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Journal of Managed Care Medicine

Supplement: A CME CMU Approved Activity



**Immunizations, Prevention
and Lifestyle**

Immunizations, Prevention & Lifestyle

Dexter Shurney, MD, MBA, MPH

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A score of 70% must be achieved on the post test to receive continuing education credits.

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Disclosure:

Dr. Shurney has no financial relationships to disclose.
Bill Williams, MD, Jacquelyn Smith, RN, BSN, CMCN, Katie Eads, and Geneva Briggs, PharmD of the NAMCP/AAMCN planning committee have nothing to disclose.

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Post Test Questions

- For every \$1.00 the United States (U.S.) spends on childhood vaccinations, how much in disease treatment costs are saved?
 - \$2.25
 - \$5.50
 - \$10.20
 - \$17.30
- Which of the following is an example of a vaccine preventable disease where the immunizations rates in the U.S. could be improved?
 - Polio
 - Diphtheria
 - Tetanus
 - Varicella
- Which of the following is an example of a vaccine preventable disease for which cases have increased in the U.S. because of vaccine skepticism?
 - Measles
 - Influenza
 - Smallpox
 - Hepatitis B
- Which of the following barriers to adult immunization is likely to be easiest for managed care to impact?
 - Lack of integration of vaccines into adult medical care.
 - Skepticism regarding vaccine safety and effectiveness.
 - Provider concerns about reimbursement and vaccine administration fees.
 - Lack of and/or weak recommendations by health care providers.
- Chronic conditions now account for over ___ of the U.S. national health care expenditure.
 - 20%
 - 40%
 - 55%
 - 80%
- Which of the following is a rule that can guide work on lifestyle management?
 - Meet people where they are
 - Present lots of information
 - Start several interventions at once
 - Avoid criticism
- Which of the following is NOT important for a behavior change to occur?
 - Competency
 - Extrinsic motivation
 - Culture
 - Intrinsic motivation
- Which of the following interventions would be a good choice for an program integrating occupational and non-occupational health?
 - Diet
 - Exercise
 - Sleep
 - Hydration
- To be successful, wellness programs have to build participant's lifestyle competencies.
 - True
 - False
- Which of the following is a true statement about epigenetics?
 - Epigenetic is the influence of lifestyle and environment on gene expression
 - Epigenetics are less important than genes in determining risk for disease.
 - Epigenetic changes only occur in later life (age > 75).
 - Epigenetic changes involve alteration to the underlying DNA sequence of a gene.

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Immunizations, Prevention and Lifestyle

Dexter Shurney, MD, MBA, MPH

Learning Objectives:

- 1) Evaluate how to implement a strategic plan to increase immunizations and screenings and enhance protocol for documenting and follow-up
- 2) Describe the use of lifestyle medicine in reducing the chance of disease or preventing disease, and as part of a detailed treatment and management plan for chronic disease
- 3) Analyze the future of preventative medicine and lifestyle medicine within the health care industry
- 4) Form a strategic plan to educate patients about the importance of immunizations and screenings and when they need them, an awareness of the risk factors that certain lifestyles (smoking, diet, etc.) may pose, and knowledge of the guidelines or best practices to follow for lifestyle changes

IMMUNIZATIONS AND LIFESTYLE MANAGEMENT are both part of overall disease prevention. Immunizations target vaccine-preventable diseases, whereas lifestyle management aims at reducing the chance of disease development and as part of a detailed treatment and management plan for chronic disease.

Overall, there are cost benefits to the health care system in providing both disease prevention programs such as immunizations and lifestyle management. Both interventions target the root cause of a disease; it is not just putting a bandage on an issue. When an immunization is given, for the most part, a case of the targeted disease is avoided. When lifestyle management is successfully done, a disease such as type 2 diabetes mellitus can be avoided or postponed. Although much has been done in immunizations and lifestyle management, there are still huge opportunities for improvements in both areas.

According to the World Health Organization (WHO), immunizations save an estimated 2.5 mil-

lion lives each year from tuberculosis, diphtheria, tetanus, pertussis, polio, measles, hepatitis B, and *Haemophilus influenzae b* infections.¹ For every dollar the United States (U.S.) spends on childhood vaccinations, \$10.20 in disease treatment costs are saved.² In the U.S., vaccine use saves \$13.5 billion in direct costs.³ Health plans should be doing more to capture the benefits of immunizations.

Great strides have been made in many vaccine-preventable diseases. Exhibit 1 illustrates the decrease in morbidity as a result of vaccinations.^{4,5} This exhibit also illustrates some of the areas where vaccine rates could be significantly improved. Example areas include hepatitis A and B, varicella, and pertussis. In some parts of the U.S., there have been significant reductions in vaccination rates and increased cases of diseases such as measles because of vaccine skepticism.

Despite the widespread availability of safe and effective vaccines, adult vaccination rates remain low in the U.S. Exhibit 2 compares the Healthy People

Exhibit 1: Vaccination Impact^{4,5}

| | Pre-Vaccine Era Estimated Annual Morbidity | Most Recent Reports of Cases in the U.S. | Percentage Decrease |
|----------------------|--|---|------------------------|
| Diphtheria | 21,053 | 0 | 100% |
| H. Influenzae | 20,000 | 243 | 99% |
| Hepatitis A | 117,333 | 11,049 | 91% |
| Hepatitis B | 66,232 | 11,269 | 83% |
| Measles | 530,217 | 61 | 99% |
| Mumps | 162,344 | 982 | 99% |
| Pertussis | 200,752 | 13,506 | 93% |
| Pneumococcal Disease | 16,069 | 4,167 | 74% |
| Polio | 16,316 | 0 | 100% |
| Rubella | 47,745 | 4 | 99% |
| Congenital Rubella | 152 | 1 | 99% |
| Smallpox | 29,005 | 0 | 100% |
| Tetanus | 580 | 14 | 98% |
| Varicella | 4,085,120 | 449,363 | 89% |

2020 objectives for adult vaccinations to 2012 coverage rates.⁶ Vaccine-preventable diseases take a heavy toll on adults. The Centers for Disease Control and Prevention (CDC) estimates that among U.S. adults each year there are roughly 4,000 deaths attributable to invasive pneumococcal disease and between 3,000 and 50,000 deaths due to seasonal influenza.⁷ Childhood immunization rates (~90%) are much better than adult rates because of school attendance vaccination policies, pediatricians incorporating vaccination as part of well-child care, and the public health infrastructure established by the Vaccines for Children Program (VFC).⁷

Although the toll of vaccine-preventable diseases is significant, there are several barriers to improving adult immunization rates (Exhibit 3).⁷ Managed care can alleviate some of these barriers, especially through reasonable reimbursement of vaccines and vaccine administration fees and use of evidence-based strategies to improve vaccine uptake.

Another avenue to improve adult immunization rates is through implementation of the National Adult Immunization Plan (NAIP), a five-year national strategic plan for the U.S.⁷ As a national plan, it will require engagement from a wide range of stakeholders to achieve its full vision. The plan emphasizes collaboration and prioritization of ef-

forts that will have the greatest impact. The NAIP is intended to facilitate coordinated action by federal and nonfederal partners to protect public health and achieve optimal prevention of infectious diseases and their consequences through vaccination of adults. The plan includes indicators to draw attention to and track progress against core goals. These indicators will measure progress against set standards and inform future implementation and quality improvement efforts. The plan establishes four key goals, each of which is supported by objectives and strategies to guide implementation through 2020:

- Strengthen the adult immunization infrastructure,
- Improve access to adult vaccines,
- Increase community demand for adult immunizations,
- Foster innovation in adult vaccine development and vaccination-related technologies.

Health care providers are consistently identified as the most trusted source of vaccine information by parents and patients. A provider's recommendation for vaccination is a powerful motivator; but all providers may not adequately stress the need for vaccination. Providers should be prepared to discuss the benefits and risks of vaccines, as well as the risks of vaccine-preventable diseases, using Vac-

Exhibit 2: Healthy People Objectives for Adult Vaccinations, 2012 Coverage and 2020 Targets⁶

| Objective | 2012 Percentage | 2020 Target Percentage |
|---|-----------------|---------------------------|
| #IID-12 Increase the percentage of children and adults vaccinated for influenza | | |
| Adults ≥ 18 years | 39 | 70 |
| Health Care Personnel | 62 | 90 |
| Pregnant Women | 52 | No target, in development |
| #IID-13 Increase the percentage of adults vaccinated for pneumococcal disease | | |
| Non-institutionalized adults ≥ 65 years | 60 | 90 |
| Non-institutionalized high-risk adults 18 - 64 years | 20 | 60 |
| Institutionalized adults ≥ 18 years in long term care or nursing home | 66 | 90 |
| #IID-14 Increase percentage of adults ≥ 60 years vaccinated against zoster (shingles) | | |
| Adults ≥ 60 years | 20 | 30 |
| #IID-15 Increase Hep B vaccine coverage among high risk populations | | |
| Health Care Personnel age ≥ 19 years | 64 | 90 |

cine Information Statements from the Centers for Disease Control and Prevention (<http://www.cdc.gov/vaccines/hcp/vis/>) and other reliable resources. Many providers may not feel adequately prepared to counter the inaccurate information presented in the media about vaccine risks. Arming providers with up-to-date information can be a role for managed care. Establishing an open dialogue between providers and patients promotes a safe, trust-building environment in which individuals can freely evaluate information, discuss vaccine concerns, and make informed decisions regarding immunizations. Providers are also encouraged to discuss after care instructions with patients or parents/guardians.

Numerous tools are available to help providers better track appropriate vaccinations. The National Association of Managed Care Physicians (NAMCP) has developed and recommends use of adult and child preventive services records to track vaccinations and other preventive health services. Examples of the two forms can be downloaded from the organization website.^{8,9}

Another area of disease prevention is lifestyle management. Chronic conditions now account for over 80 percent of the U.S. national health care expenditures.¹⁰ These expenses, however, are largely used

for the medical management of these diseases and their symptomatic relief, without usually affecting a cure or disease reversal. The high-tech medical “silver bullet” for these diseases is not easily found, as they are diseases of long standing. Their clinical manifestation may occur only years after the inception of the underlying pathogenesis of the disease that can involve multiple risk factors precipitated by patterns of behavior, lifestyle and culture.

The prevention of chronic diseases prominently involves personal and societal choices regarding diet, exercise, and smoking—lifestyle management.¹¹ With more than 70 percent of our health largely being determined by lifestyle factors, medical care—with its symptomatic or palliative treatment, as helpful as this may be at the time—has little impact on the level of chronic disease.^{12,13} In addition to preventing disease, a growing body of scientific evidence has demonstrated that lifestyle intervention is an essential component in the treatment of chronic disease that can be as effective as medication, but without the risks and unwanted side-effects.

Three rules that can guide work on lifestyle management are 1) keep it simple, 2) go slow to go fast, and 3) meet people where they are. Keeping things simple will help people to incorporate changes into

Exhibit 3: Barriers to Adult Immunization⁷

- Lack of coordination of adult immunization activities across all stakeholders, including multiple health care providers for adults
- Lack of integration of vaccines into adult medical care
- Lack or underuse of administrative systems for documenting vaccination histories and identifying patients who are due for vaccinations in medical records
- Skepticism regarding vaccine safety and effectiveness
- Inability to pay for vaccination as a result of lack of insurance or variable coverage for recommended vaccinations across health plans
- Provider concerns about reimbursement and vaccine administration fees paid by health insurers, which discourages some providers from stocking all adult vaccines
- Lack of public knowledge regarding the adult immunization schedule and the risks and consequences of vaccine-preventable diseases
- Lack of awareness that adults are supposed to receive more than influenza vaccines
- Lack of and/or weak recommendations by health care providers
- Limited use of evidence-based strategies to improve vaccine uptake, such as reminder-recall and related systems
- Conflicting and inaccurate information about immunizations in mass media

their daily lives. Going slow with implementing individual changes can help those changes become permanent in the person's life. Lastly, individuals may not yet be ready for change or willing yet to make major changes. Small steps toward the ultimate goal of living a healthy lifestyle, such as starting to walk twice a week rather than 30 minutes of daily exercise, will be easier to implement but can be built on over time.

Delivering a sustainable solution to lifestyle management requires a behavior change for the long term. Intrinsic motivation, competency, and culture all play into whether behavior change occurs. Intrinsic motivation is "what is in it for me" and understanding why something needs to be done. Americans spend a lot of their energy and money on trying to be healthier and live longer. They spend money on cookbooks, diet foods, supplements, and self-help books; yet, when an employer provides a wellness program, employees do not want anything to do with it. Thus, many employees have intrinsic motivation, but employers are not connecting with the employees. Employers need to do a better job in figuring out the intrinsic motivators for different people. For some, it may be doing challenges. Additionally, motivators change over the lifespan. What

motivates a 20-year-old is not likely to be effective in a 60-year-old.

Competency is another aspect of behavior change. This is the understanding of how and why of living healthier. People need to understand how to incorporate healthy lifestyle interventions into their daily lives, every day forever. Although widely available and used, self-help books and television shows may not be giving individuals the practical things they need to be able to apply a healthy lifestyle in their everyday life. If they were working, we would not be seeing the continuing rise in weight and rates of type 2 diabetes. Trying a lot of different things that do not work can lead to demotivation. Employers and managed care need to make sure the interventions being used in lifestyle management programs are evidence based and proven to work.

Culture is helping people make the right choices. This is changing the environment to make it easier to be healthy. Examples can include accessible walking or biking paths or access to healthy foods such as produce. Healthy food has to taste good, be affordable, and be easy. Thus, in the current culture of the U.S., it is difficult for healthy foods to compete with fast food.

The elements of a global physical and emotional

Exhibit 4: 2004 CHIP Program Results

| Biometric Measure | Average Decrease |
|--------------------------|------------------|
| Total cholesterol | 9.0% |
| LDL cholesterol | 8.3% |
| Triglycerides | 5.4% |
| Glucose | 1.1% |
| Systolic blood pressure | 4.2% |
| Diastolic blood pressure | 5.0% |
| Weight | 3.7% |
| Body fat | 3.9% |
| Waist circumference | 4.4% |

N = 12, data represents results from three separate cohorts at week number 7 of 8

well-being strategy include lifestyle competencies, health care delivery, connecting occupational and non-occupational health, and community health. Lifestyle competencies include the importance of lifestyle and environment on health and how to implement changes. Consumerism and benefit design are important aspects of health care delivery which can promote healthy lifestyles. Occupational and non-occupational health should be connected by aligning approaches and addressing reciprocal impacts. Community health is employee well-being beyond the workplace.

Lifestyle management in the form of wellness or well-being programs can be delivered in many settings including the workplace. Wellness programs can be built around major and minor health levers (i.e., interventions that can impact disease). Major levers are physical activity, nutrition, smoking cessation, and sleep. Obviously, improving major health levers can improve multiple chronic diseases. Minor levers can help the person achieve the major levers. Two examples of minor health levers are hydration and sun exposure. People who are not hydrated enough do not sleep as well. Additionally, improving hydration may reduce food intake. Sometimes we think we are hungry but really we need hydration. Getting modest sun exposure affects melatonin levels, which improves sleep, provides vitamin D, and helps with depression.

In many wellness programs, participants are told what to do but are not told how to do it. Successful programs support healthy behaviors by building the lifestyle competencies of the participants. Employers can provide E-learning modules designed

around the previously discussed major levers to provide the practical knowledge necessary to develop healthy behaviors. For example, at Cummins Inc., a global power leader headquartered in Columbus, Indiana that employs approximately 54,600 people worldwide, employees who complete E-learning modules earn credits to reduce their health care premium costs. Companies can have different levels of achievement of lifestyle competencies that can be rewarded. The high achievers can share their success and best practices, have bragging rights, and get rewarded.

The Complete Health Improvement Program (CHIP) is a turnkey lifestyle enrichment program designed to reduce disease risk factors through the adoption of better health habits and appropriate lifestyle modifications. The goal is to lower cholesterol, blood pressure, and glucose and reduce excess weight. This is done by improving dietary choices, enhancing daily exercise, increasing support systems and decreasing stress, thus aiding in preventing and reversing disease. Information on the program can be found at www.chiphealth.com. In a pilot of the CHIP program, Cummins, Inc. enrolled 112 employees. In just seven weeks, positive effects on various metabolic parameters were seen (Exhibit 4).

Creating a culture of health in the work environment is another way employers can work to improve the health of their employees. Creating this culture means leading by example and making health and well-being a common thread throughout the workforce for every employee, at every location, regardless of ethnicity, education, or career path. One ex-

ample of a culture of health is to allow people to get up and move around during meetings or having standing meetings. The hazards of excess sitting are well known but prolonged sitting is inherent in many work environments. Excess sitting can even undo the benefits of routine exercise.

Many businesses already have a culture of safety in place. They can look at what safety programs have been successful and use that type of structure to improve health. Integrating occupational and non-occupational health supports employees to achieve their best health, no matter where an employee gets sick or injured.

Programs targeted at improving employee sleep are an example of integrating occupational and non-occupational health. Sleep affects workplace safety, work quality, and employee health. In a survey of Cummins, Inc. employees, 82 percent admitted to being fatigued at work. Work quality can suffer from fatigue-related errors and decreased cognitive function. In a U.S. National Health Interview Survey, people who slept less than five hours a night had significantly higher injury rates compared with those who got seven to nine hours of sleep.¹⁴ Lack of sleep is a factor in motor vehicle crashes and is increasingly being shown to have an impact on chronic disease development.¹⁵

One way lifestyle impacts health is through epigenetics. Epigenetics are alterations in gene expression that do not involve changes to the underlying DNA sequence and are the result of lifestyle choices and environment. Epigenetic changes occur over one's lifetime.¹⁶ It has been said that genes load the gun for developing a disease such as diabetes, but it's one's lifestyle that pulls the trigger. So lifestyle choices are just as important as our genes in the development of chronic disease. Educating people about the effects of lifestyle on their genes and disease risk can be empowering and motivating for them to make changes.

Conclusion

Disease prevention encompasses many things but two which health care providers, employers, and managed care can impact include immunizations and lifestyle management. Immunizations work, are cost effective, are safe (in general), and benefit all of society through the herd effect. Lifestyle management can prevent many chronic diseases and be used to manage those diseases if they occur. Lifestyle management in the form of wellness or well-being programs can be delivered in many settings including the workplace. If people can be motivated to take care of themselves, the incidence of many chronic diseases will decline.

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