give.[88] The court found that the warning required by the ordinance is “factual and accurate, and the City had a reasonable basis for requiring the warning given its interest in public health and safety,” and therefore denied the request for a preliminary injunction.[88] The city of Baltimore, Maryland, is considering legislation that would require businesses that sell or advertise sugar-sweetened sodas, energy drinks, sports drinks, juices, coffees and teas to post signs warning consumers that they contribute to tooth decay, obesity and diabetes.[89]

Several studies have been undertaken to determine the influence that SSB warning labels have on preferences and consumption. In surveys of adolescents and young adults, warning labels improved recognition of the sugar content of SSBs and significantly reduced reported probability of purchasing SSBs.[90,91] Graphic warning labels have a greater impact on purchase preferences than text labels.[91] Health warning labels on SSBs also appear to improve parents’ understanding of health harms associated with overconsumption of such beverages; parents are significantly less likely to purchase SSBs with warning labels compared to those with no warning labels or with calorie-only labels, and parents perceive SSBs with warning labels to be less healthy than those without.[92] Research from tobacco warning labels suggests that warning labels are most effective when the label covers more than 30 percent of the package and includes a picture.[93]

Packaging and Marketing. Packaging and branding that appeal to children have been shown to influence children’s taste preferences,[94-96] so plain packaging has been proposed as a strategy to reduce children’s interest in and consumption of SSBs. Evidence on the impact of plain packaging on SSB preference is beginning to emerge. In a study of adolescents and young adults aged 13-24 years, plain packaging significantly reduced likelihood of purchasing SSBs even more so than warning labels and a 20 percent price increase.[91]

In 2010, beverage companies spent $948 million in advertising for sugary drinks and energy drinks.[97] Since young children are unable to differentiate information from advertising, they are especially vulnerable to commercial advertising, leading to calls for the reduction or restriction of marketing unhealthy foods to children.[67,98,99] An Australian cost effectiveness study predicted that banning television advertisements for energy-dense, nutrient-poor foods and beverages during children’s peak viewing time would result in cost-savings and health gains.[100] In

response to concerns about industry advertising to children, the Council of Better Business Bureaus launched the Children's Food and Beverage Advertising Initiative in 2006, under which companies voluntarily agreed to reduce their advertising to children or focus on advertising healthier products.[98] Between 2003 and 2009, exposure to television advertisements of beverages decreased more than 40 percent.[99,101,102] Although television advertising of beverages to children has become less frequent, advertising efforts have shifted to websites, social media sites, and smart phone apps frequented by children, and use features that are intended to appeal to children, such as colorful images, animation, games, videos, and music.[97,98]

Physician Counseling

Physicians play an important role in educating their patients about the harmful effects of SSBs and their contribution to obesity, and counseling them to reduce consumption. The U.S. Preventive Services Task Force recommends offering or referring adults who are overweight or obese and have additional cardiovascular disease risk factors to intensive behavioral counseling interventions to promote a healthful diet and physical activity; healthy beverage choices are highlighted as a way to promote a healthful diet.[103,104] Similarly, the AAP recommends that physicians' health-promotion efforts be aimed at removing all sweetened beverages from the diets of children.[105] AHA guidelines provide recommendations for the upper limit of SSB intake.[8,9]

Physicians have the potential to strongly influence their patients' beverage choices. A recent survey of parents determined that a primary care physician's recommendation to limit the consumption of SSBs would be one of the strongest motivators for parents to limit their children's consumption.[106] More than 98 percent of respondents reported that they would be very likely or likely to follow SSB consumption advice from a physician, and 90 percent reported that they would prefer to receive information regarding their child's diet from physicians, as opposed to a health educator or a brochure (approximately 30 and 23 percent preference, respectively).[106] However, SSB consumption is not discussed by physicians as often as is recommended. Among respondents of the aforementioned survey, only approximately 60 percent reported that their pediatrician discussed SSB consumption during an office visit.[106] Additionally, physicians' personal characteristics impact the type of counseling they provide to their patients. Physicians who do not consume SSBs themselves are more likely to discuss SSB consumption with their patients than physicians who do consume SSBs,[107] and those who believe that SSBs are an important cause of obesity are more likely to counsel their obese patients to reduce consumption than those who place less importance on SSBs as a causal factor of obesity.[108]

DISCUSSION AND CONCLUSIONS

SSB consumption has been strongly and consistently associated with increased body weight, as well as a number of related cardiometabolic conditions including type 2 diabetes and coronary heart disease. Limiting consumption of SSBs is therefore likely to improve health outcomes, and a number of strategies have been proposed and/or implemented toward that end.

The most effective strategies for limiting purchasing and consumption of SSBs appear to be restricting access in schools and potentially other settings, taxing beverages with added sugars, including warning labels on packaging, and using plain packaging. Other strategies are promising, but lack effectiveness data or require systems changes. For example, controlling the portion sizes that can be purchased in some public venues may reduce consumption, but few data exist to make that conclusion. Similarly, broad agreement exists for the need to redesign agricultural subsidies to, at a minimum, provide incentives for farms to increase fruit and vegetable production, potentially increasing their availability and decreasing their prices compared to products made from currently subsidized crops. However, the subsidies system is complex, and significant changes to it are not likely to occur in the face of disagreements about how subsidies impact SSB consumption and health outcomes. Meaningful and long-term declines in SSB consumption will likely require a combination of strategies, including physician counseling of patients.

The Council supports the implementation of evidence-based strategies aimed at reducing the consumption of SSBs, including restricting purchases in schools, taxes on SSBs, plain packaging, and warning labels. The Council also encourages continued research into other strategies that appear to be promising in reducing SSB consumption, and encourages physicians to familiarize themselves with clinical practice guidelines on counseling about SSB intake and follow them as appropriate. At this time, evidence is insufficient to determine whether restricting access to non-calorically sweetened beverages improves health outcomes. Consequently, the Council encourages continued

research into that topic. Current policy addresses a number of strategies that are intended to reduce SSB consumption, and the Council recommends updates to several of those policies to reflect current evidence about effective strategies.

RECOMMENDATIONS

The Council on Science and Public Health recommends that the following statements be adopted in lieu of Resolution 417-A-16 and the remainder of this report be filed:

1. That our AMA acknowledge the adverse health impacts of sugar-sweetened beverage (SSB) consumption, and support evidence-based strategies to reduce the consumption of SSBs, including but not limited to, excise taxes on SSBs, removing options to purchase SSBs in primary and secondary schools, the use of warning labels to inform consumers about the health consequences of SSB consumption, and the use of plain packaging.

2. That our AMA encourage continued research into strategies that may be effective in limiting SSB consumption, such as controlling portion sizes; limiting options to purchase or access SSBs in early childcare settings, workplaces, and public venues; restrictions on marketing SSBs to children; and changes to the agricultural subsidies system.

3. That our AMA encourage hospitals and medical facilities to offer healthier beverages, such as water, unflavored milk, coffee, and unsweetened tea, for purchase in place of SSBs and apply calorie counts for beverages in vending machines to be visible next to the price.

4. That our AMA encourage physicians to (a) counsel their patients about the health consequences of SSB consumption and replacing SSBs with healthier beverage choices, as recommended by professional society clinical guidelines; and (b) work with local school districts to promote healthy beverage choices for students.

5. That Policy H-150.933, "Taxes on Beverages with Added Sweeteners," which encourages consumer education about SSBs, encourages SSB tax revenues to be used for obesity prevention, and advocates for continued research into the potentially adverse effects of consumption of non-calorically sweetened beverages, be reaffirmed.

6. That Policy H-150.960, "Improving Nutritional Value of Snack Foods Available in Primary and Secondary Schools," be amended by addition and deletion to read as follows:

   H-150.960, Improving Nutritional Value of Snack Foods Available in Primary and Secondary Schools
   The AMA supports the position that primary and secondary schools should follow federal nutrition standards that replace foods in vending machines and snack bars~~, which~~ that are of low nutritional value and are high in fat, salt and/or sugar, including sugar-sweetened beverages, with healthier food and beverage choices ~~which~~ that contribute to the nutritional needs of the students.

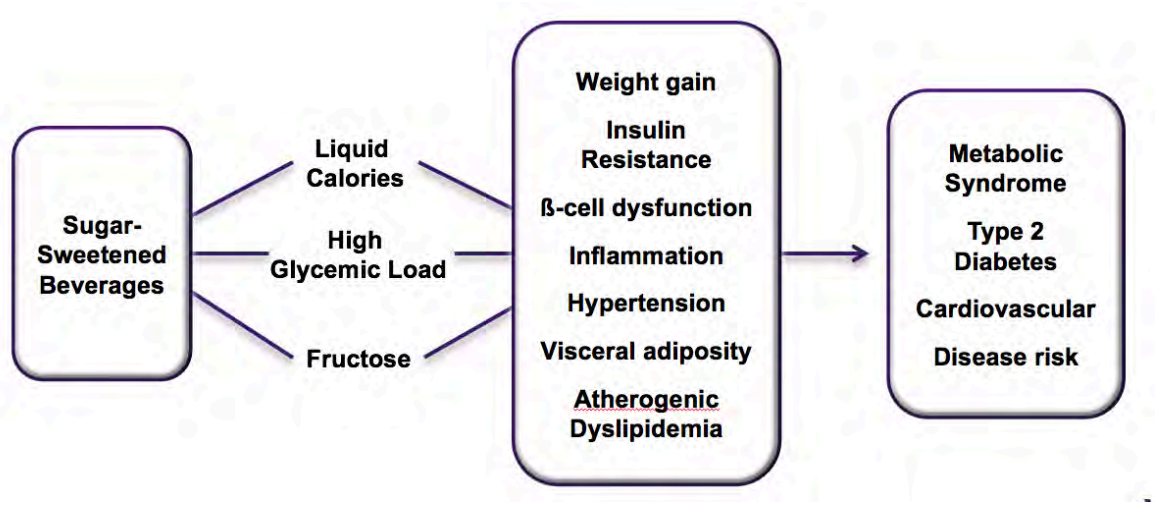
7. That Policy H-150.944, "Combating Obesity and Health Disparities," be amended by addition and deletion to read as follows:

   H-150.944, Combating Obesity and Health Disparities
   Our AMA supports efforts to: (1) reduce health disparities by basing food assistance programs on the health needs of their constituents; (2) provide vegetables, fruits, legumes, grains, vegetarian foods, and healthful dairy and nondairy beverages in school lunches and food assistance programs; and (3) ensure that federal subsidies encourage the consumption of ~~products~~ foods and beverages low in fat, added sugars, and cholesterol.

Table 1. Terms used in the report.[3]

Term	Definition
Added Sugars	Refers to sugars and syrups put in foods during preparation or processing, or added at the table. May include caloric sweeteners like fructose, corn syrup, dextrose, honey, molasses, malt syrup, maple syrup, sucrose, and various nectars. Non-caloric sweeteners generally are not considered as "added sugars."
Caloric/Nutritive Sweetener	Provide calories and sugars in the form of carbohydrates, and include natural sugars.
Non-caloric/ Non-nutritive Sweetener	Sweetener products that have an intense sweetness, are generally used in very small amounts, and have zero or a very negligible amount of calories. May include aspartame, sucralose, saccharin, stevia, or monk fruit, all of which are FDA approved.
Sugar-Sweetened Beverage	Refer to non-alcoholic beverages with added sugar or other caloric sweeteners. These include soda, fruit punch, lemonade, sweetened powdered drinks, sports and energy drinks, and sweetened teas and coffees.

Figure 1. Summary of adverse health impacts of SSB consumption.[19]



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APPENDIX - Current policies addressing obesity and SSBs

D-150.975 Eligibility of Sugar-Sweetened Beverages for SNAP
Our AMA will: (1) publish an educational brief to educate physicians about the effects of sugar-sweetened beverages (SSBs) on obesity and overall health, and encourage them to educate their patients in turn, (2) encourage state health agencies to include educational materials about nutrition and healthy food and beverage choices in routine materials that are currently sent to Supplemental Nutrition Assistance Program (SNAP) recipients along with the revised eligible foods and beverages guidelines, and (3) work to remove SSBs from SNAP. Res. 238, A-13; Reaffirmation A-14.

D-150.987 Addition of Alternatives to Soft Drinks in Schools
Our AMA will seek to promote the consumption and availability of nutritious beverages as a healthy alternative to high-calorie, low nutritional-content beverages (such as carbonated sodas and sugar-added juices) in schools. Res. 413, A-05 Reaffirmation, A-07 Reaffirmation A-12, Reaffirmation A-13.

H-150.960 Improving Nutritional Value of Snack Foods Available in Primary and Secondary Schools
The AMA supports the position that primary and secondary schools should replace foods in vending machines and snack bars, which are of low nutritional value and are high in fat, salt and/or sugar, with healthier food choices which contribute to the nutritional needs of the students. Res. 405, A-94 Reaffirmation, A-04 Reaffirmed in lieu of Res. 407, A-04, Reaffirmed: CSA Rep. 6, A-04, Reaffirmation A-07, Reaffirmation A-13.

D-150.974 Support for Nutrition Label Revision and FDA Review of Added Sugars
1. Our AMA will issue a statement of support for the newly proposed nutrition labeling by the Food and Drug Administration (FDA) during the public comment period. 2. Our AMA will recommend that the FDA further establish a recommended daily value (%DV) for the new added sugars listing on the revised nutrition labels based on previous recommendations from the WHO and AHA). 3. Our AMA will encourage further research into studies of sugars as addictive through epidemiological, observational, and clinical studies in humans. Res. 422, A-14

H-150.944 Combating Obesity and Health Disparities
Our AMA supports efforts to: (1) reduce health disparities by basing food assistance programs on the health needs of their constituents; (2) provide vegetables, fruits, legumes, grains, vegetarian foods, and healthful nondairy beverages in school lunches and food assistance programs; and (3) ensure that federal subsidies encourage the consumption of products low in fat and cholesterol. Res. 413, A-07, Reaffirmation A-12, Reaffirmation A-13.

D-150.978 Sustainable Food
Our AMA: (1) supports practices and policies in medical schools, hospitals, and other health care facilities that support and model a healthy and ecologically sustainable food system, which provides food and beverages of naturally high nutritional quality; (2) encourages the development of a healthier food system through tax incentive programs, community-level initiatives and federal legislation; and (3) will consider working with other health care and public health organizations to educate the health care community and the public about the importance of healthy and ecologically sustainable food systems. CSAPH Rep. 8, A-09,

Reaffirmed in lieu of Res. 411, A-11, Reaffirmation A-12, Reaffirmed in lieu of Res. 205, A-12, Modified: Res. 204, A-13, Reaffirmation A-15.

H-150.933 Taxes on Beverages with Added Sweeteners
1. Our AMA recognizes the complexity of factors contributing to the obesity epidemic and the need for a multifaceted approach to reduce the prevalence of obesity and improve public health. A key component of such a multifaceted approach is improved consumer education on the adverse health effects of excessive consumption of beverages containing added sweeteners. Taxes on beverages with added sweeteners are one means by which consumer education campaigns and other obesity-related programs could be financed in a stepwise approach to addressing the obesity epidemic. 2. Where taxes on beverages with added sweeteners are implemented, the revenue should be used primarily for programs to prevent and/or treat obesity and related conditions, such as educational ad campaigns and improved access to potable drinking water, particularly in schools and communities disproportionately affected by obesity and related conditions, as well as on research into population health outcomes that may be affected by such taxes. 3. Our AMA will advocate for continued research into the potentially adverse effects of long-term consumption of non-caloric sweeteners in beverages, particularly in children and adolescents. CSAPH Rep. 5, A-12, Reaffirmation A-13.

D-440.954 Addressing Obesity
1. Our AMA will: (a) assume a leadership role in collaborating with other interested organizations, including national medical specialty societies, the American Public Health Association, the Center for Science in the Public Interest, and the AMA Alliance, to discuss ways to finance a comprehensive national program for the study, prevention, and treatment of obesity, as well as public health and medical programs that serve vulnerable populations; (b) encourage state medical societies to collaborate with interested state and local organizations to discuss ways to finance a comprehensive program for the study, prevention, and treatment of obesity, as well as public health and medical programs that serve vulnerable populations; and (c) continue to monitor and support state and national policies and regulations that encourage healthy lifestyles and promote obesity prevention. 2. Our AMA, consistent with H-440.842, Recognition of Obesity as a Disease, will work with national specialty and state medical societies to advocate for patient access to and physician payment for the full continuum of evidence-based obesity treatment modalities (such as behavioral, pharmaceutical, psychosocial, nutritional, and surgical interventions). BOT Rep. 11, I-06, Reaffirmation A-13, Appended: Sub. Res. 111, A-14, Modified: Sub. Res. 811, I-14.

H-440.902 Obesity as a Major Health Concern
The AMA: (1) recognizes obesity in children and adults as a major public health problem; (2) will study the medical, psychological and socioeconomic issues associated with obesity, including reimbursement for evaluation and management of obese patients; (3) will work with other professional medical organizations, and other public and private organizations to develop evidence-based recommendations regarding education, prevention, and treatment of obesity; (4) recognizes that racial and ethnic disparities exist in the prevalence of obesity and diet-related diseases such as coronary heart disease, cancer, stroke, and diabetes and recommends that physicians use culturally responsive care to improve the treatment and management of obesity and diet-related diseases in minority populations; and (5) supports the use of cultural and socioeconomic considerations in all nutritional and dietary research and guidelines in order to treat overweight and obese patients. Res. 423, A-98, Reaffirmed and Appended: BOT Rep. 6, A-04, Reaffirmation A-10, Reaffirmed in lieu of Res. 434, A-12, Reaffirmation A-13.

H-150.937 Improvements to Supplemental Nutrition Programs
Our AMA supports: (1) improvements to the Supplemental Nutrition Assistance Program (SNAP) and Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) that are designed to promote adequate nutrient intake and reduce food insecurity and obesity; (2) efforts to decrease the price gap between calorie-dense, nutrition-poor foods and naturally nutrition-dense foods to improve health in economically disadvantaged populations by encouraging the expansion, through increased funds and increased enrollment, of existing programs that seek to improve nutrition and reduce obesity, such as the Farmer's Market Nutrition Program as a part of the Women, Infants, and Children program; and (3) the novel application of the Farmer's Market Nutrition Program to existing programs such as the Supplemental Nutrition Assistance Program (SNAP), and apply program models that incentivize the consumption of naturally nutrition-dense foods in wider food distribution venues than solely farmer's markets as part of the Women, Infants, and Children program. Res. 414, A-10, Reaffirmation A-12, Reaffirmation A-13, Appended: CSAPH Rep. 1, I-13, Reaffirmation A-14, Reaffirmation I-14, Reaffirmation A-15.

H-170.961 Prevention of Obesity Through Instruction in Public Schools
Our AMA will urge appropriate agencies to support legislation that would require meaningful yearly instruction in nutrition, including instruction in the causes, consequences, and prevention of obesity, in grades 1 through 12 in public schools and will encourage physicians to volunteer their time to assist with such an effort. Res. 426, A-12.

H-150.953 Obesity as a Major Public Health Problem
Our AMA will: (1) urge physicians as well as managed care organizations and other third party payers to recognize obesity as a complex disorder involving appetite regulation and energy metabolism that is associated with a variety of comorbid conditions; (2) work with appropriate federal agencies, medical specialty societies, and public health organizations to educate physicians about the prevention and management of overweight and obesity in children and adults, including education in basic principles and practices of physical activity and nutrition counseling; such training should be included in undergraduate and graduate medical education and through accredited continuing medical education programs; (3) urge federal support of research to

determine: (a) the causes and mechanisms of overweight and obesity, including biological, social, and epidemiological influences on weight gain, weight loss, and weight maintenance; (b) the long-term safety and efficacy of voluntary weight maintenance and weight loss practices and therapies, including surgery; (c) effective interventions to prevent obesity in children and adults; and (d) the effectiveness of weight loss counseling by physicians; (4) encourage national efforts to educate the public about the health risks of being overweight and obese and provide information about how to achieve and maintain a preferred healthy weight; (5) urge physicians to assess their patients for overweight and obesity during routine medical examinations and discuss with at-risk patients the health consequences of further weight gain; if treatment is indicated, physicians should encourage and facilitate weight maintenance or reduction efforts in their patients or refer them to a physician with special interest and expertise in the clinical management of obesity; (6) urge all physicians and patients to maintain a desired weight and prevent inappropriate weight gain; (7) encourage physicians to become knowledgeable of community resources and referral services that can assist with the management of overweight and obese patients; and (8) urge the appropriate federal agencies to work with organized medicine and the health insurance industry to develop coding and payment mechanisms for the evaluation and management of obesity. CSA Rep. 6, A-99, Reaffirmation A-09, Reaffirmed: CSAPH Rep. 1, A-09, Reaffirmation A-10, Reaffirmation I-10, Reaffirmation A-12, Reaffirmed in lieu of Res. 434, A-12, Reaffirmation A-13, Reaffirmed: CSAPH Rep. 3, A-13.

D-440.980 Recognizing and Taking Action in Response to the Obesity Crisis
Our AMA will: (1) collaborate with appropriate agencies and organizations to commission a multidisciplinary task force to review the public health impact of obesity and recommend measures to better recognize and treat obesity as a chronic disease; (2) actively pursue, in collaboration and coordination with programs and activities of appropriate agencies and organizations, the creation of a "National Obesity Awareness Month"; (3) strongly encourage through a media campaign the re-establishment of meaningful physical education programs in primary and secondary education as well as family-oriented education programs on obesity prevention; (4) promote the inclusion of education on obesity prevention and the medical complications of obesity in medical school and appropriate residency curricula; and (5) encourage medical schools' accrediting bodies to study and report back on the current state of obesity education in medical schools, and through this report, identify organizations that currently provide educational resources/toolkits regarding obesity education for physicians in training and, in consultation with relevant specialty organizations and stakeholders, identify gaps in obesity education in medical schools and submit recommendations for addressing those gaps. Res. 405, A-03, Reaffirmation A-04, Reaffirmation A-07, Appended: Sub. Res. 315, A-15.

H-150.932 Reform the US Farm Bill to Improve US Public Health and Food Sustainability
Our AMA supports the creation of a new advisory board to review and recommend US Farm Bill budget allocations to ensure any government subsidies are only used to help produce healthy food choices and sustainable foods, and that advisory committee members include physicians, public health officials and other public health stakeholders. Res. 215, A-13.

D-150.981 The Health Effects of High Fructose Syrup
Our AMA:(1) recognizes that at the present time, insufficient evidence exists to specifically restrict use of high fructose corn syrup (HFCS) or other fructose-containing sweeteners in the food supply or to require the use of warning labels on products containing HFCS; (2) encourages independent research (including epidemiological studies) on the health effects of HFCS and other sweeteners, and evaluation of the mechanism of action and relationship between fructose dose and response; and (3) in concert with the Dietary Guidelines for Americans, recommends that consumers limit the amount of added caloric sweeteners in their diet. CSAPH Rep. 3, A-08, Reaffirmation A-13.