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# A Review of Internet-Based Home Drug-Testing Products for Parents

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**ABSTRACT.** *Objective.* To review home drug-testing products and the Internet-based recommendations intended for parents.

*Methods.* A qualitative review of drug-testing products and structured analysis of information presented on company Internet sites were conducted. Eight Internet sites that sold home drug-testing products and contained a "parent's section" were identified by Ixquick using the search term "home drug testing." Description and prices of products sold by each Internet site and recommended indications for testing, consent, collection procedures, and follow-up of positive and negative test results were researched.

*Results.* A variety of drug-testing products were available, including breath and saliva tests for alcohol, a multidrug panel hair test, and a variety of laboratory and instant urine tests. Prices ranged from \$2.75 for a single alcohol test to \$89.00 for a multidrug combination urine/hair package. A total of 14 indications for home drug-testing were cited; all sites claimed that drug testing was a way to know with certainty whether a child has used drugs. Only 1 web site made a clear statement against testing an adolescent against his or her will. Little information was presented on valid specimen collection procedures and the risks of false-positive and false-negative tests. Only half of the sites recommended that parents consult a professional if a test is positive.

*Conclusions.* Pediatricians should advise parents of the limitations and potential risks associated with home drug-testing products. *Pediatrics* 2004;113:720-726; *substance abuse detection, substance related disorders, adolescence.*

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ABBREVIATIONS. MTF, Monitoring the Future; FDA, Food and Drug Administration; AAP, American Academy of Pediatrics; PCP, phencyclidine; MDMA, 3,4-methylenedioxymethamphetamine; LSD, lysergic acid; NIDA, National Institute on Drug Abuse.

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Substance use by adolescents is a major public health problem in the United States. Of the eighth-grade students surveyed in the 2001 Monitoring the Future (MTF) study, 37% had smoked tobacco, 51% had used alcohol, 20% had used marijuana, and 15% had used other drugs. MTF also reported that by the end of high school, 80% of

students have used alcohol, 49% have used marijuana, and 29% have used an illicit drug other than marijuana.<sup>1</sup> The media frequently present the scope of the problem of adolescent substance abuse but rarely introduce positive suggestions for parents. Many parents worry that their children are at risk for using drugs and seek advice from a variety of sources. One important source of medical information for the public is the Internet. According to *Newsweek*, 52 million Americans used the Internet for medical information in 2000.<sup>2</sup> Most information on the Internet is not regulated or reviewed in any way. Parents therefore can find a variety of recommendations regarding drug use on the Internet, and opinions may be stated as fact. Parents may follow recommendations without seeking advice from a more authoritative source, such as a medical professional.

Drug testing in nonmedical settings has become increasingly popular in American society in the past 25 years. Mandatory school drug-testing programs have achieved notoriety in the past year and, although efficacy is unproved, the US Supreme Court has ruled that schools may require drug testing of student athletes and, more recently, of any student who participates in extracurricular activities.<sup>3</sup> In the past 5 years, home drug testing has also become available. In 1997, the Food and Drug Administration (FDA) approved the first drug-testing kit for home use without a prescription. By 1998, >200 products had been approved for this purpose. Currently, parents can easily purchase a home drug-testing kit via the Internet and perform the test without consulting a medical professional. Several web sites specifically market drug-testing products to parents and encourage parents to institute a "home drug policy" that includes home testing as a means of preventing drug and alcohol use. These companies include testimonials from parents and teens to support their claims.

The American Academy of Pediatrics (AAP), the American Medical Association, the American Society for Addiction Medicine, the American Psychiatric Association, and the American Academy of Child and Adolescent Psychiatry all have policy statements that pertain to drug testing of adolescents, although none of these statements directly addresses home drug testing.<sup>4-8</sup> The 2 statements that refer to the general population of adolescents<sup>4,5</sup> recommend drug testing as an adjunct to an evaluation performed by a qualified professional rather than as a screening tool to be applied to an entire population. The 2 statements<sup>4,9</sup> that include policies for consent agree that competent adolescents should be given the right of informed assent; parental consent alone is not sufficient for a physician to per-

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form testing. The AAP statement<sup>4</sup> also cautions that informed consent cannot be considered freely given if an adolescent would suffer a negative consequence by noncompliance. Three policy statements discuss the challenges of collecting a valid specimen, from the complexity of the various tests available ("proper interpretation often is complicated and requires a knowledge of the techniques used, the pharmacokinetics of abused substances and local laboratory standards"), to the difficulties of working with adolescents ("adolescents often attempt to adulterate specimens").<sup>9</sup> Three of the statements explicitly state that a professional who is knowledgeable about drug testing should supervise this procedure.<sup>4,6,9</sup> It is notable that all of these statements are intended as guidelines for physicians and other professionals. The objective of this study was to review the home drug-testing products sold via the Internet and to analyze the recommendations intended for parents on these web sites.

## METHODS

### Selection of Internet Sites

We conducted an Internet search for web sites that contained home drug-testing advice for parents. Our initial search was performed on April 2, 2001. We used 3 different search engines (Yahoo, Ixquick, and Google) and 5 search terms: "parent's drug test," "home drug test kit," "at home drug test," "home drug test," and "home drug testing." We chose search engines that a parent might use (eg, Yahoo, Google) and also used a meta-search engine (Ixquick) to yield the maximum number of commonly visited sites. We found that using the Ixquick search engine and the search term "home drug testing" returned the largest number of relevant sites. We reviewed the first 50 web sites returned by this search and chose the 8 that contained a specifically designated parent section. A similar strategy has been described elsewhere.<sup>10</sup> Seven of the selected sites originated in the United States, and 1 originated in the United Kingdom. The web sites were reviewed online, then printed in their entirety between April and July 2001.

### Products

For each of the 8 Internet sites included in the study, we recorded all of the available information about each product, including test type (instant or laboratory), sample type (urine, hair, saliva, and breath), drugs detected, and cost. Whenever possible, we recorded the specific brand name of the product and reviewed the Premarket Notification application submitted to the FDA by the product manufacturers. In addition, we purchased 1 sample of each type of product (urine, hair, saliva, and breath) to evaluate the ease of purchase, the appearance of the products, and the informational materials included.

### Content Review

Each site was reviewed independently by 2 of the authors (S.L. and S.V.H.). Initially, we read every page of the web site and noted the products sold and the level of information given to parents. We noted the educational information included on the web site, such as risk factors for substance use in teens, signs and symptoms of substance use, and advice on ways to prevent substance use, and followed links to other web sites. Then, using a structured review tool, we examined all information contained on the site that pertained to the steps required to perform a drug test, including the indications to perform a drug test and which test to choose, how to inform an adolescent about a drug test and whether to obtain consent, how the specimen should be collected and verified, what to do when a child's test is positive, and what to do when a child's test is negative. Each author extracted relevant information from each site and entered that information into the appropriate section of the tool as direct quotes. The 2 investigators then reread the quotes, grouped items that were similar, and tallied the number of sites that included similar statements. They then met to compare results and resolve discrepancies. The search was repeated in May, June, and July 2001 to look for any new sites

and evaluate changes in the 8 chosen sites, but none identified during this time period. Subsequently, however, 1 site changed the products sold from laboratory-based tests to instant home kits, and several sites had minor changes in content. The information presented in this report was tabulated from the original date of printing.

## RESULTS

### Products

Table 1 lists all of the test products that were available from the sites in this study. We found that a variety of products were offered for home use. These included a multipanel hair test, saliva and breath alcohol tests, and a variety of urine tests, including single drug and multidrug panels. One company marketed a "hair testing service" that could be purchased through several different web sites. The hair test kit contains information about talking to children about drug abuse, an agreement/consent form, instructions for obtaining a hair sample, a coded card to which to attach the hair sample, and an envelope for mailing the sample. Parents obtain the test results by calling a toll-free number and giving the code number from the kit. This product tests for use of marijuana, cocaine, heroin, methamphetamine, and phencyclidine (PCP) in the past 5 to 95 days and has been FDA approved for professional use. One web site that marketed the identical product also listed Ecstasy (3,4-methylenedioxymethamphetamine [MDMA]) separately as detected by this test.

Three of the Internet sites marketed instant saliva and/or breath screens for alcohol that can be performed by a parent at home. The saliva tests are reactive pads that are placed in the mouth and saturated with saliva. They must be examined 2 minutes later, and a color change is compared with a control giving an approximate blood alcohol level ranging from 0% to 0.30%. The saliva tests are sold in packets of 3 tests, ranging in price from ~\$6 to \$15. The breath scan test is a small tube that contains crystals. To perform the test, the user squeezes the middle of the tube to break an inner glass ampule, blows hard into the tube for 12 seconds, shakes the tube, and then after 2 minutes evaluates the contents for a color change. The test comes in 3 levels of sensitivity, 0.02%, 0.08%, and 0.10%, and is sold in packets of 6 tests for ~\$16.

Seven of the 8 web sites that we evaluated sold urine drug tests, including instant tests and mail-in tests, as well as single and multidrug panels. The following substances were detected by at least 1 of the kits: alcohol, amphetamines, barbiturates, benzodiazepines, cocaine, ecstasy, heroin, methamphetamine, methadone, morphine, opiates, PCP, cannabis, cotinine (a component of tobacco smoke), and lysergic acid (LSD). Some products also include a test for adulterants. Two companies offered only mail-in, professional urine testing. The 5 other companies sold instant urine test kits, 2 of which offered mail-in, confirmatory testing. The instant kits contained a specimen collection cup and test strips that undergo a visual change when dipped in urine that contains drug metabolites.

Most web sites gave conflicting or incomplete in-

**TABLE 1.** Drug-Testing Products Sold on the Internet

Web Site	Drugs Included in Panel						
	Alcohol	Amphetamines	Barbiturates	Benzodiazepines	Cocaine	Ecstasy	Heroin
ACCESS Drug Tests UK (www.drugtest.freeserve.co.uk)							
Alco Screen Three Pack	X						
Acon Single Drug (sold as 1, 2, 5, or 10 pack)		X			X	X	
Acon 5 Panel (sold as 1, 2, 5, or 10 pack)		X			X	X	
“Value Pack” (2 “5 panels” and 1 “single drug 5 pack”)							
DrugFree Teenagers (www.DrugFreeTeenagers.com)							
PDT-90					X		
Drug Testing Network Inc. (www.drugtestingnetwork.com)							
DTN Single Drug Test (sold as 1 or 5 pack)		X		X	X		
5-Panel Kit (sold as 1 or 5 pack)		X			X		
NarcKnowledge (www.narcknowledge.com)							
Single-panel kits		X			X		
At-home drug test**		X			X	X	
QuickScreen deluxe test kitt					X		
5-panel urine test kit					X		
“Drug detection guide kit”				book, penlight, pupilometer			
ParentsAlert (www.parentsalert.com)							
Alcohol screening service	X						
Home drug-testing service		X	X	X	X	X	
Parent’s Home Drug Testing (www.home-drugtest.com)							
Breath scan (various levels)	X						
AlcoScreen	X						
PDT-90					X		
InstaCheck single drug test		X	X	X	X		
2-drug test					X		
5-drug kit					X		
Tamper test							
GC/MS confirmation							
Prove It (www.proveit.com)							
PDT-90					X	X	
“1 year supply”							
5-panel test					X		
10-test drug screen panel‡		X	X	X	X		
Single-panel POT test							
Single-panel cocaine test					X		
Alcohol test	X						
1-mo supply (2 of 5-panel, 1 of POT test)							
ViaLab, lc (www.vialab.com)							
Combo hair and urine kit	X#	X			X	X	X
Urine test only	X#						

\* Price as of May 15, 2002.

† Includes drug detection guide booklet, penlight, and pupilometer.

‡ Plus adulterants.

§ “Opiates/heroin.”

|| 12.99 for orders of 15 kits or more.

¶ “Methamphetamine/MDMA”

# Added on request

\*\* With confirmation.

formation about which drugs are detected by the various tests. All of the web sites claimed that the relevant kits identify alcohol, cocaine, PCP, cotinine, and LSD specifically and amphetamines, benzodiazepines, and barbiturates only by class. Four web sites stated that their kits detect opiates, another site claimed that its test detects “opiates/heroin,” and another stated that its kit detects heroin without mention of other opiates. One web site sold kits that detect morphine and methadone separately. Similarly, 1 web site stated that the kit that it sells identifies methamphetamine without additional detail,

and another described its product as identifying “methamphetamine/ecstasy,” presumably in the same panel. Two other sites claimed that their kits are able to identify methamphetamine and ecstasy separately.

**Content Review**

Five of the sites that we reviewed contained drug information that was not directly related to drug testing, including signs and symptoms of drug use (5 sites), statistics regarding drug use in adolescents (4 sites), “street names” of common drugs (1 site), in-

TABLE 1. Continued

Drugs Included in Panel								Test Type	Sample Type	Price* (\$US)
Methamphetamine	Methadone	Morphine	Opiates	PCP	Cannabis	Cotinine	LSD			
			X§		X			Instant	Saliva	13.22
			X		X			Instant	Urine	8.74–38.17
			X		X			Instant	Urine	14.64–102.79
			X		X			Instant	Urine	44.03
X			X	X	X			Lab	Hair	59.99
			X		X			Instant	Urine	11.45–49.50
			X	X	X			Instant	Urine	24.95–99.75
			X		X			Instant	Urine	6.99
X			X		X			Instant†	Urine	29.99
X			X	X	X			Instant	Urine	26.99
X			X	X	X			Instant	Urine	14.99
										12.99
			X		X			Instant	Saliva	14.95
							X	Lab	Urine	44.95
								Instant	Breath	15.95/6
								Instant	Saliva	9.95/3
X			X	X	X			Lab	Hair	50.00
X¶			X	X	X		X	Instant	Urine	9.95
							X	Instant	Urine	16.95
X¶			X	X	X			Instant	Urine	34.95
								Instant	Urine	9.95/3
								Lab	Urine	50.00
X			X	X	X			Lab	Hair	60.00/240.00
X			X	X	X			Instant	Urine	22.00
X	X		X	X	X			Instant	Urine	31.00
					X			Not specified	Urine	6.50
					X			Not specified	Urine	6.50
					X			Instant	Not specified	2.75
					X					44.00
				X	X		X#	Lab	Hair and urine	89.00
				X	X		X#	Lab	Urine	59.00

formation about laws regarding driving while intoxicated (1 site), and information regarding how to develop a school drug-testing program (1 site). Two sites included a general discussion of the role of parents in preventing adolescent substance use, and 2 sites had an identical section that gave suggestions on what parents could do if their child is using drugs or alcohol. One site offered to provide educational material via mail for interested readers, and 1 site linked readers to news stories related to adolescent drug use. Five sites included direct links to other drug-related sites. Of these, 1 linked to 3 different Houston area support groups, and the other 4 provided links to a variety of governmental and non-profit organization sites, including National Clearinghouse for Alcohol and Drug Information (3 sites), National Institute on Drug Abuse (NIDA; 2 sites), Substance Abuse and Mental Health Services Ad-

ministration (2 sites), Al-anon (2 sites), National Institute on Alcohol Abuse and Alcoholism (1 site), Mothers Against Drunk Driving, Students Against Destructive Decisions, Office of National Drug Control Policy, and Association for Medical Educators and Researchers (1 site each) as well as many others. We did not find any inaccuracies in this information.

Indications for testing, suggested consent procedures, collection instructions, and recommendations and/or services for follow-up of positive and negative tests are presented in Table 2.

All of the web sites gave parents multiple reasons to perform home drug testing and indicated that drug testing would allow parents to know with certainty whether their children are using drugs. Seven of the 8 sites advocated drug testing as a preventive measure (“to decrease peer pressure”) with adolescents who are not suspected of using substances. Six

**TABLE 2.** Content of Internet Sites That Market Home Drug-Testing Products to Parents (*N* = 8)

	<i>n</i>
Indication	
To know for sure whether a child is using drugs	8
To decrease peer pressure to use drugs	7
To prevent teens from using drugs	6
Random testing as part of a family drug and alcohol policy	5
To detect drug use before it becomes a serious problem	3
To open an honest conversation about drugs	3
To prevent driving while intoxicated	2
Regular monitoring after a problem has been detected	2
To rebuild trust between a parent and a child	1
Less invasive than other checks for drugs	1
To determine which drugs a child is using	1
To reduce parents' fears	1
To avoid liability and treatment costs	1
To keep drug use private/avoid speaking with a professional	1
Knowledge and consent	
Vague statement regarding a child's consent	4
No discussion of consent	3
Do not test without consent	1
Collection	
Discussion of adulteration/kits test for adulteration	3
Test in the morning	2
Do not confront a child who appears intoxicated	1
Chain of custody discussed	1
Do not give notice	1
Follow-up for positive drug tests	
Seek professional help/obtain formal diagnosis	4
Send the sample for confirmatory testing	2
Discuss with Medical Review Officer or site staff	2
Links to support groups provided	2
Retest with another kit	1
Confront a child with positive results	1
Follow-up for negative drug tests	
Test on a random basis	4
Test if you suspect drug use because of your child's behavior	2
Give positive feedback	2

of the 8 web sites recommended that parents develop a family drug and alcohol policy and also gave advice on how to establish this. Five of these sites recommended repeated, random drug tests as the mainstay of this policy; the other site recommended drug testing only when a parent has reason to suspect that a child has been using drugs. Only 5 of the 8 web sites mentioned obtaining a child's consent before performing a test. Four of these made vague statements, often implying that parents should ask for consent but perform the test even if a child refuses. Only 1 web site made a clear statement that a competent adolescent should not be tested against his or her will.

The Internet sites gave a variety of advice regarding the collection of urine samples, but no site included detailed instructions for collecting a valid specimen, as defined by the NIDA protocol.<sup>11</sup> One site discussed "chain of custody" after a sample had been provided, assuring parents that the sample would be handled properly by the laboratory. Three sites mentioned their product's ability to test for an adulterated specimen, although the details of how a teen could alter a specimen were not provided. One site advised parents not

to confront or attempt to collect a specimen from a child who is acutely intoxicated.

Three of the 8 Internet sites recommended confirmatory testing for positive urine tests done at home. One site recommended using a second instant kit, and 2 sites recommended sending a specimen to the laboratory for confirmatory testing. Four sites suggested that parents seek professional help if their child has a positive drug test, by consulting either with their own staff (2 sites) or through outside sources (4 sites). One Internet site recommended that parents "confront" a child with positive drug test results. Six of the sites recommended repeat testing if a drug test is negative, either on a random basis (4 sites) or if there is reason to suspect that a child is using substances (2 sites).

## CONCLUSION

This study shows that the Internet is a potential source of drug information for parents with teenagers and that several Internet companies market a variety of drug-testing products to parents, including hair, breath, saliva, and urine tests. Several sites outline warning signs of substance use in teens and provide general information regarding drugs. The information from the sites that we reviewed was accurate; however, we recommend that physicians refer patients who request drug information to non-commercial sites, such as the National Clearinghouse for Alcohol and Drug Information ([www.health.org](http://www.health.org)). All of the sites that we reviewed recommend drug testing, suggest how and when parents should perform tests, and make claims about the benefits of using these products. However, a number of issues are not addressed by these web sites, including the technical challenges of testing, unanticipated consequences and the potential negative effects on parent-child relationships of coerced testing. We are also concerned with the Websites' unsubstantiated claims of benefits of testing, and advice that seems to conflict with professional society guidelines.

Laboratory testing for drugs of abuse is a technically challenging procedure, even for medical professionals. We found it difficult to decipher precisely which drugs are detected by many of the advertised kits. For example, 1 of the 3 web sites that sell the PDT-90 hair-testing kit presented a different list of drugs detected by the identical kit. Similarly, some sites claimed that they had separate tests for Ecstasy, and others grouped it with amphetamines. At the time that we performed our review, no MDMA-specific immunoassays were available,<sup>12</sup> and amphetamine immunoassays have poor sensitivity for detecting MDMA.<sup>13</sup> Also, not enough information was provided to determine which drugs in a given class (eg, opiates) are detected by many of the urine kits. Thus, it would be difficult for a parent to decide which drug test to use, despite the claim made on 1 web site that "drug testing can be used to determine which drugs a child is using."

A second technical problem associated with home drug testing is the potential for false-positive and false-negative results. Although this potential exists with every laboratory screening procedure, drug testing is

particularly complex and presents unique challenges. False positive results may occur from cross-reacting chemicals found in foods or over-the-counter medications. False-positive results for amphetamines are particularly common<sup>14</sup> and may occur from a variety of sources, including cold preparations that contain pseudoephedrine,<sup>15</sup> theophylline medications, and even high doses of caffeine.<sup>16</sup> The presence of morphine in urine may occur from consuming poppy seeds in bagels and other foodstuffs.<sup>15</sup> In a study of >2600 urine samples analyzed by certified laboratories using immunoassay procedures as a screening test with confirmation of positive results by gas chromatography/mass spectrometry, the false-positive rate was between 2% and 4% depending on the immunoassay used and the specific drug detected. The rate of false-negative tests varied from 6% to 40% depending on the drug detected.<sup>16</sup> Casavant<sup>17</sup> noted that although commercial assays generally have good sensitivity and specificity in the experimental setting, weaker performance has been documented in the clinical setting. Tests performed at home by untrained parents might have higher rates of error.

Even if we assume that these products are accurately able to detect the presence or absence of a drug in the urine, the potential for misinterpretation by parents remains high. For example, interpretation of a true-positive test for cannabis, the drug most frequently used by adolescents, is not always straightforward. In regular cannabis users, a urine test may remain positive for several weeks after use has stopped. A number of Internet sites in this study did inform readers of the potential for prolonged excretion of cannabis. In addition, none of the sites described the different stages of drug use or gave parents insight into the different treatment needs for an experimental user versus a teen with a diagnosis of abuse or dependence,<sup>18,19</sup> yet this distinction is critical in determining appropriate treatment.<sup>20</sup>

Negative results also present challenges in clinical interpretation. A test may be negative while a child is using drugs if the concentration of the drug in the urine is too low to be detected or the detection window has passed. Detection thresholds or "cutoff" values are minimum concentrations of a substance required in the urine for a test to be reported as positive. These values may be set by drug-testing equipment manufacturers. The Substance Abuse and Mental Health Services Administration has also determined cutoff levels for some substances for federal workplace drug-testing programs.<sup>17</sup> The concentration of a substance in the urine is related to the length of time since last use. For most substances used by teens, the urine concentration dips below the threshold after 2 to 3 days. Exceptions are intermediate- and long-acting barbiturates and benzodiazepines, methadone, methaqualone, PCP, and cannabis in heavy regular users.<sup>15</sup> A drug test may also be negative despite use if a teen has used a drug other than those detected by the product that the parent has chosen.

A false-negative drug test may also occur if a teen "defeats" a test by diluting, adulterating, or substituting urine. Teens can dilute their urine to keep the drug level below "cutoff" by adding water to the

urine specimen or by drinking excessive fluid before giving a specimen. Teens can also get information or purchase products from the Internet that "clean" urine by interfering with standard assays. Observation can be used to verify the validity of a urine specimen, but it is recommended that the witness directly observe the act of micturition.<sup>16</sup> It has been noted that even in this case, patients have falsified urine specimens by strapping bags of clean urine to themselves and dumping that urine into the specimen cup or by introducing clean urine into their own bladder by self-catheterization.<sup>17</sup> In addition, direct observation of a urine specimen may not be acceptable or advisable with family members. Specimen adulteration is a particular concern with home drug testing because there are fewer "checks" on specimen collection than there would be in a laboratory that uses the NIDA protocol or in a clinic where specimens are observed directly.

These technical challenges to drug testing may undermine parents' attempts to obtain useful information with a home drug test. The web sites that we reviewed did not address these challenges adequately. They presented simplified descriptions of the testing procedure and its limitations. For example, no site mentioned observing a urine specimen or preventing adulteration by shutting off the water in the bathroom or putting dye in the toilet water. None of the 4 sites that sell the hair-testing kit gave any detail about hair collection. Regarding interpretation, 4 sites did not contain any information about false-positive or false-negative results, and another mentioned false-positive results without any explanation. Another site gave a detailed description of false-positive results and offered confirmation by gas chromatography/mass spectrometry but gave no information about false-negative results. One other site gave information about cutoff levels but did not explain their significance. The last site noted 3 possible causes for false-negative results and mentioned false-positive results but did not explain how to confirm a screening test. All in all, the quality of the information varied from site to site, and no single site contained adequate information to perform and interpret accurately a drug test and then make reasonable treatment decisions.

Drug testing could be associated with unanticipated consequences such as a decrease in honest communication between parents and teens, a delay in the diagnosis of a serious substance disorder, or an increase in medical costs. Three web sites in this study claimed that home drug testing would open an honest conversation about drugs, but in some cases, routine testing may encourage teens to become deceitful in an attempt to "beat the test." Teens who can routinely "beat the test" and escape consequences may be incidentally enabled and more confident in their drug use. For example, 3 of the reviewed web sites promoted alcohol testing to prevent drinking and driving. A teen could evade testing, however, by switching to another drug (eg, marijuana) instead of risking a positive alcohol test at home. Thus, the parent would have valid (the teen did not drink alcohol) but incomplete information and be falsely reassured that his or her child was not at risk. In addition, although 4 of the 8 Internet sites recom-

mended that parents seek professional help if their child has a positive drug test, only 1 site stated clearly that the parents should seek a formal diagnosis of a potential substance use disorder, as recommended by the AAP.<sup>4</sup> Thus, contrary to claims that drug use may be detected before it becomes a serious problem, the diagnosis of a drug disorder may be missed in the early stages. Finally, despite the claim by 1 web site that home drug testing reduces medical costs, parents who test repeatedly, as recommended by all of the web sites, will increase their medical costs as kits are generally more expensive than insurance co-pays.

Home drug testing may be perceived by adolescents as invasive and a violation of their rights, potentially damaging the parent-child relationship. Although 1 web site claimed that drug testing is less invasive than other "checks for drugs," such as smelling breath or checking pupils, collection of urine specimens by direct observation may seem invasive to many and would not likely be acceptable to most families. Another issue is that of the rights of an adolescent. Of the 8 sites in our review, only 1 gave clear advice that a child should not be drug tested against his or her will. According to the AAP, an adolescent who would experience negative consequences by refusing cannot truly give consent. This calls into question whether parents could ever obtain free, informed consent for drug testing from their own child. Parents who are considering drug testing should be aware of this potential violation of trust and its possible effect on the parent-child relationship.

Finally, many of the claims of benefits of home drug testing made by the web sites reviewed in this study are unsubstantiated. Some of the sites presented anecdotal statements by parents and teens noting the benefits of home drug testing, but we could not find any studies that substantiate the claim made by 7 of the 8 sites that random drug testing prevents drug use by reducing peer pressure. All 8 web sites claimed that home drug testing is a way to know for sure whether a child is using drugs. However, if a parent does not have enough information to choose the appropriate test, does not collect a valid specimen, or does not truly understand the validity and limitations of testing, then he or she instead may be inappropriately reassured by a false-negative drug test or mistakenly accuse the child of using drugs because of a false-positive result.

Some of the claims are also contradictory to professional society guidelines. Specifically, urine testing is not considered useful as a screening tool.<sup>21</sup> The professional guidelines that we reviewed recommended against screening the general population of adolescents, which was suggested by 5 of the Internet sites in this study.<sup>4,9</sup> The AAP, the American Academy of Child and Adolescent Psychiatry, and the American Psychiatric Association all recommend that a professional trained in the interpretation of drug tests supervise all drug testing; a recommendation that was not mentioned or supported by the sites that we reviewed.<sup>4,6,9</sup>

We conclude that some of the drug information presented on the Internet by sites that sell home drug-testing products, such as the signs of drug use by

adolescents, may be useful to parents. However, the drug-testing advice for parents that we reviewed is not supported by scientific evidence, is not consistent with professional society guidelines, and does not include an adequate discussion of the limitations and potential risks of these products. We believe that parents would be better served by a professional assessment for any young person who is suspected of using drugs.

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