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## Decisive help for teen mental health care

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The escalating rate of psychiatric hospitalization among adolescents has created intense controversy among insurers and mental health workers in the past decade. A federal review issued last month asserts that private psychiatric hospitals often inappropriately admit and hold people who have generous government insurance, many of them teenagers of military families.

However, psychiatrists can reach a surprising degree of agreement concerning which teenagers to hospitalize if they follow guidelines generated through a recently developed decision-making method, according to a report presented at the annual meeting of the American Psychiatric Association in Washington, D.C., last week.

"There have been egregious abuses of hospitalization for adolescents, but our data show that clinical decision making in psychiatry is not fuzzier or harder to agree on than in the rest of medicine," asserts study director Gordon D. Strauss of the University of California, Los Angeles.

Strauss and his colleagues relied on a method developed at the Rand Corp. in Santa Monica, Calif., and applied by other investigators to medical procedures in the 1980s. Strauss' team first devised a list of possible indications for hospitalization among adolescents suffering from substance abuse, conduct disorder or both. Psychiatrists assign these diagnoses to a large majority of teenagers admitted to psychiatric hospitals.

Indications related to hospitalization for conduct disorder include recklessness, suicidal or homicidal tendencies, positive or negative response to previous hospitalization, strong or weak family support, availability of outpatient treatment and presence or absence of other psychiatric problems. Many of the same indications apply to substance abuse, along with behaviors specifically linked to drug dependence.

Researchers divided each indication into high, medium and low levels, such as high recklessness and medium family support. Combining the indications in all possible ways for each diagnosis separately and together yielded 1,954 theoretical cases for evaluation by an admitting physician.

Nine national authorities on adolescent psychiatry, medicine and substance abuse then independently rated, on a nine-point scale, how strongly they felt each case needed hospitalization. General agreement emerged on 28 percent of the cases and substantial disagreement on 11 percent; the rest of the cases received equivocal or uncertain ratings.

Each panelist then reviewed the group's ratings and met with the others to discuss decisions and revise indications

based on clinical knowledge.

In a second round of ratings, which expanded to 2,605 cases because of a couple of added indications, agreement on the need for hospitalization reached 55 percent and disagreement dropped to 5 percent.

Only past medical panels evaluating the need for tonsillectomy and adenoidectomy — and dealing with fewer than 200 hypothetical cases — have exceeded the level of agreement attained in the current study, Strauss says. Much lower agreement occurred among panels dealing with coronary artery bypass sur-

gery and hysterectomy.

Disagreement regarding the need for psychiatric hospitalization of adolescents fell below that achieved for any medical procedure, Strauss remarks.

His group is using data from the study to develop software to aid in evaluating teenagers for psychiatric hospitalization. Its first customer, says Strauss, will be a "managed care" outfit that commissioned the study and oversees insurance payments for mental health care provided by some companies.

Further studies must establish whether psychiatrists can agree on the proper length of hospital stays for teenagers with substance abuse and conduct disorder, he adds.

— B. Bower

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## Hunting planets with a gravitational lens

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Does the Milky Way harbor planetary systems other than our own? A definitive answer has eluded astronomers for decades. But now, using a novel search technique, two research groups are beginning separate scans of the heavens that in a few years might reveal the presence of Jupiter-size planets orbiting distant stars within our galaxy.

The new studies rely on a fundamental principle of Einstein's theory of gravitation: Mass bends light. In fact, a massive object acts as a lens, dramatically distorting the image of a more distant star. If an observer, the massive object and the distant star are perfectly aligned, the lens will alter the star's image into a ring, an effect predicted by Albert Einstein and first observed in 1979. If alignment is slightly out of kilter, the lens can split the distant star into pairs of images that may appear as a single, brighter image, depending on the resolution of the telescope used to view the object.

Researchers have used entire galaxies as gravitational lenses — both to examine the properties of quasars billions of light-years beyond our galaxy and to study the lensing galaxies. Closer to home, individual stars that lie halfway to the center of the Milky Way should act as tiny gravitational lenses, distorting the light from stars near our galaxy's center, says Bohdan Paczynski of Princeton University. Moreover, if the foreground star happens to have a planet circling it, the character of the lensing may betray the planet's presence.

Viewed from Earth, a solar-mass star midway to the heart of our galaxy spends about two months moving in and out of alignment with a resident of the galactic core. During that time, the distant star appears progressively brighter and then dimmer.

But if the foreground star possesses a Jupiter-size planet, observers should see a second, measurable lensing effect. The more distant star undergoes additional brightening for a day or two as the

planet further distorts the stellar image, Paczynski and his Princeton colleague Shude Mao reported in the June 20, 1991 *ASTROPHYSICAL JOURNAL LETTERS*. Thus, the ephemeral brightening of a star near the heart of our galaxy may spotlight a planetary system lurking among the swarms of stars that reside between the distant object and Earth.

These notions might have remained idle speculation, since lensing by a planetary system would occur rarely, says Paczynski. But large-scale electronic light detectors now enable astronomers to monitor the brightness of 10 million stars near the Milky Way's center each night, boosting the odds of discovering a lens at work. And Andrew Gould and Abraham Loeb of the Institute for Advanced Study in Princeton calculate that a Jupiter-like planet orbiting a solar-mass star that lies midway to the galactic core would further distort light from a core star in some 20 percent of lensing events. They will report their work this fall in the *ASTROPHYSICAL JOURNAL*.

Taking advances in both theory and experiment to heart, researchers are now looking for lenses in our galaxy. Last month, Paczynski and his colleagues began their search with a 14-inch telescope at Las Campanas Observatory in La Serena, Chile. First on the agenda, he says, is to identify those stars at our galactic center that intrinsically vary in brightness, so his team won't mistake such changes for lensing.

And next month at the Mount Stromlo Observatory near Canberra, Australia, a team led by Charles Alcock of the Lawrence Livermore (Calif.) National Laboratory will set up shop with the largest electronic light detector ever built for astronomy. This study aims to uncover small black holes, brown dwarfs and other unseen objects in our galaxy's halo. But the researchers will also turn their attention to the heart of the Milky Way and expect to detect planetary systems if they lurk there, Alcock says. — R. Cowen