UC San Diego Health

Corner Clinic: Our Experts Answer Your Health Questions

This month we talk about back-to-school health issues: vaccinations, adolescent sleep and heavy backpacks

By UC San Diego Health Experts | August 27, 2015

- What vaccines do my kids need before going back to school? Why?
- How much sleep do adolescents need? How can I get my teen to improve his/her sleep?
- When it comes to school backpacks, what should I be worried about? How heavy is too heavy?

What vaccines do my kids need before going back to school? Why?
Mark H. Sawyer, MD, professor of pediatrics, and Jennifer Sterling, community health representative

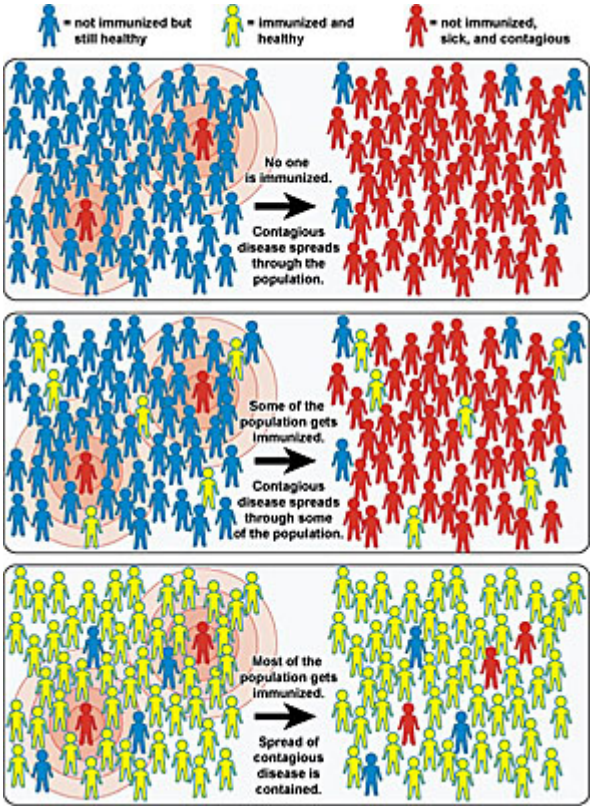
Earlier this year, the California legislature passed a bill that requires children enrolling in school to be vaccinated. Parents in California are no longer able to decline vaccinations for their children based on personal or religious beliefs. (There is one exception — children with medical issues that prevent them from being vaccinated, such as immune system deficiencies, are still able to enroll in school.)

What vaccines do your children need? In general, all children will need to be vaccinated against nine diseases:

- → Disease: Diphtheria, tetanus, pertussis (whooping cough)
  Vaccine name: DTaP and Tdap
  Notes: DTaP is a series of five shots. One booster dose (Tdap) is needed on or after the 7th birthday, required for 7th grade entry.
- → Disease: Polio
  Vaccine name: Polio

Notes: Series of four shots

- → Disease: Hepatitis B
  Vaccine name: Hep B
  Notes: Series of three shots
- → Disease: Measles, mumps, rubella
  Vaccine name: MMR
  Notes: First dose on or after first birthday
- → Disease: Chickenpox
  Vaccine name: Varicella
  Notes: One shot, unless child is 13 years or older when first dose received, then a second dose is required



Herd immunity, courtesy of the National Institute of Allergy and Infectious Diseases, NIH.

Why are these vaccines necessary? As illustrated in the figure above, when the majority of a community is immunized against a contagious disease, most members of the community are protected against that disease because there is little opportunity for an outbreak. Even those who are not eligible for certain vaccines — such as infants, pregnant women or immunocompromised individuals — get some protection because the spread of contagious disease is contained.

People who benefit from herd immunity include:

- → People without a fully-working immune system, including those without a working spleen
- → People on chemotherapy treatment whose immune systems are weakened
- → People with HIV
- → Newborn babies who are too young to be fully vaccinated
- → Senior populations
- → A small percentage of those who are immunized but didn't respond to the vaccine

If you have questions about childhood vaccines, please make an appointment with a primary care physician or pediatrician.

How much sleep do adolescents need? How can I get my teen to improve his/her sleep?
Maya Kumar, MD, Pediatric and Adolescent Medicine

On average, adolescents need between nine and nine-and-a-half hours of sleep every night. Unfortunately, more than 90 percent of American teenagers get less than nine hours of sleep on an average school night. In fact, almost 40 percent of teenagers get less than seven hours of sleep on an average school night!

Chronic sleep deprivation in adolescents is associated with academic problems, daytime sleepiness, poor concentration and memory, mood problems, anxiety and weight gain. Of particular concern, among high school students who drive, 15 percent report that they drive while drowsy at least once a week and more than 50 percent report that they drove while drowsy at least once in the last year.

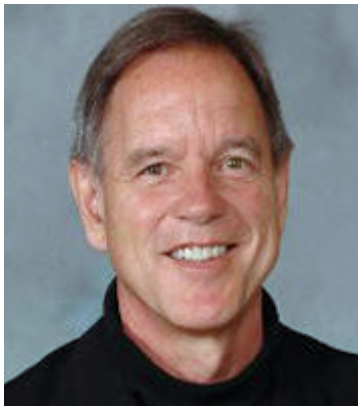
The main issues that interfere with adolescent sleep are lifestyle-related. Fortunately, these can be modified. Here are some ways that teens can improve their sleep:

- → Avoid caffeine. Caffeinated beverages include coffee (including iced coffees and blended coffee drinks), tea, energy drinks and dark-colored sodas (e.g., colas). Caffeine is best avoided altogether, but at a minimum these beverages should be avoided after 1-2 p.m.
- → Avoid all screens (including smartphones, television/movies, computers, video games and tablets) for at least one hour before going to bed. The brain needs darkness to fall asleep and the light stimulation from these devices significantly interferes with sleep onset.
- → Do not sleep with your phone beside you. Almost 20 percent of teens report being awakened at least a few nights a week by incoming texts and emails!
- → Get into a routine of waking up at a reasonable time every morning so you feel tired in the evening. Many teens get into a vicious cycle of sleeping until the afternoon and then being unable to fall asleep until very late at night or early morning. Forcing yourself to get up earlier may be rough at first, but if you stick with it for a few days your internal clock will be re-set.
- → Try to go to bed and wake up at the same time every day, including both weekdays and weekends.
- → Try to use your bedroom just for sleeping — do your homework, read and use your phone/computer/tablet in a different room whenever possible. This will train your mind to associate your bedroom with sleep.
- → Exercise daily or most days of the week.
- → Do not go to bed either hungry or overly full.

Some problems that interfere with sleep are hard to change on your own and require help from a physician. These include mental health concerns (e.g., anxiety, depression, stress, grief or a

traumatic experience) and tobacco or other substance use. If your teen is suffering from any of these or has tried the lifestyle modifications outlined above and is still struggling with sleep, an assessment by a physician is important.

Pediatricians who specialize in adolescent health issues, including sleep problems, are available at the Pediatric and Adolescent Medicine Clinic at UC San Diego Health. Call 858-496-4800 to learn more about their services.



When it comes to school backpacks, what should I be worried about? How heavy is too heavy?
Alan Hargens, PhD, professor of orthopaedic surgery, and Brandon Macias, PhD, postdoctoral fellow

There are three main factors to consider when it comes to preventing and minimizing pain due to backpack loads: overall weight, weight distribution and skin contact area.

We recently found that backpack loads as low as 11 lbs decrease blood flow in shoulder skin and increase pain. Thus, it's important that students minimize items in their backpacks in order to reduce backpack load.

In addition, we discovered that backpack loads as low as 9 lbs can cause asymmetry in the lower spine. To prevent this asymmetry, it's important to carefully adjust the backpack strap length to load both shoulders with equal weights.

Our research also suggests that students should maximize the skin contact area beneath the backpack shoulder straps and back — by using both shoulder straps instead of one, for example. This strategy will reduce overall pressure, and therefore help maintain adequate blood supply to skin and muscle.

If you or your child are experiencing pain from backpack use, please consult a primary care physician or pediatrician.

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Infectious Disease

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