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## EVIDENCE-BASED MEDICINE AND COLLEGE HEALTH

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# Evidence-Based Medicine and College

In recent years, the pursuit of clinical quality improvement has led first to development of objective measures of practice,<sup>1</sup> then to the analysis of practice variation and subsequently to the development of the field of evidence based medicine (EBM). As a paradigm for patient care, “EBM is the integration of best research evidence with clinical expertise and patient values.”<sup>2</sup> This is distinguished from the priority often given in the past to expert opinion. Ideally, EBM practices are embedded in a delivery system that repetitively gives optimal care with little variation from the best practice. In actuality, as Wennberg and Fisher have demonstrated, significant variations in care occur without any rationale.<sup>3,4</sup> Because evidence for a single best clinical practice is often lacking, the overall importance of practice variation is not always clear. However, it is logical to assume that when variations in care occur without any clinical rationale, overall quality is not maximized.

Several clinical areas, mostly in the areas of chronic disease, have been fertile ground for applying EBM.<sup>5</sup> Although college students more commonly present with acute, self-limiting disease, the principles of EBM for chronic disease, prevention, and behavioral health described below may be helpful. For example, hypertension treatment is guided by evidence-based practice guidelines such as the Joint National Committee, 7th report (JNC7), which are periodically updated, as well as evidence from high quality clinical trials such as ALLHAT.<sup>6</sup> These data led to the conclusion that calcium channel blockers were over-used for initial hypertension treatment, and although their use has declined, incomplete use of the EBM approach has left their rate of use higher than it should be.

Other common chronic conditions, such as diabetes, have evidence from high quality clinical trials such as the UKPDS and Diabetes Prevention Project, although those conditions also have practice guidelines in which evidence-based rigor has been modulated by

expert opinion. For example, the American Association of Clinical Endocrinologists recommends an HBA1c target of <6.5% and the ADA recommends an HBA1c target of <7%. Acute diseases such as urinary tract infection also have accepted treatment protocols based on expert analysis of data<sup>7</sup> that may not reach the level of rigor of a true practice guideline but are based on high quality clinical trials that can be used in an EBM rubric.

In the area of preventive services, the US Preventive Services Task Force has set the standard for an evidence-based approach, but practice guidelines that are less rigorous and more based on expert opinion also exist. Examples would be prostate cancer screening as recommended by the American Cancer Society and HIV screening as recommended by the CDC. Mental health care has high-quality clinical trials and practice guidelines produced by the American Psychiatric Association and others, but overall the EBM approach has been less prevalent in mental health care.

EBM has both limitations and detractors. There are numerous clinical scenarios that don't fit a clinical situation to which an existing body of medical evidence might apply. In that situation, health care providers must do what they have always done: exercise sound clinical judgment to the best of their ability, use what evidence is available, and rely on expert opinion as needed. Naturally, this will lead to more variations in care, but in the absence of a defined best care process, this is acceptable to some degree. It is hard to defend variations in care when a best practice is available, though there may be local resource issues that drive care one way or another.

For example, certain types of diagnostic or specialty services may be more available in a given area, and be perceived as offering nearly equivalent clinical benefits. In this context, some care variation may be justifiable as a matter of clinical expediency. There are also those who feel that EBM is “cookbook medicine,” and therefore should not be pursued,

# Health: Opportunities and Challenges

because, they suggest, it may lead to less rigor in diagnosis and treatment and result in missing important subtleties. A variety of other objections to EBM have also been made.<sup>8</sup> This is an area that is likely to have some continued controversy. However, as health systems are held more accountable to conforming to best practices, including the use of pay-for-performance programs, it is likely that EBM will be a tool that is increasingly used.

Practitioners in the field of college health take care of more patients with acute disease than chronic disease. However, sizable evidence bases about conditions such as pharyngitis, acute bronchitis, urinary tract infections, and sexually transmitted diseases exist and should be used. The same is true for mental health conditions such as problem drinking and preventive services such as screening women for Chlamydia and gonococcal infections. Therefore, college health practitioners and clinical leaders need to become aware of how to learn about and use EBM techniques in daily practice. This is certainly facilitated by clinical decision support tools available at the point of care and electronic databases that are in the public domain such as the National Guideline Clearing House. Medical organizations such as the Society of General Internal Medicine<sup>9</sup> and the American Academy of Family Physicians offer tools or training in EBM techniques. Some continuing medical education programs are designed along the lines of EBM, although it is often not readily apparent how rigorously a CME program conforms to EBM principles, and commercial bias is a known hazard at some programs. Unfortunately, in spite of progressively stricter disclosure rules, the same is also true for some clinical research.

The ultimate form of EBM for college health would be clinical trials conducted in college health services or environments that closely approximate college health. This work represents significant opportunities for the college health community. My ideal “future state” is one in which care would be

delivered by practitioners well versed in EBM working in a delivery system that makes it easy to find the best evidence, and give care in a standardized, predictable way. This is easiest to visualize in a center that has an electronic health record that would expedite clinical decision-making and documentation through structured tools. Ideally, this record would have the ability to provide process data so that adherence to or variations from practice standards can be measured, analyzed, and optimized using the tools of continuous quality improvement. Developing this capability will be challenging but exciting work for the college health community in the years to come.

## Notes:

1. Donabedian A. “Evaluating the quality of medical care.” *Milbank Quarterly* 1966;44:166-206.
2. Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. *Evidence-Based Medicine: How to Practice and Teach EBM*, 2nd Ed. London: Churchill Livingstone, 2000.
3. Wennberg JE. “Understanding Geographic Variations in Health Care Delivery.” *New England Journal of Medicine*, 1999; 340:52-53.
4. Fisher ES. “Medical Care — Is More Always Better?” *New England Journal of Medicine*, 2003; 349:1665-1667.
5. AHRQ Evidence Based Practice website: <http://www.ahrq.gov/clinic/epcix.htm>.
6. ALLHAT “Collaborative Research Group. Major Outcomes in High-Risk Hypertensive Patients Randomized to Angiotensin-Converting Enzyme Inhibitor or Calcium Channel Blocker vs. Diuretic. The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT).” *JAMA* 2002;288:2981-2997.
7. Fihn SD. “Acute uncomplicated urinary tract infection in women.” *New England Journal of Medicine*, 2003; 349:259-266.
8. Miles A, Polychronis A, Grey J. “The evidence-based health care debate - 2006. Where are we now?” *Journal of Evaluation in Clinical Practice* 2006;12:239-247.
9. SGIM EBM task force web site: <http://www.sgim.org/ebm.cfm>.



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# Adult Attention Deficit Hyperactivity Disorder: A Common Problem Yet Often Unrecognized

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Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent, neurobiological disorder. According to the National Comorbidity Survey-Replication, ADHD affects 4.4% of the U.S. adult population. It is the second most common adult psychiatric disorder. Once thought only to affect children, it is now believed that over 50% of children with ADHD retain the disorder as adults.

ADHD is regarded as a chronic disorder, but symptoms may vary among individuals and across settings. A large survey of community-diagnosed adults with ADHD by Biederman et al. found significant impairment across multiple functioning domains. It may be difficult to recognize this disorder in adults, especially when the characteristic symptoms are not profoundly different from normal behavior. Because of this, some question if ADHD is actually a disorder. For example, from time to time, any person may act without thinking, daydream, misplace objects, be forgetful, get distracted, or feel restless.

It is a diagnosable disorder to be considered when distractibility, concentration difficulty, restlessness, impulsivity, and other behavioral symptoms begin to significantly impair performance and last more than six months. Symptoms must be excessive, long-term, and occur in several settings to qualify for the diagnosis. An

individual with ADHD will have multiple symptoms that have led to prominent functional impairment in several different life settings. With a thorough clinical evaluation, adult ADHD can be reliably identified and managed.

The core characteristics of ADHD are inattention, hyperactivity and impulsivity.

These symptoms almost always appear early in a child's life, but because of effective coping strategies may not be recognized or diagnosed until adulthood.

The three subtypes of ADHD behavior include:

- Predominantly Inattentive Type (sometimes called ADD)
- Predominantly Hyperactive-Impulsive Type
- Combined Inattentive and Hyperactive-Impulsive Type

## Diagnosis

In 1994, the DSM-IV acknowledged that the diagnosis of ADHD persists into adulthood (several longitudinal studies reported in the psychiatric literature in the 1960s suggested adult symptoms). While some clinicians remain doubtful about the legitimacy of this diagnosis, a substantial body of evidence supports the validity of diagnosing adult ADHD, including clinical manifestations, associated comorbid disorders, genetics, neuroimaging studies, neuropsychological findings, follow-

Figure 1 – Inattention Symptoms

- Lack of attention to details/careless mistakes
- Difficulty sustaining attention
- Decreased listening when spoken to directly
- Doesn't follow instructions and fails to finish tasks
- Disorganization
- Avoids or dislikes tasks that require sustained attention (schoolwork, homework)
- Loses things (school assignments, books, tools)
- Distractibility
- Forgetfulness

Figure 2 – Hyperactivity/Impulsivity Symptoms

- Fidgets, squirms
- Is unable to stay seated
- Runs about, restless
- Difficulty enjoying leisure activities/relaxing
- Is "on the go"/ acts as if "driven by a motor"
- Talks excessively
- Blurts out answers before questions are finished
- Difficulty awaiting turn
- Interrupts/intrudes on others

*“Impairment in more than one functioning area may be difficult to determine, especially for patients who are high functioning and have good coping skills.”*

up studies of children with ADHD into adulthood, and treatment response.

A person diagnosed with ADHD must have several symptoms of inattention and/or hyperactivity-impulsivity (see *Figures 1 and 2*) for at least 6 months, to the point of some impairment in two or more settings such as school, home, and work. The DSM-IV-TR requires at least six of nine symptoms of inattention and/or hyperactivity-impulsivity for diagnosis. Some symptoms that cause impairment of functioning must be present before age 7 years (although this may be difficult to recall) and there must be evidence of clinically significant impairment in different settings such as school, work, or social relationships. Farone et al. concurred with McGough and Barkley that late-onset adult ADHD is valid and clinicians should flexibly apply the current DSM criteria for adult ADHD. Impairment in more than one functioning area may be difficult to determine, especially for patients who are high functioning and have good coping skills. The criteria for diagnosing adult ADHD are based on childhood symptoms adapted to adult manifestations (see *Figure 3*). Overall the symptoms must be maladaptive and inconsistent with the individual’s developmental level.

## Epidemiology

ADHD affects over 8 million U.S. adults and costs billions of dollars in lost annual income. It can affect adults regardless of gender, race, or ethnicity. The male to female ratio is 3:2. There is a strong genetic correlation. In families of ADHD children, 25% of the close relatives also have ADHD. More than 50% of children with ADHD carry the diagnosis into adulthood. The clinical presentation in adults with ADHD tends to be more inattention symptoms rather than hyperactivity and impulsivity. One in twenty adult patients seen in primary care has ADHD. The majority of adults with ADHD are undiagnosed and untreated.

## Comorbid Disorders

More than 50% of adults with ADHD have

**Figure 3 – Examples of Adult Manifestations of ADHD**

• Lack of attention to details/careless mistakes
• Poor listening
• Difficulty sustaining attention to tasks (reading, paperwork)
• Difficulty planning/completing tasks
• Difficulty sustaining attention to leisure activities
• Procrastination
• Avoids difficult tasks
• Misplaces things
• Disorganization
• Distractibility
• Forgetfulness
• Difficulty following instructions
• Fidgeting
• Restlessness
• Feels overwhelmed
• Unable to stay seated
• Feels “on edge”, “on the go”
• Works long hours/several jobs
• Selects active jobs/impulsive job changes
• Difficulty relaxing
• Risk-seeking behavior (drives too fast)
• Avoids long meetings, lectures
• Impatience/quick to anger/difficulty waiting ones’ turn (road rage)
• Excessive talking
• Interrupts

comorbid psychiatric disorders, including depression, bipolar disorder, anxiety disorders, substance use disorders, antisocial disorder, and learning disorders. Endocrine/Metabolic disorders and neurological disorders may also be present.

Persons diagnosed with mood, anxiety, and other

*“The exact cause of ADHD is unknown. Research suggests a combination of neurobiological factors.”*

psychiatric disorders may have “reverse comorbidity” – a higher incidence of ADHD than individuals without such diagnoses. A longitudinal history is critical in making a good differential diagnosis because the symptoms of ADHD can be similar to other medical disorders.

### **Rating Scales and Screening Instruments**

Rating scales and screening instruments can help determine the presence of ADHD symptoms. They can quantify impairment and also evaluate treatment response (outcome measures). Examples of ADHD rating scales for adults include the Wender Utah Rating Scale, the Brown ADHD Scale, and Barkley & Murphy’s ADHD Rating Scale.

Researchers at Harvard University and the World Health Organization developed the Adult ADHD Self-Report Scale (ASRS) v1.1. A screening version of the ASRS v1.1 is also available. The ASRS screener consists of six questions: four dealing with inattention and two dealing with hyperactivity-impulsivity. The ASRS v1.1 and screener can be located at the following websites: [www.nyu.edu/Psych/training/adhd.html](http://www.nyu.edu/Psych/training/adhd.html) or <http://www.hcp.med.harvard.edu/ncs/ftpdir/adhd/6Question-ADHD-ASRS-v1-1.pdf>.

### **Etiology of ADHD**

The exact cause of ADHD is unknown. Research suggests a combination of factors may be involved including genetic, environmental, and neurobiological factors. ADHD is thought to be mediated by the dysregulation of the chemical messengers dopamine and norepinephrine. Scientists know that increasing dopamine and norepinephrine levels in the brain are responsible for increasing attention span and concentration abilities. Environmental factors that might play a role in ADHD development include alcohol, tobacco smoke, lead poisoning, pregnancy and birth complications, and head injuries. Symptoms closely resembling ADHD have been noted in individuals who have experienced impaired parental attachments, violence, and other emotional trauma. Some studies suggest certain ADHD symptoms are associated with a lack of nutritional factors such as omega-3-fatty acids.

### **Course of Adult ADHD**

Adults with ADHD are often unaware that they have this disorder. They may have a history of academic failure, work problems/frequent job changes, frequent speeding tickets or automobile accidents, disorganization, relationship problems and trouble keeping appointments. A diagnosis of ADHD can be surprising, but can also bring a sense of relief. Understanding that adult ADHD is a common medical condition that can be effectively treated helps to explain the many symptoms that led to underachievement, negative self-perceptions, low self-esteem, frustration, disruption, and feelings of hopelessness. We have seen many patients recover from their secondary anxiety and depressive symptoms after ADHD was diagnosed and treated effectively.

### **ADHD and Substance Abuse Disorders**

There is overlap between ADHD and substance use disorder. Substance use disorders including alcohol, nicotine, and other drugs are common in adults with ADHD. The prevalence of tobacco, alcohol and illicit drug use increases as children grow into adolescents and young adults. Biederman et al. found young adults with ADHD had higher lifetime nicotine dependence prevalence rates than young adults without ADHD, and by age 30 years, individuals with ADHD had twice the prevalence of nicotine dependence compared to those without ADHD. A survey by Upadhyaya et al. found that college students with ADHD had greater past-month and past-year use of tobacco and marijuana than did students without ADHD. They also found that having uncontrolled symptoms increases substance use risk. Thus, symptom control may reduce tobacco and other non-tobacco drug use in patients with ADHD.

Wilens et al. found individuals with untreated ADHD were more likely than controls to develop substance abuse, and earlier onset of substance abuse was associated with untreated ADHD symptoms. A meta-analysis review of treated and untreated patients with ADHD by Wilens et al. suggests that the risk for substance use disorders is reduced two-fold with ADHD treatment. Diagnosing ADHD in adults with substance use disorders may be complex at times but nevertheless

is very important in the comprehensive evaluation and management of comorbid disorders.

### **Positives/Challenges/Potential Negative Outcomes of Adult ADHD**

There are positive aspects of ADHD as well as challenges that result from the symptoms of inattention, impulsivity and hyperactivity. It is important for an individual with ADHD to find successful strategies to utilize the positive aspects and to minimize any characteristics that can impair functioning.

Positive characteristics include energy, enthusiasm, inventiveness, humor, multi-tasking, and visionary thinking.

### **Evaluation of Patients with Adult ADHD**

A comprehensive clinical evaluation is vital to identify lifelong symptoms, current impairment, and comorbid disorders. A thorough medical and family history and self-report scales are extremely valuable. Third party reports (spouse, teacher, parents, partners) and a physical exam with appropriate laboratory work may be helpful with certain patients. Although psychological testing is not diagnostic for adult ADHD, it can help to identify other disabilities, information processing deficits and sub-average intelligence. What is clear is that ADHD is a clinical diagnosis.

### **The Treatment of ADHD**

The diagnosis and successful treatment of adult attention deficit hyperactivity disorder (ADHD) can be rewarding for both the patient and the clinician. Despite the many challenges involved, appropriate care can improve academic performance, reduce comorbidity, and lead to greater patient self-confidence and life satisfaction.

A thorough history and psychiatric assessment of the patient is an absolute must in the diagnosis and management of patients with ADHD. This may require considerable time. A typical intake visit requires a one hour appointment to accurately diagnose, educate, and initiate medical treatment for a patient with adult ADHD.

### **Therapeutic Considerations**

Three main areas of dysfunction need to be

addressed in the management of ADHD. It is the collective approach toward this disorder that appears to be the most successful.

- **Educational:** The patient needs to have a clear understanding of the disorder and reasonable expectations of the treatment outcome. The establishment of structured study time, use of efficient study skills, and use of a tutor are all very helpful to the patient who suffers from ADHD. Extra time and serene testing environment accommodations may also play a large role in promoting academic success. Special accommodations issues may fall under the Americans with Disabilities Act. Open communication with the university's Center for Disabilities is crucial.
- **Psychosocial:** In general, comorbidity is the rule not the exception in the treatment of adult ADHD. Mood disorders are common including major depression and bipolar disorder. Anxiety disorders are common comorbid conditions in ADHD. These may include generalized anxiety disorder, panic disorder, social anxiety disorder, and obsessive compulsive disorder. A complete and thorough history is vitally important in the management of these patients. Close follow-up and monitoring for untoward events is crucial. The concomitant treatment of mood disorders, anxiety disorders, and ADHD is a frequent clinical practice.  
Frequently, a patient who presents with major depression and/or an anxiety disorder is found to have a diagnosis of ADHD. Upon treatment of the co-morbid ADHD, the symptoms of anxiety and depression may subside. In some cases, treatment of the anxiety disorder or depression may be discontinued altogether, giving rise to the concept that some anxiety and depressive disorders may be secondary "fallout" of long-standing ADHD.
- **Biological/Medical:** The management of ADHD often requires the use of medication. The medications used in this disorder are in two general categories: stimulants and non-stimulants. In general, medications improve function, decrease distractibility, enhance concentration, increase focus, and decrease procrastination.

*“In general, the experience at WVU SHS is that the majority of patients respond that the stimulants are significantly more effective in treating ADHD than are the*

The treatment of ADHD with medications requires the practitioner to fully educate and inform the patient about the drugs available for use, side effects, expected outcome, misuse, and abuse issues. Close monitoring for untoward effects of medical treatment is required. As with many other medical therapies, starting at a low dose is a prudent approach. The dose may be increased as tolerated to achieve the maximum desired result without the production of significant side effects.

## Medical Therapy

### Non-Stimulants

**Atomoxetine (Strattera)** is a norepinephrine reuptake inhibitor available for use in the treatment of ADHD. It is approved by the U.S. Food and Drug Administration (FDA) for use in children and adults with this disorder. The usual adult starting dose is 40 mg once a day increasing to 80 mg per day after three days. The full effect of atomoxetine may not be achieved until 8 weeks of therapy. Effect size for atomoxetine is calculated to be between 0.35-0.40. All non-stimulants grouped together have an effect size of 0.62. In general, it is regarded as a 2<sup>nd</sup> or 3<sup>rd</sup> line treatment in adult ADHD patients.

**Bupropion (Wellbutrin XL)** is a dopamine and norepinephrine reuptake inhibitor approved for use as an antidepressant. It is not FDA approved for use in ADHD. Some practitioners favor the use of bupropion because of its relative safety and lack of U.S. Drug Enforcement Administration (DEA) control. Studies have shown improvement in ADHD symptoms with the use of bupropion. Its effect is usually regarded as modest at best.

**Modafinil (Provigil)** is a wakefulness promoting agent indicated for excessive daytime drowsiness secondary to narcolepsy, sleep apnea, and shift-work sleep disorder. It is useful for ADHD symptoms in children up to age 17 years, but has not demonstrated effectiveness for adults with ADHD. Some small studies have shown improvement in ADHD symptoms when compared to placebo.

**Guanfacine (Tenex)** and **clonidine (Catapres)** are centrally acting alpha adrenergic agonists. Neither is approved for use in ADHD. The use of these medications for this disorder has been mostly confined to the control

of hyperactivity and impulsivity in children. These medications are not regarded as therapeutic options in adults for the treatment of ADHD.

**Selective serotonin reuptake inhibitors (SSRIs)** have been used by some practitioners for the treatment of adult ADHD. No controlled studies have demonstrated effectiveness for this disorder. The SSRIs are not FDA approved for the treatment of ADHD. They are very helpful treatments in many patients with comorbid anxiety disorders and major depression.

### Stimulants

The stimulant medications are considered by many as the mainstay of medical therapy in adult ADHD. Numerous studies have demonstrated effectiveness in both children and adults in improving the core symptoms of this disorder. There is a long record of the use of stimulants in the treatment of ADHD. The first published account was in 1937.

The stimulants are regulated as U.S. Drug Enforcement Administration (DEA) Schedule II drugs. The stimulants include methylphenidate, dexamethylphenidate, amphetamine, and dexamphetamine. These medications may cause a psychological addiction but do not induce a physical dependence. There is a significant potential for abuse and misuse of these drugs, particularly on college campuses. The stimulants may be crushed to facilitate snorting or injection. They may be sold outright. They may also be used as a counter to the depressant effects of alcohol.

At the West Virginia University Student Health Service (SHS), we have adopted a “one strike and you’re out” type policy in regard to the misuse of stimulant therapy. Misuse does occur but is encountered in less than 1 of 10 patients. The remaining patients are successfully treated resulting in improved academic performance and decreased comorbidity. Termination of stimulant therapy of a patient suspected of misuse occurs on occasion. Misuse problems arise often enough to keep stringent monitoring procedures in place.

**Methylphenidate/Dexamethylphenidate (Ritalin, RitalinSR, Ritalin LA, Metadate, Concerta, Focalin,**

*better to amphetamine than to methylphenidate. Another observation is non-stimulants. This finding is echoed nationally.”*

**Focalin XR, Daytrana patch**) are centrally-acting stimulants effective in the treatment of ADHD. The action of methylphenidate is thought to be due to preferential inhibition of dopamine re-uptake at pre-synaptic nerve endings in the central nervous system (CNS). It is the most studied stimulant medication. It is helpful in the treatment of both the inattentiveness and the hyperactivity/impulsivity symptoms of ADHD. Dosage and response are highly variable from person to person. In general, adults may be started at 5 mg twice a day. Dosage may be incrementally increased to a daily maximum of 2 mg/kg/day. The optimum dose for a given patient is the dose that achieves the most improvement without obtrusive or undesired side effects. Side effects may include:

- Decreased appetite
- Nausea
- Dry mouth
- Insomnia
- Headache

**Amphetamine and dexamphetamine (Adderall, Adderall XR, Dexedrine)** are centrally acting stimulants that are thought to exert their effect by predominantly increasing release of pre-synaptic dopamine. Dexamphetamine is the d-isomer of the racemic mixture amphetamine. Dexamphetamine is approximately 3 times more potent than amphetamine. Adderall is a 3:1 mixture of amphetamine to dexamphetamine. Its generic name is mixed amphetamine salts.

Initial dosing of amphetamine is similar to methylphenidate. A starting dose of 5 mg twice a day may be incrementally increased until best effect is observed. The dose should be adjusted downward if untoward side effects occur. The maximum daily dose is usually considered to be 1.5mg/kg/day. Side effects are identical to those of methylphenidate.

### Considerations

- The response of adult patients to either amphetamine or methylphenidate is highly variable, patient specific, and not predictable. Some patients may respond nicely to one medication and not the other.
- Effect size of immediate release stimulants is 0.91. For long-acting stimulant medications, the effect size

is 0.95. Effect size for all stimulants is over twice that of atomoxetine.

- In general, the experience at WVU SHS is that the majority of patients respond better to amphetamine than to methylphenidate. Another observation is that the stimulants are significantly more effective in treating ADHD than are the non-stimulants. This finding is echoed nationally.
- Blood pressure and pulse are monitored at each visit. Elevated blood pressure is an unusual finding in our patient population. When a patient is found to have an elevated blood pressure, there is usually a strong family history of hypertension that correlates. After clinical evaluation and treatment of the elevated blood pressure, careful re-institution of stimulant therapy may be attempted.
- Patients with known structural heart disease, coronary heart disease, significant arrhythmias, or other significant medical illnesses are not treated with stimulant therapy. Even the non-stimulant, atomoxetine, may elevate blood pressure and would likely not be used in this small subgroup of individuals.
- Substance abuse is a serious concern nationally and on college campuses. There is no evidence that the treatment of ADHD worsens substance abuse. The reverse is usually true. In the long term, the treatment of ADHD in patients with comorbid substance abuse improves outcome and overall level of functioning. Obviously, the substance abuse issue in this group of patients needs addressed first. After a detoxification period of about three months, treatment of ADHD with stimulants or non-stimulants may be initiated. If the use of stimulants is elected, long-acting preparations would be preferred.

### New Treatments

- **Lisdexamphetamine (Vyvanse)** is a new product expected to be released in the U.S. by mid-2007. This product is a unique bond of dexamphetamine and lysine. Following ingestion, the molecule is hydrolyzed, cleaving the lysine-dexamphetamine bond. This allows the dexamphetamine to become active.

*“Adult ADHD can be reliably diagnosed and effectively managed by practitioners college students in most cases is a successful academic outcome.”*

### **Evaluating Adult ADHD at West Virginia University Student Health Service**

West Virginia University (WVU) is a state land grant institution serving over 27,000 students. Four mental health clinicians, two psychiatrists, one family medicine physician who practices psychiatry full-time, and one certified physician assistant/mental health specialist routinely evaluate and treat students with adult ADHD at the WVU Student Health Service (SHS). In addition, SHS primary care physicians, mid-level practitioners, and nurses participate in the management of patients with ADHD by checking blood pressures, performing electrocardiograms and completing medical evaluations for patients as indicated. The SHS is also a training center for psychiatric residents who evaluate and treat ADHD under faculty supervision.

There is close collaboration with the WVU Counseling Center (The Carruth Center) and with the athletic department regarding student athletes who have ADHD. The WVU Disability Services division provides accommodations for qualified students with ADHD such as extended time and quiet environments for examinations.

Some students with ADHD have been diagnosed and treated prior to coming to campus, but many are initially diagnosed and managed by the SHS mental health practitioners.

Students pay a nominal health service fee each semester (part of their university fee package) to receive services from the Student Health Service. In addition, the SHS charges a small co-pay per visit and for certain prescriptions written at the SHS. Many of the university students are uninsured or do not have adequate medical insurance coverage for mental health services. There is no mandatory insurance on our campus except for health science and international students. A patient assistance specialist facilitates indigent prescriptions for students without medical

insurance coverage. There is no limit on the maximum number of mental health visits as long as the student is enrolled in school.

Generally, one hour is allotted for a psychiatric evaluation and one-half hour for a follow-up visit. Patients with ADHD are initially monitored closely (visits, phone) and after stabilization, they are usually seen once or twice per semester or as necessary. As noted, comorbid disorders are common and their management can often be quite complex. The diagnosis and treatment plan is thoroughly discussed with the student at the initial visit. If stimulants are prescribed, side effects, abuse potential, and misuse and diversion issues are carefully reviewed.

We have developed a Fact Sheet for Psycho-stimulant Use for ADHD which includes medical conditions in which stimulant use is contraindicated, our health service policy regarding misuse of medication and lost/stolen prescriptions, and other pertinent information. In addition to physician counseling and written materials, we have an outstanding health education team including a very active student assistance program for alcohol and other substance abuse education and treatment. We obtain a blood pressure and pulse rate on patients treated with stimulants, at baseline and regularly at follow-up.

Our physicians must write a number of monthly stimulant prescriptions each day since refills, phone and e-prescriptions are not permitted for Schedule II medications.

The demand for psychiatric services continues to grow at WVU. Recent statistics from our Student Health Service indicated that the top three medical diagnoses were psychiatric diagnoses and that ADHD was number one.

This formulation makes it very difficult to crush, snort, or inject the drug; thereby, reducing its potential for abuse.

- Drugs that increase the activity of both the neurotransmitters glutamate and histamine in the pre-frontal cortex are under study. Glutamate activity

has been investigated as playing a role in Alzheimer's disease, schizophrenia, and other central nervous system (CNS) disorders. These future medications may allow the practitioner to treat patients with ADHD with more specificity of symptom control.

## Summary

Clinicians should routinely evaluate adults for the symptoms of ADHD. Adult ADHD is vastly under-recognized and undertreated in our society. A careful clinical evaluation is vital in the diagnosis of adult ADHD. In patients being treated for depression, bipolar disorder, anxiety disorders, and substance abuse, ADHD is typically not recognized or diagnosed. No specific laboratory test, physical features, imaging studies such as a brain scan, neurological assessments, or neuropsychological test is available to make a clinically useful diagnosis. ADHD symptoms of inattention, impulsivity, and hyperactivity can cause significant impairment, leading to many other problems including low self-esteem, frustration, anxiety, depression, and increased substance abuse. Common complaints in college students include distractibility when reading and studying, decreased listening, feelings of being overwhelmed, restlessness, and risky behaviors.

The treatment of adult ADHD, specifically in college students, is a complex and challenging endeavor. Various treatment regimens are available, some of which are "off label," yet effective and useful. Improved knowledge of brain function is likely to occur in the future. Newer therapeutic agents are on the horizon. Stimulants currently appear to be the most effective medications for treatment of ADHD. When used properly, in conjunction with thorough patient education, awareness of comorbidity, and on-going monitoring, medical therapy can provide patients with the ability to focus and concentrate efficiently in school, at work, and in social relationships.

Adult ADHD can be reliably diagnosed and effectively managed by practitioners who are comfortable and experienced with this diagnosis. The end result for college students in most cases is a successful academic outcome.



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## References:

- "ADHD: Applying Practice Guidelines to Improve Patient Outcome and Executive Function." Biederman J, chair. *J Clin Psychiatry* 2006; 67(12); 2014-25.
- "ADHD Costs U.S. Adults Billions in Lost Income." *Behavioral Health Trends. Drug Benefit Trends*. AMA Briefing, NY 2004.
- "Adult ADHD: Issues and Answers." Dept. of Psychiatry, NYU School of Medicine 2006; 1(6):3-4.
- "Attention-Deficit/Hyperactivity Disorder: Recognition & Diagnosis in Adults." CNS Special Report, Primary Care Special Edition. Nov. 2003.
- "Attention Deficit Hyperactivity Disorder (ADHD) in Adults: Your Guide to Recognizing, Understanding & Successfully Managing ADHD." Shire U.S., Inc. 2005.
- "Common Problems, New Solutions? A Look at ADHD, Substance Use Disorders, and the Safety and Abuse Liability of Pharmacologic Agents." Timothy E. Wilens, Program Chair. 2007.
- "Diagnosis & Management of Attention-Deficit/Hyperactivity Disorder in Adults in the Primary Care Setting." PCC Visuals, vol. 2. #4. Sept. 2003.
- "Practice Guidelines for the Treatment of Patients With Substance Use Disorders," 2nd edition. Republished *Am J Psychiatry* 164:4, April 2007 Supplement.
- "The Truth and Consequences of Adult ADHD." Shire U.S., Inc. 2005.
- Adler, L. "Adult ADHD: Conceptualization, Diagnosing & Treatment." Data presented at the 17th Annual U.S. Psychiatric & Mental Health Congress. San Diego, Ca. Nov. 2004.

*“When used properly, in conjunction with thorough patient education, awareness of comorbidity, and on-going monitoring, medical therapy can provide patients with the ability to focus and concentrate efficiently in school, at work, and in social relationships.”*

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, Text Revision, 2000.

Arnsten AF. “Fundamentals of Attention-Deficit/Hyperactivity Disorder: Circuits and Pathways.” *J Clin Psychiatry* 2006; 67, supp8: 7-12.

Biederman, J. “Behavioral Health Trend – Drug Benefit Trends.” *Report to AMA Media*, 2004

Biederman J, et al. “Functional impairments in adults with self-reports of diagnosed ADHD: controlled study of 1001 adults in the community.” *J Clin Psychiatry* 67:4 April 2006.

Biederman J, Swanson J, et al. “A Comparison of Once-Daily and Divided Doses of Mofafinil in Children With Attention-Deficit/Hyperactivity Disorder: A Randomized, Double-Blind, and Placebo-Controlled Study.” *J Clin Psychiatry* 2006; 67: 727-35.

Dodson WW, Wilens TE. *The Heavy Burden of ADHD in Adults: New Understanding of the Neurobiology, Diagnosis and Treatment Options*, 2004.

Farone, SV. “ADHD Through the Lifecycle: New Findings & Clinical Implications.” APA Annual Meeting, Atlanta Ga. 2005.

Farone S, Biederman J, Spencer T, et al. “Diagnosing adult attention deficit hyperactivity disorder: Are late onset and subsyndromal diagnoses valid?” *Am J Psychiatry* 163:10, October 2006.

Franowicz J, Arnsten A. *New Insights into the Noradrenergic System in ADHD. Advances in ADHD*. 2007; vol. 1(3): 85-90.

Freeman M, Hibbeln J, Wisner K, et al. “Omega-3 fatty acids: Evidence basis for treatment and future research in psychiatry.” *J Clin Psychiatry* 67:12, December 2006.

Goodman G. “Treatment and Assessment of ADHD in Adults.” In: Biederman J, ed. *ADHD Across the Lifespan: An Evidence-Based Understanding From Research to Clinical Practice*. Hasbrouck Heights, NJ: Veritas Institute for Medical Education, 2006: 227-262.

Grabowski J, Wilens T. “Adherence, Adverse Effect, and Abuse of ADHD Medications. Substance Use and ADHD.” CME Activity, Part 5 of 6. 2006 Boston University School of Medicine, Haymarket Medical, coord.

Hoffman B, Lefkowitz R. “Catecholamines and Sympathomimetic Drugs.” In: Goodman Gilman A, et.al., eds. *Goodman and Gilman’s The Pharmacological Basis of Therapeutics*, 4th ed. New York: Pergamon Press, Inc., 1990: 187-220.

Jadam A. et al. “Treatment of Attention Deficit/Hyperactivity Disorder, Evidence Report/Technology Assessment.” *AHRQ Evidence Reports* No. 11. 1999: 1-12.

Pomerantz, JM. *Drug Benefits Trends-Behavioral Health Trends*. Vol. 17, no. 5, 2005.

Remschmidt, H. “Global Consensus on ADHD/HKD.” *European Child and Adolescent Psychiatry* 2005; 14(3):127-37.

Robb, A. *Regulatory Issues in ADHD Psychopharmacology in the US. Advances in ADHD* 2007; vol. 1(3): 79-84.

Spencer T, McGough J. “Adult ADHD: A Diagnostic Challenge.” A CME Monograph from the Adult ADHD Academic Council, Dec. 2005.

Surman, CB. “ADHD Through the Lifecycle, New Findings and Clinical Implications.” APA Annual Meeting, Atlanta, Ga., 2005.

Szegedy-Maszek, M. “Driven to Distraction.” *US News & World Report-Science & Society*, Apr. 2004.

Taylor F, Russo J. “Efficacy of Mofafinil to Dextroamphetamine for the Treatment of Attention Deficit Hyperactivity Disorder in Adults.” *J Child Adolesc Psychopharmacol* 2000 Winter; 10(4): 311-20.

Turner D, et al. “Mofafinil Improves Cognition and Response Inhibition in Adult Attention-Deficit/Hyperactivity Disorder.” *Biol Psychiatry* 2004; 55:1031-1040.

Weisler R, Biederman J, Spencer T, Wilens T. “Long-term Cardiovascular Effects of Mixed Amphetamine Salts Extended Release in Adults with ADHD.” *CNS Spectr* 2005; 10(12 suppl20): 35-43.

Wilens TE, Farone SV, Biederman J. “Attention-Deficit/Hyperactivity Disorder in Adults” (reprinted). *JAMA*, vol. 292, no. 5, 2005.

Wilens, T. “Attention deficit hyperactivity disorder and substance use disorders.” *Am J Psychiatry* 163:12, December 2006.

Wilens, T. “Management of Attention-Deficit/Hyperactivity Disorder.” *CNS News* April 2006: 13-18.

Wilens T, Biederman J, Spencer T. “The Patient with Attention Deficit-Hyperactivity Disorder.” In: Stern T, Herman J, Slavin P. Eds. *Guide to Primary Care Psychiatry*, 2nd Ed. New York: McGraw-Hill, 2004:287-99.

Wilens T. et al. “Blood Pressure Changes Associated with Medication Treatment of Adults with Attention-Deficit/Hyperactivity Disorder.” *J Clin Psychiatry* 2005; 66: 253-59.

Wozniak J. “Appropriate Therapeutic Targets for ADHD,” pp267-268: In: Biederman J, chair. “Determining and Achieving Therapeutic Targets in Attention-Deficit/Hyperactivity Disorder [Academic Highlights].” *J Clin Psychiatry* 2003; 64:265-276.

#### Helpful Websites:

<http://www.medscape.com/pages/sites/infosite/strattera/article-everyday>

<http://www.nmha.org/infoctr/factsheet/93.cfm>

<http://www.nami.org/PrinterTemplate.cfm?Section=ByIllness&emplate=/ContentManag>

<http://www.nimh.nih.gov/publicat/adhd.cfm>

<http://www.nimh.nih.gov/publicat/helpchild.cfm>

<http://www.medscape.com/pages/sites/infosite/adderall/article-treatment>

# Improving Identification and Treatment of Depression in College Health

Henry Chung, MD and Michael Klein, PhD, New York University

*Editor's Note: The U.S. Preventive Services Task Force recommended universal depression screening for all adults in clinically prepared practices, that is, those with systems in place to ensure accurate diagnosis, effective treatment, and follow-up.<sup>1</sup> This recommendation is particularly relevant for college students at a time when need is rising and outreach efforts need to be maximized. This article will support the case for systematic screening for depression in college students (important because of the challenges of accurately and efficiently detecting this disorder in a university population) and describe methods for improving quality of care for depression in university health services and counseling centers utilizing a well-established model of quality improvement.*

Most college and university health systems offer both primary healthcare services as well as counseling and psychological services. Whether these services are offered under a single administrative and budgetary structure or are administered separately, university health services theoretically qualify as “clinically prepared practices” because the means to provide effective diagnosis and treatment for depression are available. However, there have been no published reports of university health centers having systematically implemented the recommended depression screening and documentation of evidence-based care. The continuum of depression care offered in Student Health Services (SHSs), runs the gamut from primary medical services that do not offer any treatment for depression and refer all depressed students to counseling services, to medical services that take primary responsibility for treatment and only refer when there is not a satisfactory response to treatment or their capacity limitations have been reached. Obviously, the variability of depression treatment offered in college health is associated with the resources accessible and available on- and off-campus. Irrespective of the model of care offered, the need for high-quality treatment for depression and other mental disorders in college students is critical.

A large nationally representative study of more than 27,000 four-year college students indicated that serious

psychiatric conditions are highly prevalent among such students throughout the United States, across all geographic settings and types of institutions. The rate of major depression reported in this study was approximately 5%.<sup>2</sup> Several recent studies indicate increasing levels of mental health needs in students attending college, e.g. 10.3% of students reported seriously considering ending their lives during the preceding 12 months.<sup>3</sup> More alarming is that 6.7% of students actually made suicide plans, while only 17.6% of college students nationwide reported receiving information on suicide prevention from their institution.

The data are even more worrisome when the demographics of utilization in college health centers are considered. Mortality data indicate that over 90% of people who die by suicide at any age have a diagnosable mental illness, most often depression.<sup>4</sup> The 2005 National Survey of Counseling Center Directors reported that only 27 out of 154 (17.5%) of student suicides in the past year were current or former counseling center clients, suggesting that the majority of completed suicides are by students who have never been to the counseling center. Furthermore, although females make more suicide attempts than males, especially in the age range between 18 – 24, males are 6.5 times more likely to kill themselves within this same age group.<sup>3</sup> Further evidence of gender discrepancy in treatment is the fact that female rates of counseling service utilization are consistently two to three times that of males.<sup>5, 6</sup> The most recent data reported by the American College Health Association (ACHA) also highlight just how many students with mental health problems are left untreated. Among students who reported having been diagnosed with depression in the last year, just 26.4% reported current treatment in therapy and 36.6% reported current antidepressant medication treatment.<sup>7</sup>

The evidence suggests that many students who possess especially high risk factors for suicide are not being identified and treated in college counseling centers. Data is unavailable for the prevalence of depression in

*“The collaborative learning approach, dubbed the Breakthrough Series (BTS) treatment for many chronic health conditions.”*

students who seek primary care medical services, however, some data suggest many students who are not presenting at counseling centers may enter the system via medical services, given the literature on somatic symptoms and depression. This offers college medical services an alternate pathway for identifying and helping potentially depressed students. A primary goal for our longitudinal quality improvement project (detailed below) is to fill the gap in our knowledge of the prevalence of clinically depressed students who seek medical services at their college health center.

### **Treating Students in Primary Care: A Critical Point of Entry**

The evidence overwhelmingly suggests that many at-risk college students with a diagnosable mental health disorder, including those with the highest risks, such as males and racial and ethnic minority students, are frequently not seeking help at college counseling centers. Research on primary care service utilization suggests that an important opportunity to reach many of these students may be in the general medical setting. Although research on college students in particular is sparse, much evidence suggests that the majority of people with common mental disorders frequently present at primary care clinics during the course of the illness.<sup>8,9</sup> In fact, Regier and colleagues described primary care as the “de facto mental care health system” in the U.S.;<sup>8</sup> a point supported by the landmark Surgeon General’s Report on Mental Health in 1999.<sup>10</sup> Although evidence is currently lacking on how many college students with depression utilize medical services during the course of the illness, our clinical experience in primary care settings, both outside of and within college health, support the notion that many depressed patients may present solely in college medical settings. Many residential campuses report utilization percentages of medical services at a minimum of 50% to a maximum of 85% in an academic year; this opportunity for depression screening, or reinforcement of existing counseling treatment, is simply too great to ignore.

If the majority of patients seek help from their general practitioner for mental health problems, it is essential to improve the quality of illness detection in medical settings. Research suggests that medical providers’ ability to identify mental health problems, especially in

### **Figure 1: Six Components of Chronic Care Model\***

**Clinical Information Systems:** Establishing a patient registry is essential for proactive follow-up. The registry needs to provide data on both patient and population levels. Feedback from the information system helps inform care for individual patients and for the health system to benchmark aggregate outcomes.

**Practice Redesign:** Systems that are reactive are redesigned to be proactive, keeping the system as barrier-free for patient engagement as possible (ie, facilitated referrals to counseling with minimal wait time or starting evidence based treatment without undue delay). It involves clearly defined roles for all providers of care. Providers usually work together as a team.

**Decision Support:** This starts with evidence based treatment guidelines and ongoing interactive continuing medical education activities. It also includes active collaboration between specialists and primary care providers.

**Self-Management:** this includes more than patient education. The goal is for clinicians and patients to work together to define problems, set priorities, establish goals, and create treatment plans that target troublesome symptoms or barriers to improvement.

**Community Resources and Policies:** Can support or expand a health system’s care, i.e. preferred arrangements for community referrals to include feedback on engagement or if students drop out of needed treatment. May include community policies such as redesigning insurance benefits and improving access to counseling services on- and off-campus.

**Health System:** Includes senior leadership support for the changes and inclusion of the model into business plans and financial planning. It is important that system incentives support the new model.

\*The Chronic Care Model was developed by Ed Wagner, MD, MPH, Director of the MacColl Institute for Healthcare Innovation, Group Health Cooperative of Puget Sound, and colleagues of the Improving Chronic Illness Care program with support from The Robert Wood Johnson Foundation.<sup>14</sup>

college-aged populations and minorities further complicates the challenge of identifying at-risk students. Borowsky, Rosenberg, Meredith et al. found that patients under the age of 35 were less likely to be identified as having mental health problems, while male and African American status were also associated with lower rates of detection.<sup>11</sup>

Other studies have found that patients' race or ethnicity can increase the risk of non-detection of mental health problems in primary care.<sup>12</sup> These studies, confirmed by our own clinical experience, indicate a serious need to develop systematic methods of improving the detection of depression among students using primary care services in university health centers.

In a recent report of the Presidential commission for assessing and improving the mental health services system in the United States, the most frequently cited subgroups as unlikely to be properly identified and treated included adolescents and individuals from ethnic minority backgrounds.<sup>13</sup> Again, this age and demographic background fit a college and university population. A major conclusion stated in this report was that improved mental health care will take place at the interface of general medicine and mental health. They emphasize the long-standing but spurious split between traditional medical care and specialty mental health and the need to develop systematic and evidence-based treatment protocols that will make it possible to evaluate outcomes in an objective manner.

### **Improving Evidence Based Care for the Detection and Treatment of Depression**

The collaborative learning approach, dubbed the Breakthrough Series (BTS) by the Institute of Health Improvement, has been used to improve treatment for many chronic health conditions.<sup>14, 15</sup> It was developed, in part, because of gaps in clinicians' knowledge of the current evidence base, as well as the lack of sustained impact of professional education vehicles (e.g., CME lectures, seminars, etc.). Collaborative learning was designed to identify and disseminate evidence for sustainable improvements in health care practice.<sup>16</sup> This BTS model of collaborative learning allots a minimum of 12-18 months for change processes to allow evidence-based improvements to take root and spread throughout the entire health system.

The BTS brings together participating teams for three, two-day learning sessions that involve intensive lectures and workshops led by expert faculty on topics that have been supported by the evidence-base for that specific chronic condition. A key component of the learning session is to allow ample time for site teams to

plan how to implement specific evidence based change concepts within their particular organization. *Figure 1* on the previous page describes each of the six core change concepts that have been found critical to sustainable health care change for chronic illness care.

The main premise of BTS is that sustainable change in healthcare services requires support from senior leadership, sustained motivation, team-based learning, shared experiences to develop best practices and overcome barriers to change, and coaching through small, rapid, systematic changes in health practices over a focused period, commonly referred to as plan-do-study-act or "PDSA" cycles.

IHI recommends that any organization planning to launch a collaborative answer three critical foundation questions prior to beginning. Only after completing this initial task can appropriate PDSA test cycles be performed. The first question involves setting out aims that are both time-specific and measurable. For example, previous collaborative projects include: reductions in c-section rates of 30%, reducing wait time and delays by 50%, and reducing costs in the ICU by 25%. Note that although the aims differ in some basic ways (e.g. cost vs. appointment efficiency), all aims are specific and measurable. The second question asks how an organization will know that a change is an improvement, that is, how will change be measured quantitatively? The final question is intended to have leadership teams strive to plan for changes that will impact the organization directly. Changes which result in improvement in some key area of health service delivery is the goal.

The PDSA lies at the heart of the BTS approach to quality improvement and becomes the basic unit of inquiry once the basic three questions have been answered. Acknowledging that resistance to change is an unavoidable factor, (that is all human systems resist change and seek to maintain homeostasis), the PDSA recognizes that "trying out" new practices, and different skill sets can overcome some of this resistance. These "test cycles" are akin to small experiments, in which a practice improvement team might try out a new procedure with a small number of patients in a systematic manner. For example, a single provider might administer a depression screening measure to all patients seen over a one week period to assess the work burden, results, and

*“Because change is created initially on a small scale with select providers and procedures, policies and systems must be considered from the outset of any BTS*

where strains in the system might occur. Team emphasis is placed on planning, executing, documenting the results, and finally acting on what is learned. Expectations are set in advance so that the team understands that several small steps might be necessary before arriving at a satisfying solution that is clinically beneficial and sustainable. In summary, the PDSA is the primary method used for action-oriented learning.

Because change is created initially on a small scale with select providers and only a subset of patients, the challenges of “scaling up” of new procedures, policies and systems must be considered from the outset of any BTS collaborative project. It is expected that as early adopters develop consensus around the new way of improving care and have accumulated supporting evidence that documents the improvement, that this approach will be expanded and then repeated and “spread” to other clinicians and health personnel in the system. At a certain point, with appropriate incentives or mandates (educational, philosophical or economic), the system begins to change and improve. Ultimately, a change process that began on a small scale, with just a few carefully selected team members becomes a standard of care that is utilized system-wide. This approach addresses directly the difficulty of getting a consensus from every health provider to agree to make changes before any innovation is initiated or mandating change that breeds resentment, loss of morale, resistance, and confusion for staff and patients.

### **Developing a Depression-Specific Collaborative**

Adaptations are necessary to implement the chronic care model for a complex illness such as depression that involves physical, emotional, and behavioral factors. Emphasis is placed on training multidisciplinary teams comprised of mental health specialists, nurses, primary care clinicians who are providing counseling, and patient educators. This approach teaches partnership principles between primary care and counseling services, fosters sustainable system changes that increase screening and detection; uses evidence based treatment guidelines and approaches; decreases stigma; uses care (case) management methods to improve adherence to treatment

plans and to prevent vulnerable students from getting “lost” in the system, and teaches self-management as an augmenting modality of treatment. The true innovation of this learning approach is that the sites are encouraged to share their best practices in how to make the necessary changes in order that these principles be systematically applied for depression treatment. In addition, sites share their “failed experiments” as well as lessons learned when barriers are encountered, in an “all teach, all learn” forum. Finally, sites are taught to collect and interpret data that are entered into a single centralized database that guides individual treatment planning and system-wide continual quality improvement and sustainable change.

Emphasis on measurable data that can be evaluated and used to adjust and develop best practices is a challenge for depression, which faces greater difficulty in arriving at an objective measure of pathology. The decision was made to determine what measure existed that gave the best combination of validity, ease of use, and added minimal additional burden. The Patient Health Questionnaire (PHQ-9) is the depression screening module of the full Patient Health Questionnaire, a self-administered version of the Primary Care Evaluation of Mental Disorders (PRIME-MD) diagnostic instrument for common mental disorders.<sup>17</sup> The PHQ-9 consists of nine questions based on the nine DSM-IV criteria for a major depressive episode and one question on functioning, which is not scored. Each of the questions asks patients to select the frequency of the depressive symptoms that they experienced in the two weeks before survey administration. Scores for each item range from 0, not at all, to 3, nearly every day. Scores between 10 and 14 indicate a moderate level of depressive symptoms, scores between 15 and 19 indicate moderately severe major depression, and scores 20 and above indicate severe major depression. Validity research has shown a strong positive correlation between the PHQ-9 and the Hamilton Depression Rating Scale, which is the most commonly used measure of depression severity in randomized controlled trials.<sup>17</sup> The PHQ-9 was successfully used in the very first BTS collaborative in 1999 and thereafter<sup>18</sup> and recently was used successfully by psychiatrists and other mental health professionals in a national collaborative.<sup>19</sup>

only a subset of patients, the challenges of “scaling up” of new collaborative project.”

## Figure 2: Inclusion/Exclusion Criteria

### **Inclusion:**

A candidate for the CBS-D depression registry is a student with a diagnosis of Major Depression, Dysthymia, or Depressive disorder NOS (as defined in DSM-IV) who has:

1) Scored 10 or greater on the PHQ-9

AND

2) Rated (very difficult) or (extremely difficult) on the final PHQ-9 functional item.

*Note: common anxiety comorbid diagnoses such as panic disorder, generalized anxiety disorder and others are not excluded.*

### **Exclusion:**

Any student who has a primary diagnosis of bipolar disorder, schizophrenia, eating disorder, substance dependence, or whose depression diagnosis is ruled out by medical illness, hypothyroidism, or Traumatic Brain Injury would be disqualified from entering the registry.

## The College Breakthrough Series for Depression (CBS-D)

Our current project is an 18-month shared learning project to improve evidence-based identification of depression, systematic treatment, and suicide prevention among college health services. With grant support from the Aetna Foundation and New York Community Trust (NYCT), Henry Chung, MD, currently Assistant Vice President of Student Health, is the principal investigator leading the College Breakthrough Series – Depression (CBS-D), a regional initiative to improve depression care on college campuses, with a special emphasis on reaching racially diverse students. The Co-PI on the project is Christopher Lucas, MD, PhD from the NYU Child Study Center and the Co-Investigators are Daniel Silverman, MD from Princeton, Janet Corson-Rikert, MD from Cornell and Siu Ping Ma, PhD from Hunter College of the City University of New York.

The collaborative consists of eight colleges and universities representing a range of institutions varying in

locale, size, onsite resources and demographic composition. Each school has assembled a practice improvement team that consists of a senior leader and participating clinicians. Five urban schools include Hunter College, Baruch College, Northeastern University, New York University, and Case Western Reserve University. The senior leaders from these sites are Siu Ping Ma, PhD, Caroline Kasnakian, PhD, Roberta Berrien, MD, Henry Chung, MD and Eleanor Davidson, MD, respectively. Sites that are set in more rural/suburban locales include Princeton University, St. Lawrence University, and Cornell University. Senior leaders from these sites are represented by Daniel Silverman, MD, Patricia Ellis, RN, FNP, and Janet Corson-Rikert, MD, respectively. All senior leaders hold senior positions either as directors of counseling services or directors of the university health services.

The ultimate goal of the initiative is to establish and disseminate best practices for depression treatment in college students to other university health centers to assist them in meeting the complex physical and psychological needs of their students. Part of the collaborative effort involves challenging each site to reach long-term goals for depression assessment and treatment set by the program directors. The goals are intended to specifically define standards of depression treatment considered to be “minimally adequate,” based on information culled from federal agency recommendations, experimental research, and experts in the field.

An initial consensus meeting was held with all senior leaders in August 2006 to review the most current literature on depression outcomes and reach consensus about the most critical areas of diagnosis and treatment delivery and outcomes to be measured. *Figure 2* lists the inclusion and exclusion criteria agreed upon by the senior leadership team, which was refined over time and finalized after the first learning session held in October, 2006. *Figure 3* (on page 18) illustrates the seven measures of depression treatment and process that were agreed upon by the leadership team.

The CBS-D requires attendance from all practice improvement team members (5-7 individuals chosen from the site) from every participating site at three multi-day, intensive centralized face-to-face “learning sessions” spread over nine months comprised of lectures, workshops, group activities, and coaching through listserv

### Figure 3: Process and Treatment Goals

**Process goals are benchmarks of quality screening, treatment initiation, and management; with special attention given to accurately identifying students seen in primary care who are suffering from clinical depression.**

#### CBS-D Process Goals

- Percentage of all students seen at the health center for primary care screened for depression with the PHQ-2\* or PHQ-9 at least once during the academic year. (Goal: 80%)
- Percentage of students who receive at least one follow-up PHQ-9 reassessment within four weeks of CBS-D enrollment (Goal: 80%)
- Percentage of students who receive evidence-based treatment (defined as any student who receives antidepressant medication or attended a counseling session with a licensed mental health specialist initiated within four weeks of CBS-D enrollment) (Goal: 50%)

\* PHQ-2 = a briefer validated two-question version of the PHQ-9 full form. It consists of the first two DSM criteria: depressed mood and anhedonia

- Percentage of students who have a documented self-management goal within eight weeks of CBS-D enrollment (Goal: 60%)

**Treatment goals are benchmarks of student symptom relief and functional improvement.**

#### CBS-D Treatment Goals

- Percentage of students with a 5-point reduction in Patient Health Questionnaire (PHQ-9)\* within eight weeks of CBS-D enrollment. (Goal: 40%)
- Percentage of students with a PHQ-9 score of <10 within 12 weeks of CBS-D enrollment (Goal: 40%)
- Percentage of students with improved function who report ‘not difficult at all’ or ‘somewhat difficult’ problems meeting daily social, academic, and occupational responsibilities within 12 weeks of CBS-D enrollment (Goal: 35%)

channels and monthly conference calls. Action periods of approximately three months are allowed between learning sessions to allow sites to begin the PDSA test cycles that produce actionable data for areas in need of additional development and resources.

At this point, every site that offers primary care services has been successful in instituting systematic depression screening and has hired and trained Care Managers that have a critical administrative and support role in coordinating care among providers and ensuring systematic PHQ-9 reassessment to monitor treatment progress and outcomes. The care manager is also usually designated as the point person in compiling the results of activities that have occurred during the month and generating a report that summarizes the outcomes on the seven agreed upon measures. Early results have already shown impressive systematic screening for depression in college primary care, with over 10,000 college students screened in the first five months of the project. Importantly, over 300 students have been identified as sufficiently

depressed and functionally impaired to be entered into the depression collaborative registry. This ensures that these students will be systematically followed as they proceed in treatment and will not be lost to follow-up as so frequently happens early in the treatment of an illness that confers significant stigma, tends to reinforce sedentary behavior and is made more difficult because of the compressed and unpredictable demands of the academic schedule.

### Conclusion

The IHI BTS approach appears to offer a promising approach to increasing access to comprehensive depression care for college students. Data suggests that providing this service is more important than ever due to the increased prevalence of students who arrive at college campuses with more serious psychiatric problems. Initial CBS-D data on depression screening rates and detection of depressed students in medical settings suggests we may be able to identify troubled students earlier as well as those who

students in medical settings suggest we may be able to identify troubled channels such as ethnic minorities and men.”

might eschew traditional behavioral health channels such as ethnic minorities and men. Coordinated transition into treatment and systematized efforts aimed at treatment retention are expected to improve treatment outcomes. We expect more specific results on treatment outcomes as the project continues to proceed beyond the initial 6-month development phase and plan to report on these once available.



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#### Notes:

1. Pignone MP, Gaynes BN, Rushton JL, et al. “Screening for depression in adults: A summary of the evidence for the U.S. Preventive Services Task Force.” *Annals of Internal Medicine*, 2002. 136, 765-776.
2. Weitzman, ER. “Poor mental health, depression, and associations with alcohol consumption, harm, and abuse in a national sample of young adults in college.” *Journal of Nervous and Mental Disease*, 2004. 192(4), 269-277.
3. Center for Disease Control (CDC). Accessed via [www.cdc.gov/ncipc/factsheets/suifacts.htm](http://www.cdc.gov/ncipc/factsheets/suifacts.htm) on April 13, 2007.
4. Conwell YC, Duberstein PR, Cox C, Hermann JH, Forbes NT, and Caine ED. “Relationships and age of Axis I diagnoses in victims of completed suicides: A psychological autopsy study.” *American Journal of Psychiatry*, 1996. 153, 1001-1008.
5. Hyun JK, Quinn BC, Madon T, and Lustig S. “Graduate student mental health: Needs assessment and utilization of counseling services.” *Journal of College Student Development*, 2006. 47(3), 247-266.
6. Kearney LK, Draper M, Baron A. “Counseling utilization by ethnic minority college students.” *Cultural Diversity and Ethnic Minority Psychology*, 2005. 11(3), 272-285.
7. American College Health Association. National College Health Assessment: Reference Group Executive Summary Spring 2006. Baltimore: American College Health Association. 2006.
8. Regier DA, Narrow WE, Rae DS et al. “The de facto US mental health and addictive disorders service system: Epidemiologic Catchment Area prospective: 1-year prevalence rates of disorders and services.” *Archives of General Psychiatry*, 1993. 50, 85-94.
9. Young AS, Klap R, and Sherbourne CD. “The quality of care for depressive and anxiety disorders in the United States.” *Archives of General Psychiatry*, 2001. 58, 55-61.
10. U.S. Department of Health and Human Services. “Mental Health: A Report of the Surgeon General — Executive Summary.” Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health. 1999.
11. Borowsky SJ, Rubenstein LV, Meredith LS, Camp P, Jackson-Triche M, and Wells KB. “Who is at risk of nondetection of mental health problems in primary care?” *Journal of General Internal Medicine*, 2000. 15, 381-388.
12. Chung H., Teresi J, Guarnaccia P. et al. “Depressive symptoms and psychiatric distress in low income Asian and Latino primary care patients: prevalence and recognition.” *Community Mental Health Journal*, 2003. 39, 33 – 45.
13. Unutzer J, Schoenbaum M, Druss BG, and Katon WJ. “Transforming mental health care at the interface with general medicine: Report for the President’s commission.” *Psychiatric Services*, 2006. 57(1), 37-47.
14. Wagner EH, Glasgow RE, Davis C, Bonomi AE, Provost L, McCulloch D et al. “Quality improvement in chronic illness care: a collaborative approach.” *Joint Commission Journal of Quality Improvement*, 2001. 27(2),63-80.
15. Wells KB, Sherbourne C, Schoenbaum M, Duan N, Meredith L, and Unutzer J. “Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial.” *JAMA*, 2000. 283(2), 212-220.
16. Dobscha SK, Corson K, Dickam DH, Perrin NA, Kraemer DF, and Gerrity MS. “Depression Decision Support in Primary Care: A Cluster Randomized Trial.” *Annals of Internal Medicine*, 2006. 145(7), 477-487.
17. Kroenke, K. “The PHQ-9: Validity of a brief depression severity measure.” *Journal of General Internal Medicine*, 2001. 16, 606-613.
18. Katzelnick D, Von Korff M, Chung H, Provost LP, and Wagner EH. “Applying depression-specific change concepts in a collaborative breakthrough series.” *Journal on Quality and Patient Safety*, 2005. 31(7), 386-397.
19. Katzelnick D, and Chung H. “Depression Leadership Initiative: Using the Collaborative Model in Psychiatric Practices.” Annual Meeting of the American Psychiatric Association, 2006.



# Prevalence, Diagnosis and Treatment of Allergic Rhinitis

Gordana Gligoric, MD, University of Texas

Allergic Rhinitis (AR) is among the leading presenting problems of college and university students seeking care in student health centers.

Because AR is highly correlated with impairment in classroom productivity and is observed to have other co-morbidities which impair learning, such as Attention Deficit Disorder, Obstructive Sleep Apnea, and Asthma, it is particularly critical that college health professionals diagnose and treat AR appropriately to reduce symptoms to permit improved academic performance.

This article will discuss the signs and symptoms of AR, classifications, co-morbidities and treatment strategies based on the current literature.

The diagnostic task, although sometimes quite straightforward, can occasionally be challenging in patients with more severe forms of AR. Diagnosing AR can be especially difficult in patients who also present frequently with upper respiratory infections and/or other complaints.

Because up to 85% of asthmatic college students also have AR and because AR has been shown to double the risk of emergency room visits for patients with asthma, it is particularly critical for college health professionals to identify and treat this co-morbidity in AR patients.

## Allergic Rhinitis

Allergic rhinitis is an inflammatory allergic disease of the upper airways. It is caused by exposure to specific allergens (like pollens and animals) to which the individual has been sensitized in past. Although AR is the most common form of rhinitis, it is also frequently associated with non-allergic rhinitis.<sup>1</sup> Non-allergic rhinitis (NAR) is caused by smoke exposure, perfumes/colognes, cosmetics, household cleaning products, hairspray, dust, windy/cold/damp/humid days, alcohol beverages and spicy food.

## Incidence and Prevalence

AR affects around 40% of non-asthmatic and 85% of asthmatic college students.<sup>2</sup> More than 10% of adults and as many as 40% of children suffer from AR. It is the fifth most common chronic illness and the most

prevalent chronic condition in patients under 18 years of age.<sup>3</sup> Some patients have mild forms of AR, while others experience debilitating symptoms. Ninety-three percent of AR patients may suffer a moderate to severe impairment in classroom productivity and 91% have moderate to severe impairment in work productivity. Also, 96% have moderate to severe impairment in the ability to perform daily activities and 25% of individuals with allergic rhinitis have missed time from school or work.<sup>4</sup> There are 16.7 million office visits each year attributed to allergic rhinitis. It is estimated that AR costs the healthcare system \$18 billion annually.

Allergic rhinitis occurs in persons of all races. In childhood, allergic rhinitis is more common in boys than in girls, but in adulthood, the prevalence is slightly higher in women (see Figure 1).<sup>12</sup>

**Symptoms** of AR include sneezing, stuffy nose (congestion), runny nose, itching in the nose, roof of the mouth, throat, eyes and ears. Frequently AR is also associated with postnasal drainage, cough, headache, sometime fatigue and daytime sleepiness. The symptoms of allergic rhinitis are more prominent in the morning.<sup>5</sup>

## Classification of Rhinitis

Allergic rhinitis is classified as seasonal (SAR),

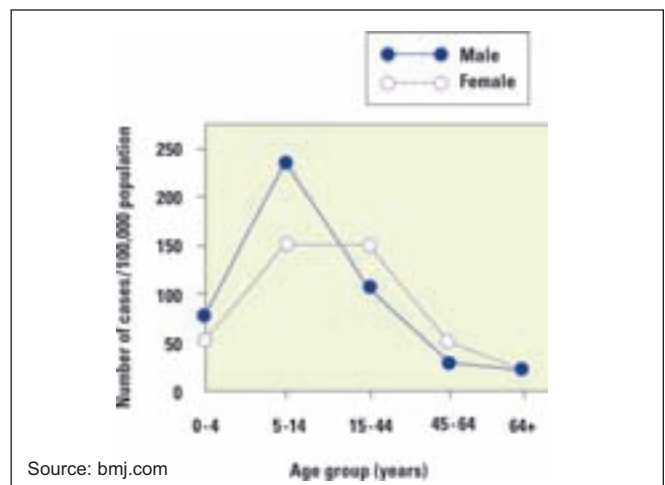


Figure 1: In childhood, AR is more common in boys. In adulthood, the prevalence of allergic rhinitis is slightly higher in women.

*“AR is a high-frequency presenting problem among college and university students, which, untreated (or treated sub-optimally) can contribute to a significantly compromised academic performance.”*

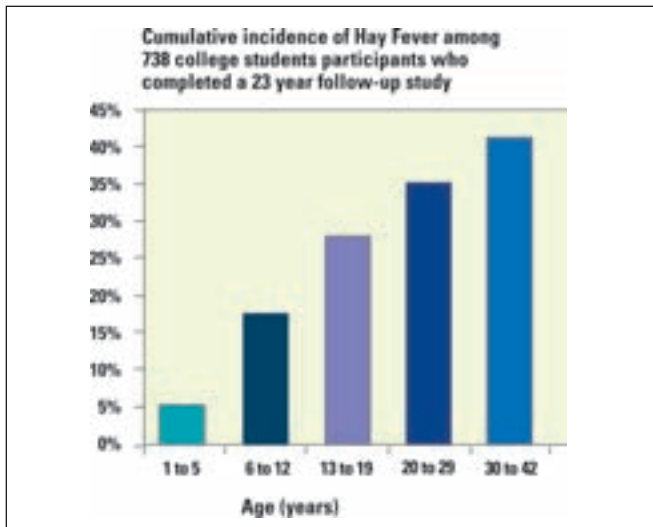


Figure 2: Study of college students shows cumulative incidence of hay fever increasing.

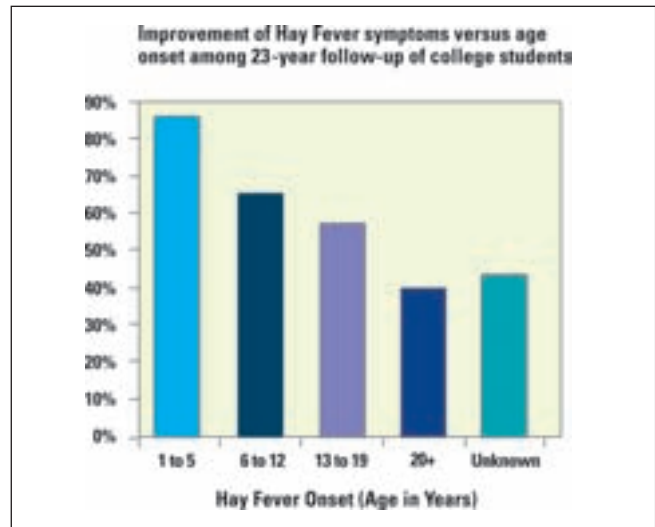


Figure 3: Study also suggests that, over a long period of time, hay fever symptoms will improve in most individuals.

perennial (PAR), or both. **Non-allergic rhinitis** is classified as infectious, NARES (Non-Allergic Rhinitis with Eosinophilia); occupational, drug-induced, vasomotor, hormonal, gustatory, or other anatomical/idiopathic.

Seasonal AR (SAR) is sometimes referred to as hay fever and is caused by substances that trigger allergies, like tree, weed and grass pollen. Perennial AR (PAR) is observed throughout the year and shows little or no seasonal variation. It is persistent, chronic and generally less severe than SAR. It is caused by animal dander, molds, dust mites and cockroaches. In a 23-year follow-up study of college students with asthma, 75% had SAR and 32.1% had PAR. Within the same group, of the students without asthma, 37.2 % had SAR and 11.6% had PAR.<sup>2</sup> During the study period, the cumulative incidence of hay fever among the 738 participants increased (see Figure 2). The same study suggested that, over a long period of time, hay fever symptoms will improve in the majority of individuals (see Figure 3).

### Co-morbidity Associated with AR

Co-morbidities may be attributed in part to the

fact that the upper and lower airways share a common and probably interconnected inflammatory process in the allergic rhinitis and asthma. This may explain why AR increases the risk for asthma threefold and doubles the risk of emergency room visits in patients with asthma.

Other Observed Co-morbidities include:

- Acute sinusitis is 25% associated with allergic rhinitis<sup>8</sup>
- Chronic rhino sinusitis has 40% to 80% allergic component<sup>8</sup>
- Children with otitis media with effusion have 50% association of allergic rhinitis<sup>8</sup>

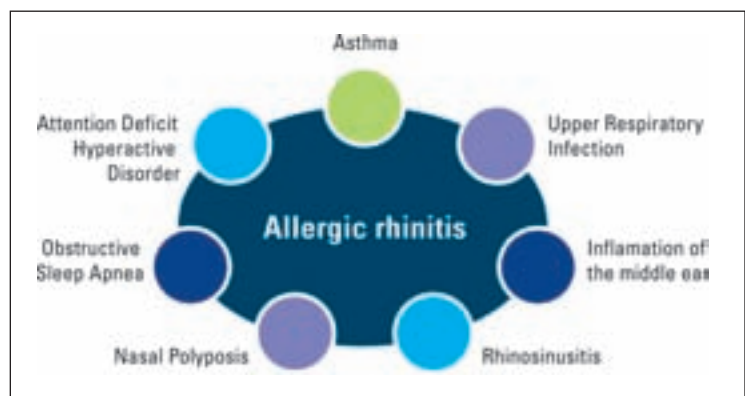


Figure 4: Comorbidity associated with allergic rhinitis.

In one study done few years ago in Switzerland,<sup>9</sup> patients with obstructive sleep apnea (OSA) were more likely to be sensitized to perennial allergens such as house dust mites and dogs than those patients with chronic obstructive pulmonary disease (COPD). Perennial allergen was reported in 11% of OSA patients but in only 2.3% of COPD patients in this study.

In an open trial of 14 children with AR with disordered sleep, treating the nasal congestion with topical nasal steroids improved the quality of sleep and led to improvement in daytime quality of life. The author used objective measurements (polysomnography) and subjective data (Rhinitis Quality of Life Questionnaire [RQLQ]) before and after treatment with a topical nasal steroid.<sup>10</sup>

Treatment of allergic rhinitis may benefit some of the symptoms of attention deficit hyperactivity disorder (ADHD). In one small study of 30 patients, five to eighteen years of age with ADHD, it has been found that 61% had at least one skin prick test with a positive result to allergen, 43% showed typical physical signs of allergic rhinitis and 100% had family history of allergic disease.<sup>11</sup>

## Diagnosis

Diagnosis of AR is based on history with specific symptoms (as above), physical exam and testing for specific allergens. On physical exam, the nasal mucosa is mainly pale, swollen with clear nasal discharge. Frequently the pharynx (back of throat) has small bumpy looking



Figure 5: Skin prick test for grasses and weeds on a patient’s back.

structures (“cobble stoning”) a sign of constant post nasal drip. Many individuals have dark circles around the eyes (“eye shiners”) and some individuals have fluid effusion of the middle ear. Specific allergen testing is done by blood test or by skin prick testing (Figure 5). The skin prick test is the preferred diagnostic test and only takes 10 to 20 minutes to get results. It is performed with the pricking of the skin over a drop of specific allergen. Skin tests are more sensitive, faster, and more cost-effective than RAST testing (blood test). Allergy testing is not commonly needed to make the diagnosis, but may be helpful for patients with multiple potential allergen sensitivities.

## Treatment

Management of the patient’s living environment can be particularly challenging for students living in both on-campus and off-campus group living arrangements.

**Avoidance of allergens:** Depending on the allergen to which an individual is sensitized (dust mites, pollens, animals), avoidance behavior will vary.

**Dust mite avoidance:** Dust mites are microscopic insect-like creatures and natural inhabitants of your home. Their presence does not indicate a lack of cleanliness. They feed on flakes of human skin and are attracted to warmth and moisture. Dust mites live in house dust, mattresses, pillows, towels, carpets, upholstered furniture, and stuffed toys. The basic idea is to remove as much dust-absorbing material as you can. Remove the carpet from the bedroom, keep the room as simple as possible with the least amount of dust-absorbing material possible, wash all beddings weekly in hot water (over 120 degrees), use dust mite protective covers for the bed and mattress.

**Cockroach avoidance:** First exterminate the cockroaches, cleaning thoroughly after extermination. Seal all cracks to prevent cockroaches entering from the outside. Place food in tight containers and clean cooking and eating areas after every meal. Do not leave dirty dishes in the sink and empty trash containers often.

**Pet allergy avoidance:** Remove pets from the bedroom and wash them frequently, if possible.

**Pollen avoidance:** Avoid going outside during the peak pollen season. Keep windows closed, clean or replace air conditioner filters frequently, and use a clothes

for students living in both on-campus and off-campus group living arrangements.”

dryer instead of drying clothes outside. Washing your hair in the evening instead of the morning can reduce the amount of pollen accumulated during the day in the hair and reduce the chance of breathing it in from the pillow during the night. When working in the yard or garden, wear a pollen-dust mask.

**Mold allergy avoidance:** Molds are microscopic fungi that live on plant or animal matter and they are present all year around in virtually every environment. Clean surfaces where mold grows with mold-killing products (like-Tilex), remove potted plants, and if you use a humidifier keep the humidity low (<50 percentile).

High-efficiency HEPA filters for air purifiers and vacuums may reduce the amount of allergens.

**Medications**

Over-the-counter medications like loratadine (claritin) or diphenhydramine (benadryl) may alleviate some of the mild symptoms of AR and it is generally appropriate to try them (Caution must be applied to individuals who are sensitive to sedating antihistamines i.e. benadryl because it can cause excessive somnolence if taken during the day and may also decrease concentration.). Using nasal saline wash a few times each day can also help with some of nasal symptoms.

- Oral Antihistamine:** claritin, zyrtec, allegra, clarinex, benadryl
- Nasal Antihistamine:** astelin
- Intranasal corticosteroid:** flonase, rhinocort, nasonex, flunisolide
- Oral decongestant:** Pseudoephedrine, Claritin-D, Allegra-D, Zyrtec-D
- Intranasal decongestant:** Afrin
- Intranasal mast cell stabilizers:** Cromolyn
- Topical anticholinergics:** Ipratropium nasal
- Anti-leukotrienes:** Singulair

**Discussion of Medication Effectiveness**

**Topical nasal steroids** have the best results in treatment of allergic and non-allergic rhinitis, but need daily treatment and sometimes take a few days to a few weeks to reduce symptoms. There are no significant side effects associated with topical steroids, although some individuals may develop nasal bleeding.

**Oral antihistamines** will work quickly to diminish both nasal and eye symptoms, and may be considered as an addition to topical steroids.

**Topical nasal antihistamine** works quickly with all nasal symptoms. Caution must be taken with **nasal**

**Table 1: Medications Used in Rhinitis and Their Effect on Symptoms**

Agent	Sneezing	Rhinorrhea	Nasal Congestion	Nasal Itching	Eye Symptoms
Oral Antihistamine	++	++	+	+++	++
Nasal Antihistamine	++	++	+	++	-
Intranasal Corticosteroids	+++	+++	+++	++	++
Oral Decongestant	-	-	+	-	++
Intranasal Decongestant	-	-	++++	-	-
Cromolin Nasal	+	+	+	+	-
Topical Anticholinergics	-	++	-	-	-
Anti-leukotrienes	-	+	++	-	++

- not effective for symptoms  
 + mildly effective for symptoms  
 ++ moderately effective for symptoms  
 +++ or ++++ very effective for symptoms

*“Semi-rush immunotherapy is the preferred treatment of AR in our clinic at UT, San Antonio, and has shown very good results in a very short period of time, with minimal side effects.”*

**decongestants** as, although they work quickly and are effective with congestion symptoms, patients can become dependent on them if they are used frequently and over an extended period of time. Some patients can also develop rhinitis medicamentosa, which is in some cases more difficult to treat than AR.

**Oral decongestants** work well, but in some cases, may cause an increase in blood pressure, insomnia, and/or palpitations. Some older patients can develop urinary retention.

**Nasal cromolin** is infrequently used today for nasal problems.

**Topical anticholinergic medication** is effective for patients with vasomotor rhinitis with abounded clear nasal discharge.

**Anti-leukotrienes** are useful to add to topical steroids and antihistamines, especially for patients with a history of asthma.

**Specific allergen immunotherapy** is the best treatment for AR. It not only improves the patient's quality of life during the treatment, but can also prevent the development of asthma in some patients and may, in some cases, cure allergy problems. In the long run, it is a less expensive treatment than daily medication use. Specific allergen immunotherapy can require three to five years of treatment and, at the beginning, frequent visits (weekly or more) are required until maintenance dosing (monthly) is achieved. Some allergists offer “rush immunotherapy” – fast desensitization with a specific allergen in one to three days – achieving a substantial decrease of symptoms or symptom freedom in a very short period of time (days instead of the months required for traditional immunotherapy). Semi-rush immunotherapy is the preferred treatment of AR in our clinic here at UT, San Antonio, and has shown very good results in a very short period of time, with minimal side effects.

## Conclusion

AR is a high-frequency presenting problem among college and university students, which, untreated (or

treated sub-optimally) can contribute to a significantly compromised academic performance.

While the literature is rich on diagnosis and treatment strategies, evidence-based optimal treatment requires careful, patient-specific considerations and a commitment by both the patient and the caregiver to continuity of care.

As with many young people with chronic or recurring illness – who see the college experience as an opportunity to magically redefine themselves as healthy – students with AR are often challenged to be treatment persistent.

Because of the nature of AR and the complexity of treatment, both a continuity of care model and a team approach involving health educators is often appropriate.

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## Notes:

1. Settipane, RJ et al. In: Kaliner, ed. *Current Review of Allergic Diseases*. 2000.
2. William A et al, *Allergy and Asthma Proc*.1998.
3. Public Health Service. Publication (PHS) 93-1510. 1993.
4. O'Connell, EJ, *Allergy*. 2004; 159 (suppl 78): 7-11.
5. Reinberg et al. *J Allergy Clin Immunol*. 1988;81; 51-62.
6. Settipane, RJ et al. *Allergy Proc* 1994; 15:21–25.
7. Bousquet, J et al. Poster presented at the EAACI, 2004.
8. AAAAI, ACAAI, JCAA, *Joint Task Force Position Statement*: November 17, 2002.
9. Canova, CR. *Respiration*. 71(2):138-43, 2004 March/April.
10. Mansfield, LE. *Annals of Allergy, Asthma, & Immunology*. 92(2):240-4, 2004 February.
11. Brawley. A. et al. *Annals of Allergy, Asthma, & Immunology*. 92(6):663-7, 2004 June.
12. *BMJ* 1994; 308:897-900 (2 April).

## Useful Websites

1. American Academy of Allergy Asthma and Immunology (AAAAI) [www.aaaai.org](http://www.aaaai.org)
2. American College of Allergy, Asthma & Immunology (ACAAI) [www.aaaai.org](http://www.aaaai.org)



# Health Promotion Programming: What Does It Mean to Say “Evidence-Based”?

*Michelle Burcin, PhD, MPH, CHES, University of South Carolina*

The practice of health promotion historically has focused on three major areas: program planning, program development and program evaluation. In the last ten years, health promotion professionals have been tackling the issue of evidence-based programming while also understanding the need for a more ecological perspective in college health promotion.<sup>1</sup> Until fairly recently, one had to look to disciplines outside of health promotion (often clinical medicine) for examples of evidence-based practice.

What follows is a high-level overview of the concepts, terms, and key issues in evidence-based programming for health promotion on college campuses; followed by comments from ten practitioners from around the country about how evidence-based practice is working (or not) on their campuses. Two specific programs are cited in some detail.

Evidence-based programming in health promotion was energized in 1998 when the 51st World Health Assembly urged all Member States to “adopt an evidence-based approach to health promotion policy and practice, using the full range of qualitative and quantitative research methods.”<sup>2</sup> Because this field of research is relatively new, it is important for all health promotion professionals to share the same core concepts associated with evidence-based programming. These concepts include: needs assessment, theory-based practice (for higher education the ecological model is a particularly useful theoretical construct) and proven practices in the field of health promotion.

It is also important that we speak the same professional language. Here, the World Health Organization’s Health Promotion Glossary of Terms is useful:

**Capacity building:** The development of knowledge, skills, commitment, structures, systems and leadership to enable effective health promotion.

**Determinants of health:** The range of personal, social, economic and environmental factors which determine the health status of individuals or populations.

**Evidence-based health promotion:** The use of information derived from formal research and systematic investigation to identify causes and contributing factors to health needs and the most effective health promotion actions to address these in given contexts and populations.

**Health behavior:** Any behavior undertaken by an individual, regardless of actual or perceived health status, for the purpose of promoting, protecting or maintaining health, whether or not such behavior is objectively effective towards the end.

**Health impact assessment:** A combination of procedures, methods and tools by which a policy, program, product, or service may be judged concerning its effects on the health of the population.

**Health outcomes:** A change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status.

**Health promotion evaluation:** An assessment of the extent to which health promotion actions achieve a “valued” outcome.

**Health promotion outcomes:** Changes in personal characteristics and skills, and/or social norms and actions, and/or organizational practices and public policies which are attributable to a health promotion activity.

**Needs assessment:** A systematic procedure for determining the nature and extent of health needs in a population, the causes and contributing factors to those needs and the human, organizational and community resources which are available to respond to these.

Evidence-based programming is critically important now because virtually all colleges and universities, policy makers and grant making organizations are expecting quality, outcome-driven programs and interventions that are grounded in theory and proven cost-effective.<sup>3,4</sup> Assessment and theory play vital roles in the development process of evidence-based programming.

*“It is crucial that the health promotion professional has a full understanding elements of the unwanted behavior.”*

## Why Assessment?

The best programs start with assessment. Assessment can be accomplished through qualitative or quantitative research methods or a combination of the two.<sup>5</sup> The goal of assessment is to gather information about health behaviors of the target population(s). It is crucial that the health promotion professional has a full understanding of current health behaviors to avoid addressing the wrong or inappropriate elements of the unwanted behavior.<sup>3</sup> Prior to conducting assessment, the health promotion professional should ask the following questions:

- What is the purpose of the assessment?
- Who should be studied?
- What is the best assessment method?
- How should the data be collected?
- What instrument should be used?
- Who should collect the data?
- How should the data be recorded?
- How should the data be analyzed?
- How should the results be reported?
- How should the results be used?

## The Importance of Theory and Particularly the Ecological Model

Theory, in simplest terms, is a carefully thought through rationale for how things work. Human systems are particularly complex, and therefore require well developed theoretical models for how they will behave. Since health promotion has moved from focusing on individual behavior and risk factors to include programs that address environmental determinants of health, the role of theory in how human systems influence individual behaviors is increasingly essential. This relatively new emphasis on the environment allows health to be embraced by the entire campus community. The intersection between health and the campus educational environment allows the university community to share a focus and vision: to create an academic environment that promotes student engagement and achievement using a healthy living and learning environment (the ecological model).<sup>6</sup> In the past, health programs have focused on a medical model, meaning that the primary focus is on the individual,

an approach that may limit our ability to fully understand health behaviors.

The ecological perspective puts forward a new paradigm in health promotion program planning with a shared emphasis of responsibility for student health among student affairs leaders, faculty members, and administrators.<sup>6</sup> This approach creates an opportunity for campus leaders to work as a team to develop a campus environment that has greater potential for academic and personal achievement and therefore producing more successful and productive citizens. *Table 1* not only describes the ecological model, but since its source is the National Cancer Institute, it shows the universal applicability of this approach.

## The Reality of Evidence-Based Health Promotion on Campus

To test the current state of evidence-based practice, twenty colleagues in the field of college health promotion were asked a series of questions regarding evidence-based programming on their campus, ten responded. What follows are some of their comments.

### What document(s) does your campus use in health promotion planning?

- CAS (Council for Advancement of Standards in Higher Education) for Health Promotion Programs
- Healthy Campus 2010
- Leadership for a Healthy Campus (NASPA’s Ecological Approach)
- Standards of Practice for Health Promotion in Higher Education
- Vision Into Action: Tools for Professional & Program Development
- NCHEC (National Commission for Health Education Credentialing) Standards and Responsibilities
- Institution’s mission, vision, values, and strategic priorities document; and division of student affairs’ mission, vision, values, and strategic priorities statement
- CDCynergy Social Marketing website

### What role does assessment play on your campus with regards to program planning and development?

“We have a person on staff (.5 FTE) to do

An Ecological Perspective	
Concept	Definition
Intrapersonal	Individual characteristics that influence behavior, such as knowledge, attitudes, beliefs, and personality traits
Interpersonal	Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support and role definition
Institutional Factors	Rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviors
Community Factors	Social networks and norms, or standards, which exist as formal or informal among individuals, groups, and organizations
Public Policy	Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management

*Source: National Cancer Institute, Theory at a Glance: A Guide for Health Promotion Practice.<sup>7</sup>*

research/evaluation. I feel this is critical to monitor trends, disseminate information about student health and related behavior, and gain buy-in for changing factors in the environment to improve student health. We plan learning objectives and assess our success in reaching these.”

“In our office (Health Promotion), we use assessment for much of our program planning, development and evaluation purposes. Assessment tools include: three university-wide surveys, focus groups, intercept interviews, direct and indirect observation, asking student leaders, talking with students, etc.”

“Assessment is embedded throughout our planning.”

“A very big one within health education. Unfortunately, other offices within the Division of Student Affairs are not as advanced or sophisticated on needs assessment, evaluation, and evidence based approaches. This has made moving toward a healthy campus quite interesting. Others involved want to ‘do something’ now, and those actions are often quite contrary to evidence-based practices targeting assessed needs.”

“We conduct the American College Health Associations’ National College Health Assessment annually and look at our data to see where to focus efforts.”

“Strategies are selected for implementation after assessment (individual, population, and environment) is conducted and results analyzed.”

**How do you identify health issues/topics to target (e.g. how do you identify your community needs)?**

“NCHA, CORE Survey, other surveys conducted throughout the year, focus groups with Resident Assistants, topic requests for programs from public, health service utilization rates, counseling center utilization rates, judicial records, other archival data, qualitative methods, findings published through state, regional and national surveys, findings published in peer reviewed journal articles focusing on college populations.”

“This is difficult. We look

for changes in our data, but for the most part it is fairly consistent. At an annual retreat we try to write measurable goals and objectives for priorities. These are based on strengths of our staff, severity of an issue and prevalence. Grant funding also influences where we focus efforts.”

“We examine our data, compare it to national standards and targets and then determine which has the most impact on student success.”

“We have done data collection over the years and work with several campus departments to identify the areas to target. These include CORE, Social Norms Marketing Research Project and an Alcohol, Other Drug and Violence Survey provided by our state. I survey freshmen at orientation and during subsequent programming on their desire for various informational topics including bacterial meningitis, STDs, sexuality, tobacco use, metabolic syndrome, diabetes and other health issues.”

“We use a problem analysis process which includes current literature on the state of the problem(s) nationally and regionally for the college student population; collecting qualitative and quantitative data about those problem(s); include gap analysis and key stakeholder perspectives; conduct and incorporate environmental assessments.”

*“It is worth noting that evidence alone is not an adequate basis for effective but it can not replace the expertise of individual practitioners, which guides*

“We use three assessment tools (ACHA-NCHA every third year; Health Promotion Survey every year; Health Behavior Survey every year) as well as direct and indirect observation. We also ask students (Peer Health Educators, student leaders) at every opportunity using focus groups and intercept interviews. We also use current events and news (i.e. what is the school newspaper talking about?).”

“We conduct the ACHA-NCHA biennially, conduct a variety of in-house studies that help us to identify risk and protective factors and help determine program direction.”

“We conduct needs assessments with cross-tabs on demographics and other variables.”

How are evidence-based programs selected to address target issues?

“Social Norms Marketing is an on-going program that is evidence-based (and already has a pre-determined focus, and we use our assessment tools to determine specific needs/topics). Regarding other programs – we search them out through peer-reviewed journal articles, networking, and some trial-and-error to see what works best on our campus. We don’t really ‘agree’ upon anything, except with our students, since most departments work on their own health/wellness initiatives.”

“We provide leadership in multidisciplinary workgroups to help guide the process of identifying evidence-based strategies and include them in our plans. It is a community organizing process.”

“Read the literature and discuss it with key stakeholders.”

“The health promotion team does review of literature to find programs that have been demonstrated effective in accomplishing the intended outcomes and then using similar strategies to implement and evaluate these programs in our setting.”

“Literature reviews of current and major findings from peer-reviewed journals and federal government and nonprofit agencies (NIAAA, SAMHSA, SIECUS, DOJ, etc.).”

“We seek evidence-based programs from conferences, networking and the literature.”

“In spirit, yes; in actuality – no. There are great philosophical differences between disciplines as to what works and is effective. Some on my campus view programming that is effective with non-campus based populations to be ‘evidence-based.’ In our move to a healthy campus initiative, we’re working toward that (evidence-based programming), but it will not come until we are all in agreement about the issues to target.”

### **What baseline information do you use to conduct outcome evaluation?**

“Qualitative and quantitative data that we begin with to define the problem – surveys, focus groups, environmental scans, infrastructure gap analysis.”

“Social Norms programs – we have years of baseline and trend data that we can use, and can look at overall behavior change trends to determine if negative consequences are declining (we can’t say if our program ‘caused’ this decline, just that it is one part of the puzzle). Other programs – we have an evaluation form that we ask students to complete regarding their ‘behavioral intent’ – one thing they learned from this program, and the usual ‘did you like this program?’ – and use one year’s data as baseline for the following year. Other programs – sometimes all we can do is obtain participation numbers for our ‘reach’.”

“NCHA, or intervention-specific pretests.”

“We use many of our needs assessment tools as baselines. Within health education, we are also trying to have pre- and post-tests, with a control when and if possible.”

“Depends. For small scale measurements, the baseline is the pretest. For large scale, usually a random survey of the target group, such as the ACHA-NCHA or an internally developed survey.”

### **How do you evaluate your efforts?**

“Mostly through surveys that focus on both satisfaction and outcomes. We also look at judicial

*health promotion. External information can be extremely useful, the collection and application of evidence-based programming.”*

## **Evidence-Based Programming: Putting Knowledge to Practice**

The following are examples of evidence-based programming on college campuses:

1) The **University of Virginia** wanted to reduce the incidence of alcohol poisoning and mortality associated with high-risk drinking on students' 21st birthday. Modeling their program after similar successful initiatives at Michigan State University and California State Polytechnic University, Pomona, the Alcohol and Drug Abuse Prevention Team (ADAPT) at the University of Virginia designed a 21st birthday card.

a. This card included messages from the University President as well as other student organizations. The main message of the birthday cards read "Happy 21st Birthday! We encourage you to celebrate responsibly." Students who had turned 21 during the study were asked to complete a brief questionnaire about their reaction to the 21st birthday cards as well as their behaviors on their 21st birthday.

b. The average number of drinks consumed on the day the student reported celebrating their birthday was significantly smaller for those that received the card when compared to those that did not receive the card (8.12 drinks and 11.3 drinks respectively). The project also showed a major difference in the number of students who reported completing the Corner Crawl (a perceived tradition of consuming 21 shots of liquor on the night a student turns 21). Only 1.2% of the students who received the card on or before the birthday reported completing the Corner Crawl in comparison to the 15.8% that either received the card late or not at all. (Susan M. Bruce, BACCHUS Peer Education, October 2001)

2) **Virginia Commonwealth University's** program (Walking Counts) goal was to reduce the proportion of adults who engage in no leisure-time physical activity as well as to increase the proportion of adults and adolescents who engage in regular physical activity for at least 30 minutes per day, five or more days per week (both are Healthy Campus 2010 objectives).

a. Walking Counts was modeled after previously successful pedometer-based walking programs. This program required participants to wear a pedometer daily for 10 weeks, to record steps and exercise daily, to complete pre-test and post-test surveys and body composition measures and to attend two mandatory educational programs.

b. Walking Counts produced statistically significant results in the days per week of reported physical activity (1.72 at baseline and 2.86 at follow-up;  $p < .001$ ); body satisfaction (2.59 at baseline and 2.86 at follow-up;  $p < .05$ ); ideal body (2.24 at baseline and 2.45 at follow-up;  $p < .05$ ); self-esteem (32.97 at baseline and 34.59 at follow-up;  $p < .01$ ) and waist circumference (baseline 37.52 at baseline and 36.60 at follow-up;  $p < .01$ ). (Katie Vatalaro Hill, Diane B. Wilson, Melanie K. Bean, Reported at ACHA, 2006)

recidivism for alcohol policy violators, a change in culture, media coverage, focus groups, etc.”

“Combination of pre/post tests, intercept surveys, focus groups, process evaluation (numbers and other process information), trends identified through surveys (behavior change trends).

“Various ways: assessment tools (including NCHA); evaluation forms with behavioral intent; direct and indirect observation; lots of process evaluation with students; gauge media output; use participation numbers to gauge “reach”; conduct focus groups and intercept interviews.”

“Process: did we do what we said we'd do? Impact: did

*“The best programs start with assessment. Assessment can be accomplished through qualitative or quantitative research methods or a combination of the two...It is crucial that the health promotion professional has a full understanding of current health behaviors to avoid addressing the wrong or inappropriate elements of the unwanted behavior.”*

what we did have any effect? *Outcome:* did the effect make any difference in the problem?”

## Conclusion

These comments from ten campuses suggest both high degrees of consensus and the universal challenge of working through multiple parts of the campus structure. It seems logical that we should make every effort to build on each other's successes, but even if programs on other campuses have evidence-based success, it is important to ask:

- How does it work?
- Why does it work?
- What elements are necessary for it to be successful?
- Can it be replicated on this campus, and,
- Is it an appropriate way to address an important issue on this campus?<sup>3</sup>

Jackie Green<sup>3</sup> warned that if we are not careful, “we will end up with a little more than a menu of proven interventions from which to select and without a rational base to guide that selection.” It is worth noting that evidence alone is not an adequate basis for effective health promotion. External information can be extremely useful, but it can not replace the expertise of individual practitioners, which guides the collection and application of evidence-based programming.<sup>8,9</sup>

## Ways to Share Information/Resources

The National Healthy Campus Clearinghouse ([www.healthycampus.sc.edu](http://www.healthycampus.sc.edu)) is devoted to the collection and dissemination of information about health promotion programmatic initiatives on college campuses. This clearinghouse was established to provide institutions of higher education with resources and networking opportunities to help enhance the quality of prevention, health promotion

and wellness services and planning on college campuses. The Clearinghouse provides a wealth of information regarding evidence-based wellness programming that will help build the foundation for shaping future prevention efforts..

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## Notes:

1. Rychetnik, L and Wise, M. (2004). “Advocating evidence-based health promotion: reflections and a way forward.” *Health Promotion International* 19(2), 247-257.
2. World Health Assembly (1998). Resolution WHA 51.12 on Health Promotion. Agenda Item 20, 16 May 1998. WHO, Geneva.
3. Green, J. (2000). “The role of theory in evidence-based health promotion practice.” *Health Education Research*, 15(2), 125-129. Available at <http://her.oxfordjournals.org/cgi/content/full/15/2/125>.
4. Macdonald, G., Veen, C. and Tones, K. (1996). “Evidence for success in health promotion: suggestions for improvement.” *Health Education Research*, 11(3), 367-376.
5. Nutbeam, D. (1999). “The challenge to provide ‘evidence’ in health promotion.” *Health Promotion International*, 14(2), 99-101.
6. “Leadership for a Healthy Campus: An Ecological Approach for Student Success.” The National Association of Student Personnel Administrators. Available at: [naspasql.naspa.org/help/archives/docs/EcologyBooklet.pdf](http://naspasql.naspa.org/help/archives/docs/EcologyBooklet.pdf).
7. *Theory at a Glance: A Guide for Health Promotion Practice*. National Cancer Institute. Available at: [www.nci.nih.gov/theory](http://www.nci.nih.gov/theory).
8. Sackett, D., Rosenberg, W., Gray, J., Haynes, B and Richardson, S. (1996). “Evidence-based medicine: what it is and what it isn't.” *British Medical Journal*, 312, 71-72.
9. Tang, K.C., Ehsani, J. and McQueen, D. (2003). “Evidence based health promotion: recollections, reflections and reconsiderations.” *Journal of Epidemiology and Community Health*, 57, 841-843.



# Evidence-Based Alcohol Programs

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The consequences of high-risk alcohol use by students continue to be the greatest health and safety problem facing colleges and universities in the U.S. These effects range from academic problems to vandalism, injury, assaults, and deaths. These effects are of a magnitude which far outweighs any other threat to health and safety on campus and perhaps all other such concerns combined. Recent data from the CORE Institute would indicate that the problem may be worsening, with heavy drinking, defined as five or more drinks in one sitting, having increased to 55.6% of students in 2005, up from 49.8% in 2003 and 46.5% in 2000.<sup>1,2,3</sup>

Despite this national trend, many individual campuses have seen significant improvements. However, despite good data on effective approaches to reducing consumption and the problems associated with excessive alcohol use, many campuses continue to focus their limited prevention resources on programs that are not likely to produce the desired change; still investing in programs that aim simply to provide information to students about the ills of alcohol use, through brochures, posters, speakers, workshops, and skits, for example.

Also, alcohol prevention efforts are often evaluated on workshop attendance, whether students enjoy a speaker, or even the number of brochures distributed. Any discussion of evidence-based approaches to alcohol problem prevention on campus operates from the assumption that behavior change – decreased consumption – and even more importantly, the resulting changes in individuals and the environment – fewer adverse consequences to individual drinkers, other students, campus property, and the neighborhoods surrounding campuses – are the measures of an “effective” approach.

This article outlines the state of our knowledge of effective approaches to combating excessive alcohol use on campus and suggests key resources campuses can turn to for guidance in planning and implementing an evidence-based approach. Several leading researchers

weigh in on the question “What should campuses do with this knowledge?”

And, although more is known than ever before about what works in campus alcohol prevention, how to translate this knowledge into practice most effectively is less clear. To offer some help in moving science to practice, the article ends with some lessons the author learned in leading a project to determine the general principles and processes by which campuses implement their programs, policies, and interventions.

## Guidance on Evidence-Based Programs, Policies, and Interventions

In 1999, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) convened a blue-ribbon panel of leading researchers, college and university presidents, and students to engage in a series of discussions to address the serious problem of college student alcohol use. Over the course of three years, this task force developed a ground-breaking report outlining the extent of the problem and its many manifestations and providing a guiding framework upon which to develop sound and effective campus alcohol programs.

The 2002 report, “A Call to Action: Changing the Culture of Drinking at U.S. Colleges”<sup>4</sup> was a landmark because, for the first time, the dimensions of the college alcohol problem were outlined in terms so stark, no college administrator, alumnus, or student could deny its deadly and damaging ramifications. The magnitude of college student deaths, injury, assaults, academic problems, vandalism, and other secondary effects was troubling.

The statistics were updated in March 2005, and the problem appears to be even greater than indicated by the 2002 figures. Researchers report that unintentional fatal injuries related to alcohol increased from about 1,500 in 1998 to more than 1,700 in 2001 among U.S. college students aged 18-24. Over the same period, national surveys indicate the number of students who drove

*“High-risk alcohol use and its consequences present a public health problem, influenced at [multiple] levels.”*

under the influence of alcohol increased by 500,000, from 2.3 million to 2.8 million.<sup>5</sup>

However compelling these statistics are, the most important contribution of the original report was its recommendations for effective alcohol prevention in the college population, based on 24 papers from researchers describing the state of the science of alcohol problems and reviewing the published research on prevention and intervention approaches. Many of these papers were published in a special issue of the *Journal of Studies on Alcohol* in March 2002.<sup>6</sup>

### A Typology For Alcohol Prevention On-Campus

High-risk alcohol use and its consequences present a public health problem, and as such require an approach that recognizes that health behavior is influenced by multiple factors operating at five levels: individual factors, group processes, institutional factors, community factors, and public policies.<sup>7</sup>

DeJong and Langford describe an application of this social ecological model in a “full typology of campus-based prevention and treatment options.”<sup>8</sup> The authors created a matrix, with the social ecological model as one dimension of the typology and key areas of strategic intervention forming a second dimension (see *Figure 1*).

These areas of strategic intervention are:

- Changing people’s knowledge, attitudes, and behavioral intentions regarding alcohol consumption;
- Eliminating or modifying environmental factors that contribute to the problem,
- Protecting students from the short-term consequences of alcohol consumption (“health protection” or “harm reduction” strategies); and
- Intervening with and treating students who are addicted to alcohol or otherwise show evidence of problem drinking.<sup>8</sup>

This typology can be enormously useful to those wanting to address alcohol problems in an organized and systematic way. The matrix format encourages consideration of the strategic interventions that need to be pursued at multiple levels of the social ecological model. For example, initiatives related to alcohol policy might need to include efforts to inform students (individuals) about consequences of violating campus policy and state laws, to convey to senior administration (institution) that students support strong policy and enforcement,<sup>9</sup> and to work with liquor enforcement officials (community) to organize compliance checks at bars and liquor stores.

For that reason, DeJong and Langford suggest that campuses use the typology to inventory current problems, efforts, and assets; determine program gaps; and plan activities, policies, and interventions to address problems and gaps.

### Research on Effective Programs

While the typology provides a tool for mapping prevention efforts, what specific activities, policies, and interventions should campuses be using if they want to make a real impact on student alcohol use and abuse? The language used to

Typology Matrix for Mapping Campus and Community Prevention Efforts					
Areas of Strategic Intervention	Program and Policy Levels (Social Ecological Framework)				
	Individual	Group	Institution	Community	Public Policy
Knowledge, Attitudes, Behavioral Intentions					
Environmental Change 1. Alcohol-Free Options 2. Normative Environment 3. Alcohol Availability 4. Alcohol Promotion 5. Policy/Law Enforcement					
Health Protection					
Intervention and Treatment					

*DeJong & Langford, Journal of Studies on Alcohol Supplement No. 14, March 2002.*

describe “effective” prevention can be confusing, and it can be difficult to sort through the choices. What does it mean for a program to be designated “evidence-based”, “proven”, “model”, “science-based”, or even just “promising”?

Unlike many areas of college health, there is a consensus to guide administrators on alcohol prevention and intervention strategies with the strongest support in the research literature. In addition to the stark numbers on the consequences of alcohol problems on campus, NIAAA’s “A Call to Action” translated the 2002 findings into a set of clear and comprehensive guidelines for campuses. The report outlined different prevention strategies (*see sidebar, “NIAAA’s Levels of Evidence”*) based on a review of the literature of college alcohol prevention and alcohol prevention targeting the general population.

In essence, the recommended strategies include: screening and intervention services for the high-risk drinker; an environmental prevention approach to address problems within the entire campus and in the broader community; and support for campus and community collaboration across many constituencies.

Much more detail on the research that informed the NIAAA recommendations is contained in two 2002 articles that reviewed all of the published research on individual-focused<sup>10</sup> and environmental<sup>11</sup> approaches to decreasing alcohol problems on campus. Both of the 2002 literature reviews have been updated to include new literature, with one published in 2007 and the other in press.

Traci Toomey, the lead author on both the original 2002 review and the 2007 update of the research in environmental policies to reduce college drinking,<sup>12</sup> said in a recent interview that her strongest recommendation is that “the use of multiple environmental strategies is promising for reducing high-risk alcohol use and alcohol-related problems among college students.” Toomey is at the University of Minnesota School of Public Health.

“What the literature suggests is that multiple changes to the environment can produce changes in alcohol use and problems. You can’t expect to change the culture by making one change like banning beer kegs, but if you ban kegs, and change underage enforcement, and don’t allow self-service or don’t serve at campus events, there is more likely to be an effect,” Toomey said.

## **NIAAA’s Levels of Evidence**

The NIAAA report provides a tiered system of recommendations for effective alcohol problem prevention:

### **Tier 1: Evidence of Effectiveness Among College Students**

Examples: combining cognitive-behavioral skills, norms clarification and motivational enhancement interventions; brief motivational enhancement interventions; challenging alcohol expectancies.

### **Tier 2: Evidence of Success With General Populations That Could Be Applied to College Environments**

Examples: enforcement of minimum drinking age laws, alcohol-impaired driving prevention, alcohol retail outlet density restrictions, increased alcohol prices and taxes, responsible beverage service.

### **Tier 3: Evidence of Logical and Theoretical Promise, But Require More Comprehensive Evaluation**

Examples: enforcement of underage drinking laws on campus, consistently enforcing disciplinary actions associated with policy violations, conducting marketing campaigns to correct student misperceptions about alcohol use, “safe rides” programs.

### **Tier 4: Evidence of Ineffectiveness**

Examples: informational, knowledge-based, or values clarification interventions about alcohol problems related to excessive use, when used alone; providing blood alcohol content feedback.

Although the research doesn’t currently support specific recommendations for which combination of approaches is effective, Toomey suggests that because every campus and surrounding community is unique, the same set of strategies won’t work in every case. “There’s no “how-to” manual,” she said. “The research points us in the right direction – it tells us some things not to do and some things that are promising.” While campus prevention staff should use the research literature for guidance, they should also draw on as many sources as possible to develop an approach that works for the particular campus context.

*“In essence, the recommended strategies include: screening and intervention services problems within the entire campus and in the broader community; and support for*

One of the articles Toomey cites in the 2007 review describes an evaluation of the Robert Wood Johnson Foundation funded, “A Matter of Degree” program,<sup>13</sup> and provides evidence of the changes that can occur on campus when multi-strategy, environmental approaches are employed. Of the ten campuses participating, those implementing a high number of environmental interventions saw significant decreases in alcohol use, secondhand effects, and drinking and driving.

William DeJong, a Boston University researcher and former director of the U.S. Department of Education’s Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, echoes Toomey’s view that prevention programs need to address the specific campus context. “The danger is that people will treat the NIAAA report and the new literature reviews as a laundry list and start to put programs in place without getting a better sense of the problems on their specific campuses and thinking about how the strategies will work in sync,” he said.

DeJong’s experience with the University of Rhode Island’s RhodeMap to Safety campaign illustrates how programs should be integrated. “The campaign created an umbrella under which several different efforts could be unified,” he said. “Everyone can see that all of the research-based activities – [drinking and driving] enforcement, an agreement with alcohol retailers to increase identification checks and not to overserve bar patrons, an education program about living off campus – are connected and pushing toward the same goals.”

One interesting conclusion in Toomey’s 2006 review of the research is that social norms marketing programs, which aim to change students’ exaggerated views of how much other students drink by using campus-based media to correct the misperception, “should be used cautiously”. Some of the studies Toomey reviewed suggested that the campaigns do not reduce alcohol use and may even increase consumption. “I definitely wouldn’t say that a campus should use it exclusively,” she said.

DeJong is more enthusiastic about social norms marketing campaigns, based on published research<sup>14</sup> that was not available at the time Toomey’s review was

completed. The study, involving 18 campuses randomly assigned to treatment and control groups, found that students attending institutions that implemented a social norms marketing campaign had a lower relative risk of alcohol consumption than students attending control group institutions.

DeJong and his research team were unable to replicate these results in a second study involving another 14 campuses. “At baseline, this set of schools had much higher rates of alcohol use than the previous cohort, and we had controlled for high school drinking, so we thought there might be something about the environment that was important,” he said. Analyses conducted with LSU’s Richard Scribner with all 32 institutions suggest that the impact of the social norms marketing campaigns was moderated by alcohol outlet density in the surrounding communities. “What we found,” DeJong explained, “is that the campaigns resulted in a lower relative risk of alcohol consumption on campuses where there was relatively lower alcohol outlet density, but not on campuses with relatively higher alcohol outlet density.”

This suggests that in an alcohol-rich environment, a SNM campaign will need to be more intensive in order to succeed, and that it is equally important to work to change that environment.<sup>15</sup>

“I’ve always argued for social norms campaigns to be done in conjunction with other environmental efforts,” DeJong said. “The campaigns can begin by correcting behavioral norms, and then move on to talk about student support for policy, which also is misperceived. That sets the stage for policy changes and stricter enforcement.”

In the realm of individual-focused strategies, Mary Larimer’s latest literature review<sup>16</sup> found the most consistent support for in-person, motivational feedback interviews. “This also happens to be where the bulk of the research has been done, and given the cost of doing in-person interventions, campuses will likely want to target resources toward those students who are at highest risk, like mandated students, members of fraternities and sororities, and those identified by medical providers,” Larimer said.

Larimer also noted that there is “emerging strong evidence for normative feedback interventions by

*for the high-risk drinker; an environmental prevention approach to address campus and community collaboration across many constituencies.”*

themselves.” She added that these are inexpensive and relatively easy to do, and they have lasting effects, so they are promising for use with larger populations of students, like freshmen, she said.

As in the 2002 review, Larimer said that she was unable to identify a single study in which information-only interventions outperformed other approaches. And there were no articles she could identify that addressed issues of treatment for students who have been diagnosed with alcohol abuse or dependence.

### **How To Translate Research Into Effective Practice**

Given the existence of these reviews of the research, why are research-based programs, policies, and interventions not more quickly embraced on college and university campuses? One barrier is the limited understanding of what “evidence-based” means. Many campus officials are influenced by ideology, asserting that underage students should be taught to drink responsibly, for example, without realizing that research in the U.S. and abroad clearly supports a minimum legal drinking age of 21.

Another challenge is the reliance on approaches that provide students with information about the problems they may encounter when they drink excessively, with the expectation that this will produce behavior change. Colleges and universities are filled with educators, who believe, quite rightly, in the power of education to open up worlds of opportunity for young and old alike. Unfortunately, the research on health behavior change, and on alcohol use in particular, simply doesn’t support use of information-only strategies.

Perhaps the most significant barrier is that research is generally conducted in controlled conditions, not the “real world” of implementation on campus. Each campus faces specific problems, in its own unique context, with cultural and political issues to consider, making adoption of any program much more complicated.

Not surprisingly, the most successful programs employ research-based principles and processes for effective health promotion and prevention. Seven key lessons for how to translate research to practice emerged during a series of site visits that staff of the Higher Education Center for Alcohol and Other Drug and

### **Research-based Principles and Processes for Effective Alcohol Problem Prevention**

1. Exercise leadership
2. Build collaborations
3. Choose evidence-based programs
4. Use a strategic planning process
5. Evaluate program activities
6. Work toward sustainability
7. Take the long view

Violence Prevention conducted at the U.S. Department of Education’s “model” programs during 2005 (*see sidebar, “Research-Based Principles and Processes for Effective Alcohol Problem Prevention”*).

1. **Exercising leadership.** Especially where multiple strategies are being used, and a wide range of stakeholders are participating, the leader’s skills must “go beyond education and program development to include political organizing, coalition building, and advocacy.”<sup>17</sup> On every campus we visited, the knowledge and skill of the designated AOD prevention coordinator was perhaps the most important contributor to program success. Sharing leadership also was often important, and the support of senior administration for comprehensive alcohol problem prevention was key.

2. **Building collaborations.** Implementing a comprehensive approach, involving multiple strategies operating at both the environmental and individual levels, has to be the responsibility of more than one person or organization. It also is more or less an axiom of health prevention and promotion science that collaborations are critical to success. Almost all of the 22 model program campuses worked hard both to obtain wide support across their campus and to work with strategic partners to implement specific program initiatives. Building and sustaining coalitions requires “knowing how to build positive internal and external relationships; how to engage members in work tasks; and how to select, develop, and implement effective programs and policies.”<sup>18</sup>

3. **Choosing evidence-based programs.** Many campuses have interpreted NIAAA’s recommendations to mean that they should implement only Tier 1 strategies,

and this would be a mistake. Although Tier 1 strategies include only individual-focused interventions, this simply reflects the ease with which research on these kinds of interventions can be undertaken, in contrast with evaluations of environmental interventions, which are much more complex and costly to do.

**4. Implementing strategic planning.** Often, campuses start to address alcohol problems by selecting programs, but there are some important steps that must come before program selection. The most successful of the model programs made an effort to understand the nature of their problems and to state clearly program goals and objectives. Use of a strategic planning process can help ensure that even evidence-based programs are adapted to fit the specific campus and community context. The Center for College Health and Safety uses a five-step process<sup>19</sup> as the foundation for its consultation and training services to statewide prevention initiatives and campus teams (see sidebar, “Center for College Health and Safety Strategic Planning Process”).

**5. Conducting a program evaluation.** Campuses have limited resources for alcohol prevention, so it is essential that decisions on how to use those resources be based on the best possible information about what is actually working to achieve program goals.

**6. Working toward program sustainability.** Campuses with successful alcohol prevention programs understand that more than money is required to sustain their efforts. Without senior administrator buy-in, it is difficult, if not impossible, to keep a program going. And without evaluation data to demonstrate that the program is working, that buy-in is difficult to obtain. Strategic planning, using evidence-based strategies, developing broad support from multiple constituencies – all of these elements factor into whether a campus can sustain or institutionalize alcohol prevention efforts.

**7. Taking the long view.** The problems facing colleges and universities are complex, collaborations take time and effort to maintain, and campus conditions change over time. The alcohol industry continues to create new ways of marketing products with appeal to young people. And there continue to be naysayers who insist that nothing can be done to prevent the injuries, property damage, and deaths that heavy drinking can cause. Efforts

### **Center for College Health and Safety Strategic Planning Process**

1. Conduct a problem analysis
2. Establish long-term goals and objectives
3. Consult research, logic, and theory to identify potential strategies
4. Create a strategic plan, including a plan to evaluate
5. Implement, and evaluate

to change the environment that abets high-risk alcohol use will take time, and those involved need to persevere in their vision of a safer and healthier campus.

These elements will be the focus of a publication to be released this fall by the U.S. Department of Education’s (ED) Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention. The publication is intended to explore general principles and processes by which ED’s Office of Safe and Drug-Free Schools’ “model programs” successfully implemented their programs, policies, and interventions.

Further support for campuses wanting guidance on effective approaches is coming from NIAAA. In addition to the two new research reviews described above, NIAAA plans to issue a bulletin updating the 2002 “A Call to Action” report sometime during 2007.

### **What Else is Needed?**

What is next for research on campus alcohol problem prevention? Larimer expects an explosion of research on Internet-based interventions, and although this is an exciting area, it’s important that researchers explore how individuals process information differently when it is obtained online compared to when it is delivered via other means. She also feels there is a need to look at possible cultural differences in responses to the individual-focused interventions she studies. “We haven’t addressed culture in the development of these interventions, and although there’s nothing currently to suggest that they don’t work, we might get more benefit if we work to adapt materials so that they are more relevant to specific groups.”

DeJong cited the need for a shift in how campus organizers think about coalition development. “What are the differences between a community organizing

model, where a campus group reaches out strategically to specific partners, and a broad coalition?” he said. “We’ve been encouraging campuses to develop campus and community coalitions, but when does it make sense to use one?”

Toomey pointed to the challenges of studying multi-strategy, environmental approaches. “When we are looking at facilitating changes in the real world, there are practical and ethical issues, as well as methodological challenges when funders are looking for [research] designs that are not possible within those constraints,” she said. A lot of what is needed to change the alcohol environment is already clear – regular checks to ensure that alcohol establishments are not selling to or serving underage or intoxicated patrons, for example – but resources are not always made available to implement the strategy in the way that research has found to be most effective.

But not every environmental strategy is costly. “So much of environmental management doesn’t cost any more than ineffective approaches still being used.” DeJong adds, “Do you want to continue to hold informational workshops, or do you want to work with bar owners to reduce promotions and raise prices? Campuses doing the latter, are seeing changes in the drinking culture and the negative consequences to students.”

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#### Notes:

1. Core Institute. *Recent Statistics 2000: Alcohol and Other Drug Use on American Campuses*, Carbondale, IL: Core Institute, Southern Illinois University, 2000 (available at <http://www.siu.edu/~coreinst>).
2. Core Institute. *Recent Statistics 2003: Alcohol and Other Drug Use on American Campuses*, Carbondale, IL: Core Institute, Southern Illinois University, 2000 (available at <http://www.siu.edu/~coreinst>).
3. Core Institute. *Recent Statistics 2005: Alcohol and Other Drug Use on American Campuses*, Carbondale, IL: Core Institute, Southern Illinois University, 2000 (available at <http://www.siu.edu/~coreinst>).
4. Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, National Institute on Alcohol Abuse and Alcoholism. *A Call to Action: Changing the Culture of Drinking at U.S. Colleges*. Washington, DC: National Institutes of Health, 2002.
5. Hingson, R., Hereen, T., Winter, M. and Wechsler, H. “Magnitude

of Alcohol-Related Mortality and Morbidity Among U.S. College Students Ages 18-24: Changes from 1998 to 2001.” *Annual Review of Public Health* 26, 259-79, 2005.

6. *Journal of Studies on Alcohol*, Supplement No. 14, 2002.
7. Stokols, D. “Translating Social Ecological Theory into Guidelines for Community Health Promotion.” *American Journal of Health Promotion* 10: 282-298, 1996.
8. DeJong, W. and Langford, L.M. “A Typology for Campus-Based Alcohol Prevention: Moving Toward Environmental Management Strategies.” *Journal of Studies on Alcohol*, Supplement No. 14: 140-147, 2002.
9. DeJong, W. “How to Address Alcohol Problems on Campus: An Emerging Consensus (Some College Administrators Fear Student Resistance),” presented at Tufts University, March 29, 2007.
10. Larimer, M.E. and Cronce, J.M. “Identification, Prevention, and Treatment: A Review of Individual-Focused Strategies to Reduce Problematic Alcohol Consumption by College Students.” *Journal of Studies on Alcohol*, Supplement No. 14: 148-163, 2002.
11. Toomey, T.L. and Wagenaar, A.C. “Environmental Policies to Reduce College Drinking: Options and Research Findings.” *Journal of Studies on Alcohol*, Supplement No. 14: 193-205, 2002.
12. Toomey, T.L., Lenk, K.M., and Wagenaar, A.C. “Environmental Policies to Reduce College Drinking: An Update of Research Findings,” *Journal of Studies on Alcohol and Drugs* 68(2): 208-219, 2007.
13. Weitzman, E.R., Nelson, T.F., Lee, H., and Wechsler H. “Reducing Drinking and Related Harms in College Evaluation: Evaluation of the ‘A Matter of Degree’ Program”. *American Journal of Preventive Medicine* 27: 187-196, 2004.
14. DeJong, W., Kessel Schneider, S., Gomberg Towwin, L., Murphy, M.J., Doerr, E.E., Simonsen, N.R., Mason, K.E., and Scribner, R.A. “A Multisite Randomized Trial of Social Norms Marketing Campaigns to Reduce College Student Drinking,” *Journal of Studies on Alcohol* 67(6): 868-879, 2006.
15. DeJong, W. “How to Address Alcohol Problems on Campus: An Emerging Consensus (Social Norms Marketing Research Project Findings for Study 2),” presented at Tufts University, March 29, 2007.
16. Larimer, M.E. and Cronce, J.M. “Identification, Prevention, and Treatment Revisited: Individual-focused College Drinking Prevention Strategies 1999-2006.” *Addictive Behaviors*, in press.
17. DeJong, W., Vince-Whitman, C., Colthurst, T., Cretella, M., Gilbreath, M., Rosati, M., and Zweig, K. *Environmental Management: A Comprehensive Strategy for Reducing Alcohol and Other Drug Use on College Campuses*, Newton, MA: Higher Education Center for Alcohol and Other Drug Prevention, Department of Education, 1998. <http://www.edc.org/hec/pubs/enviro-mgmt.pdf>
18. Foster-Fishman, P., Berkowitz, S., Lounsbury, D., Jacobson, S., and Allen, N. “Building Collaborative Capacity in Community Coalitions: A Review and Integrative Framework.” *American Journal of Community Psychology* 29 (2): 241-261, 2001.
19. Langford, L.M. “Strategic Planning for Statewide Initiatives”, presented at the Statewide Initiatives Leadership Institute III, Cleveland, Ohio, July 13, 2001.

#### Essential Resources:

- [www.higheredcenter.org](http://www.higheredcenter.org)
- [www.CampusHealthandSafety.org](http://www.CampusHealthandSafety.org)
- [www.collegedrinkingprevention.org](http://www.collegedrinkingprevention.org)

# A Chlamydia Screening Program For Women Evidence-Based Medicine For A Population

*James M. Perlotto, MD and Patricia Stumpf, RN, Yale University Health Services*

In early 2007, Yale University Health Services initiated a program of education aimed at encouraging young women under the age of 26 to be screened annually for Chlamydia trachomatis. This program is predicated on evidence-based medicine from multiple studies and is in alignment with recommendations supported by the U.S. Preventive Services Task Force and the Centers for Disease Control and Prevention. Chlamydia has shown a rising incidence in the U.S. population overall. Because Chlamydia is often asymptomatic, relatively easy to screen with a low-cost test, and treatable with easy and cost-effective methods, it lends itself well to a routine screening model. The University Health Services model provides an ideal setting for this screening program, with an evolving Electronic Medical Record system and a robust communications network with the patient community. A system of measurements and outcome analysis is also in progress that will allow documentation of efficacy of the program and the ability to revise and improve the program over time. This is a gratifying example of how “State of the Art” medicine can be practiced in the college and university setting.

## Indications

The incidence of Chlamydia infections in women in the United States has risen dramatically over the past fifteen years, as pointed out in the recent excellent review article by Karl Miller, MD of the University of Tennessee College of Medicine<sup>1</sup> (this might be in part due to better screening and awareness on the part of clinicians and patients, and improved reporting). It is clear that Chlamydia presents a significant health risk and burden of disease especially for young adults and adolescents in the U.S.<sup>2</sup> Although symptoms of Chlamydia can include vaginal or urethral discharge, dysuria, pelvic pain and even pelvic inflammatory disease (fever, abdominal pain, and vaginal bleeding), there is general consensus that the majority of women infected with Chlamydia have no

symptoms. This is also true for infected men, who may have urethral discharge or scrotal pain and swelling, but often are asymptomatic. Therefore, it is reasonable to pursue a population-based, broad screening program for asymptomatic patients who are at risk.

As noted by Dr. Miller,<sup>1</sup> there is an excellent evidence-based recommendation for the key guideline that “All women who are 25 years or younger or at increased risk of sexually transmitted diseases should be screened for Chlamydia infection annually.” (Evidence rating = A: consistent, good-quality patient-oriented evidence, per the American Academy of Family Physicians rating system.) Certainly, Chlamydia screening can be offered to at-risk women over 25 years of age, or any at-risk men, but the evidence does not yet support a broader-based population screening program for those groups.

Fortunately, there is a range of acceptable testing techniques for Chlamydia, which include direct cervical or urethral culture and DNA Amplification testing on cervical or urine specimens. Thus, screening can be offered to women not only in the context of a pelvic examination, but quite easily in a general primary care medical clinic, non-invasively.

## Program Setting

Yale University Health Services (YUHS) is a multi-specialty, managed care facility located in the heart of the Yale campus and serving approximately 30,000 members of the Yale community, including 12,000 students and their spouses/partners and families, as well as faculty and employees. All enrolled students (undergraduate and graduate/professional) are entitled to receive basic primary care, including any laboratory testing, without additional costs. Students receive care primarily in two departments within YUHS: Student Medicine and Obstetrics/Gynecology (OB/GYN). Although some students choose other outside sources of medical care, the majority of students utilize YUHS for their primary

# at Yale University Health Services: Using Health Initiative

care because the services are easily accessible, convenient, confidential and at no added cost to the student. No bills for these screening services are generated to patients or their parents/families, with the goal of encouraging broad participation.

The Department of Student Medicine consists of four MDs including Family Medicine, Internal Medicine and Adolescent Medicine physicians; four APRNs; two RNs; three Medical Assistants; and one Health Educator for students. The department is open year-round and provides over 13,000 primary care encounters each year. Students also can access care through multiple other YUHS departments including OB/GYN, sub-specialties, and after-hours Urgent Care. Laboratory services are available both as point-of-care in the Student Medicine Department, and at a full-service laboratory on site.

## Development

Several planning meetings were held between the departments of Student Medicine and OB/GYN. The collaborative planning was an opportunity for the two departments to work on a project of mutual interest and to establish practice benchmarks. The workgroup reached consensus on who should be tested for Chlamydia using evidence-based medicine, and developed an overall communication strategy. The Departments of Student Medicine and OB/GYN also decided to participate in the 2006 American College Health Association (ACHA) Pap Test and STI survey for the first time. The adoption of Chlamydia screening as a HEDIS measure was also discussed. Changes in the scope of the work required that a data analyst be added to the workgroup to oversee the quality of the data reporting.

The workgroup then developed an informational flyer as the method of informing individual patients about the screening initiative. Three communication objectives were set: to educate women about Chlamydia infection, to define the risks of infection, and to illustrate important

reasons for being tested (*see sidebar on page 40, "New Testing Recommendation for Chlamydia in Women"*).

## Implementation

Education of the staff was critical to the success of this project. The staff was given journal articles on the medical evidence for Chlamydia screening. They were further educated at a staff meeting during which all facets of the project were reviewed and discussed. Thus, staff "buy in" was established, especially around the important concept that screening should be offered to all eligible women at each visit, even when the reason for the visit is not related to STI or sexual health. The staff meeting also reinforced that each staff member plays an important role in educating patients about the importance of screening.

The informational flyers are placed on the tables in the reception area and a flyer is given to each patient during her initial intake by the Medical Assistants (MAs). The MA explains that Chlamydia screening is a new recommendation, that it is easy and that the patient can be screened today. The MA refers all questions to the clinician or the RN. If the patient wants to be tested, the MA offers a pre-prepared lab slip, confirms the patient's telephone number, and instructs the patient how to complete the test. The MA also explains how and when the woman will be informed of her results.

## Outcomes

Laboratory results are received via the electronic medical record. The results are verified by the clinician. The MAs communicate negative results to the patient by telephone or by Patient On Line, a confidential email system for patient communication. Individuals with a positive result are called by an RN or the clinician.

The original project workgroup recommended that methods be devised to document in the electronic medical record that the patient was offered screening, to

*“The goal will be to increase the percentage of women who elect to be screened infections are identified and treated, thus reducing the burden of disease into*

### **New Testing Recommendation for Chlamydia in Women**

If you are a sexually active woman under 26 years old, you should be tested for Chlamydia every year.

You should also be tested if:

- you or your partner have symptoms
- you have a new sexual partner or multiple partners
- you are pregnant
- you think you are at risk for any reason

### **Facts About Chlamydia**

*What is Chlamydia?*

Chlamydia is a common sexually transmitted infection (STI) caused by the bacterium, *Chlamydia trachomatis*, which can damage a woman's reproductive organs.

*What are the symptoms of Chlamydia?*

Symptoms of Chlamydia include vaginal discharge, pelvic pain, urethral discharge, pain, and burning. However, Chlamydia is known as a “silent” infection because about three quarters of infected women and about half of infected men have no symptoms. This is why we recommend routine testing.

*How can I be tested?*

It's easy. You can be tested right away. The test can be done during your pelvic exam or, if you are not being examined, you can be tested by a urine sample.

*How common is Chlamydia?*

Chlamydia is the most frequently reported bacterial sexually transmitted infection in the United States. An estimated 2.8 million Americans are infected with Chlamydia each year.

*How do people get Chlamydia?*

Chlamydia can be transmitted during sexual activity. Chlamydia can also be passed from an infected mother to her baby during vaginal childbirth.

*What complications can result from untreated Chlamydia?*

If untreated, Chlamydia infections can progress to serious reproductive and other health problems such as permanent damage to women's reproductive organs, possibly causing infertility or Pelvic Inflammatory Disease (PID). Like the infection itself, the damage that Chlamydia causes is often silent.

*How can Chlamydia be prevented?*

The surest way to avoid sexually transmitted infections is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Consistent use of condoms can greatly reduce your risk of sexually transmitted infections. Getting tested is the first step to preventing the spread of Chlamydia.

*How is Chlamydia treated?*

Chlamydia can be easily treated with antibiotics once it is identified.

record the results of screening and additionally alert the clinician as to when the next annual screening is due. This process is needed to eliminate duplication of effort when a patient is seen in more than one department. Until this is accomplished, the Student Medicine department is maintaining a manual tracking system.

### **Evaluation**

The project will be considered successful if asymptomatic patients with *Chlamydia trachomatis* infections are detected through screening. The data that will be collected include the total number of female patients under the age of 26 that arrived for an appointment

for Chlamydia and to increase the number whose asymptomatic Chlamydia the future.”

in the Student Medicine Department, the number of females under the age of 26 that completed a laboratory screening test for Chlamydia, and the number of positive results. The data will be analyzed quarterly.

## Promotion

The project workgroup recognized that more extensive outreach and education will be needed to motivate otherwise healthy young patients to be screened. On site, in addition to the ubiquitous presence of the informational flyers, posters will be placed in clinical areas such as exam rooms. The Chlamydia screening initiative will be promoted to the Yale student body. E-mail messages can be sent to students under the auspices of their Deans. The YUHS Member Advisory board, which includes student leaders, will be aware and involved. Information will also be disseminated by the many student newspapers, journals and newsletters on campus.

The Peer Health Educators and Graduate Health Advocates have participated in outreach campaigns in the past and have been effective in reaching students with important health messages. Thus, in the fall, the Health Educator for Students and the team of Student Peer Health Educators and Graduate Health Advocates will assist in a more extensive public education campaign on campus. In addition, multiple outreach sessions will be programmed across the campus, in which the Student Medicine clinician staff will give presentations to student groups and help to answer questions in a personal and educational manner.

## Summary

Recognizing that asymptomatic Chlamydia poses a significant health risk for college age women, Yale University Health Services has designed and implemented a screening program that is fundamentally based on published medical evidence. The initiative offers convenient, non-invasive, cost-effective Chlamydia screening annually to all female Yale students under the age of 26. The resources needed to move the project from concept to implementation were modest, although the cost of the laboratory test might be a barrier in some settings.

Women will be offered the opportunity to undergo screening at every clinic visit, regardless of the nature of the visit. A method of recording and tracking this clinical

information will be implemented, eventually utilizing the electronic medical record. An extensive program of community education and awareness will be in effect across the Yale campus. As a result of this increased awareness, at-risk women of all ages, and at-risk men, are expected to consider screening also. However, the main group being followed will be women under the age of 26, and the goal will be to increase the percentage of women who elect to be screened for Chlamydia and to increase the number whose asymptomatic Chlamydia infections are identified and treated, thus reducing the burden of disease into the future. Outcome measurements will be carefully followed to document the success of the initiative, and to provide feedback for revisions and improvements of the program over time.

## Acknowledgements

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## Notes:

1. Miller, Karl E., "Diagnosis and Treatment of Chlamydia trachomatis Infection", *American Family Physician*, April 15, 2006: Vol 73, No. 8, pp 1411-1416.
2. *Sexually transmitted disease surveillance 2003 supplement*, Atlanta: Centers for Disease Control and Prevention, 2004.



# BRIEFLY NOTED...

The most cursory review of this issue of *Spectrum* will clearly demonstrate the breadth and depth of the literature on evidence-based healthcare.

The challenge to those working in the field of college health is to discern what is truly informative, valid and appropriate for their unique practice. Just one sentence into his editorial, D.C. Dugdale cites Sackett and his co-authors' three part definition, "...the integration of best research evidence with clinical experience and patient value." This is important because too often "evidence-based" in the literature refers simply to research evidence. And sometimes that research is not robust.

Consider these observations in an article subtitled, "Nonadherence to Practice Guidelines Remains the Major Barrier to the Successful Practice of Evidence-based Medicine":<sup>1</sup>

"So many parties have jumped on the EBM bandwagon and so many clinical practice guidelines are churned out by individuals, professional organizations, insurers, and others that the benefits of uniformity may disappear in the cacophony of overlapping, conflicting, and poorly constructed guidelines. With more than 1,000 guidelines created annually, calls for "guidelines for clinical guidelines" have been issued. The quality of EBM guidelines has also been questioned. In ideal circumstances all decision points of a clinical practice guideline should be based on solid scientific evidence, preferably derived from a meta-review of large, double-blind RCTs (Randomized Clinical Trials). Because this "gold standard" of evidence is rarely available, except in industry-sponsored drug trials, researchers have come to rely on other methods for determining "best evidence," such as small clinical trials with insufficient statistical power, studies with a nonrandomized control group, other nonrandomized control studies, and, finally, studies without a control group such as case studies and testimonials. Guidelines have also been developed with the assistance of consensus meetings and focus groups. In addition, some clinical practices already largely follow the available evidence, while others, insufficient evidence is available to evaluate any of the existing alternative interventions."

The reference to large, double-blind randomized clinical trials (RCTs) as a "gold standard of evidence (that) is rarely available" represents a significant problem in evaluating evidence. As most now know, many RCTs for pharmaceuticals only contrast the study subject to a placebo, and not to currently available therapies. So all this kind of RCT can show is that the study drug is superior to no therapy, while it may well be inferior to existing therapies. Happily, there are a few excellent RCTs worthy of the gold standard label. Dr. Dugdale's cite of the ALLHAT study reported in *JAMA* in 2002 did compare four types of drugs. To most people's surprise, the inexpensive, generic, fifty-year-old diuretic turned out to be just as effective at lowering blood pressure without the complications of the calcium channel blocker.<sup>2</sup> Sadly, these kinds of RCTs are not only more the exception than the rule, but there is also evidence of bias in some of the clinical research involving drugs.<sup>3</sup>

All of this leads us to suggest several aphorisms which may be helpful guides in assessing recommendations for evidence-based practice.

**"Average Behavior May Not Be the Most Desired Behavior."** One area of considerable interest in developing evidence-based practice is practice pattern variation. When these variations are observed, care must be taken to carefully evaluate both tails of the distribution curve, as well as its center, for the most appropriate practice. This is often challenging because of case mix intensity issues, case selection and referral patterns. It is also challenging because when these data are disseminated to clinicians there is a natural tendency to migrate practice toward the mean.

**"It is Better to be Generally Right Than Precisely Wrong."** The increasing availability of large data sets enables many levels of analysis. The ease with which computers can generate detailed analyses on small samples can lead to artificial precision. Care must be taken to evaluate the data behind the "Evidence."

The management expert, the late Peter Drucker, observed, **"If You're the Fastest Gun in Town, it is Prudent to Avoid Knife Fights."** As we try to discern

best appropriate practice it is not only critical to stay within our expertise, but also to draw upon the expertise of others.

And finally, Sir William Osler famously observed, **“It is Better to Know What Sort of Patient Has the Disease Than What Sort of Disease the Patient Has.”** As evidence-based healthcare is evaluated, it is critical to consider the patients, both those whose treatment generated the evidence and in the population being cared for. Laurie Davidson in her article in this issue on Evidence-Based Alcohol Programs notes that an important future initiative will be to look at ethnic and cultural differences in the effectiveness of these programs.

While there are many useful references to the literature on evidence-based care cited by this issue’s authors, we would suggest two others which may be helpful to the application of evidence-based practices to college health.

The first is a chapter by Phil Caper, a former colleague of Jack Wennberg and a pioneer in the application of small area variation studies to the availability, use of, and access to, healthcare resources. Entitled, “Population-Based Measures of the Quality of Medical Care”, Caper’s chapter appeared in a book entitled *Healthcare Quality Management for the 21st Century*.<sup>4</sup> Caper’s work has particular relevance to college health because the demographics of the whole student population are known in great detail, not just those who access care. Further, the dominant role of the Student Health Service as the likely source of primary care makes linking utilization data to the population at risk considerably easier than in the more fragmented delivery system of community healthcare. Two quotes from Caper are offered:

“...population-based analysis creates the potential for beginning to back away from the more contentious, labor-intensive, and threatening techniques of “quality assurance” that are now commonly used, such as individual case challenge and review methods. If the focus of review can be directed more toward population-based patterns of care over time and less toward individual cases, the chances of gaining to cooperation of practicing physicians are greatly enhanced.”

“Finally, population-based approaches are both comprehensive and highly efficient. Because they permit comprehensive surveillance on an ongoing basis, community-specific issues can be routinely identified, interventions tailored to community needs, and their effects routinely and inexpensively monitored.”

Our second suggestion is David Eddy’s lead article, “Evidence-Based Medicine: A Unified Approach” in the January/February issue of *Health Affairs: Putting Evidence into Practice*.<sup>5</sup> Dr. Eddy concludes:

“It seems that the current definition of evidence-based medicine, which focuses on individual physicians and their decisions, is too narrow. It should be expanded to include not only evidence-based decision making by individual physicians, but also evidence-based systematic reviews, guidelines, and other types of policies. This would recognize that the combination moves medical practices toward evidence faster, more consistently, and more efficiently than evidence-based individual decision making alone. It would also make the definition consistent with how EBM is actually being done, bringing under the umbrella of the term the dozens of guideline programs that have been practicing the principles and developing the methods for years.”

#### Notes:

1. Timmermans, Stefan; Mark, Aaron, “The Promises and Pitfalls of Evidence-based Medicine”, *Health Affairs*, January/February 2005, Volume 24, Number 1.
2. ALLHAT Collaborative Research Group. Major Outcomes in High-Risk Hypertensive Patients Randomized to Angiotensin-Converting Enzyme Inhibitor or Calcium Channel Blocker vs. Diuretic. The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). *JAMA* 2002;288:2981-2997.
3. Bodenheloner, Thomas, “Uneasy Alliance: Clinical Investigators and the Pharmaceutical Industry”, *New England Journal of Medicine*, May 18, 2000, p. 1539.
4. Caper, Philip, “Population-based Measure of the Quality of Medical Care”, *Healthcare Quality Management for the 21st Century*. Couch, James B. Ed., The American College of Physician Executives 1991, p. 324.
5. Eddy, David M., “Evidence-based Medicine: A Unified Approach”, *Health Affairs*, January/February 2005, Volume 24, Number 1.

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*Chickering congratulates Dorothy Kozłowski from Rutgers University on the completion of her most successful term as the President of ACHA, and offers Lesley Sacher of Florida State University every good wish as she assumes the Presidency. Spectrum also congratulates Fern Goodbart of Rutgers University on receiving the Edward Hitchcock Award; Pamela A Kelleman from Villa Julie College for the E. Dean Lovett Award; Steve Lustig of the University of California at Berkeley and Judy Sandeen from Hastings College on the Ollie B. Moten Award; Chris Leeth from the University of Texas-San Antonio and Danielle Patel of the University of Minnesota-Minneapolis, for the Lewis Barbarto Award. We also congratulate all of the New Professional Awardees and the newly elected Fellows of ACHA.*



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