the CDC. In emergency room records, people who come in with slit wrists are simply recorded as having lacerations. O'Carroll says he found that when he looked up figures on aspirin overdoses in the National Hospital Discharge Survey, they were coded "accidental" even though there was a clear increase in such overdoses among late adolescents.

Litman and psychiatrist Norman L. Farberow of the Los Angeles Suicide Prevention Center are now conducting a survey to better identify youths susceptible to suicide as part of a 5-year program recently enacted by the California legislature. This involves a random survey of 1000 teenagers and a like number of parents. Teens are being asked if they know anyone who has tried to harm or kill himself; why they did it; and what could have been done to prevent it. They are then asked if they themselves have considered or attempted suicide. Between 11 and 12% report attempts.

Data on psychopathology and suicide in the families of victims has become increasingly important as researchers look for evidence of biological influences. Shaffer's study has found that one-third of the suicide victims had relatives who attempted suicide. He hopes to illuminate the family question further by looking at family psychopathology, particularly the rate of bipolar illness (manic depression). Measures are also being taken of 5HIAA (5-hydroxyindoleacetic acid), a serotonin metabolite, low levels of which have been found in the spinal fluid of violent suicide attempters. Shafii, in his study, is testing levels of urinary melatonin, a product of serotonin secreted by the pineal gland, in people admitted to the hospital for suicidality.

NIMH has become very interested in suicide among youth and has organized three conferences: on risk factors, prevention and intervention, and strategies for the future. The first conference, held in May, reported that "comorbidity (or co-occurrence) of antisocial and depressive symptoms appears to be a particularly lethal combination." Participants recommended a closer look at high risk groups, for example the children of a depressive mother and an alcoholic father, a frequent combination and one highly likely to produce disturbed offspring. ■ CONSTANCE HOLDEN

ADDITIONAL READING

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Briefing:

Astronomers Find Their First Embryonic Star

The nearby regions of the Milky Way offer abundant evidence that star formation is an ongoing process. Astronomers have mapped out the dense molecular clouds where stars condense from interstellar gas. They have photographed clusters of hot young stars ionizing the surrounding cloud material with intense ultraviolet radiation. They have seen massive stars no more than a few million years old exploding as supernovas. And yet, despite years of searching, astronomers have never been able to catch an embryonic star at the moment of formation.

Now, however, a team of researchers from the Universities of Arizona and Missouri* have done just that. "We're pretty confident we've actually detected the collapse," says team member Charles J. Lada of Arizona. "And that's very exciting, because it's the first observation we can use to test our theories of the star formation process."

What has made the detection challenging, he explains, is that star formation takes place behind a kind of interstellar smoke screen. The molecular clouds consist of dense molecular hydrogen laced with interstellar dust, and are essentially opaque to visible light. Only in the 1970's did astronomers develop the instrumentation to peer into the clouds at infrared and microwave wavelengths, where the gas is much more transparent and where the warm regions of active star formation tend to shine most brightly.

"Infrared sources were found in great numbers in the 1970's," says Lada. "A couple of dozen of those had spectral signatures that led us to believe they were protostars—that is, stars still in the process of pulling together material by gravity. But then we got worried. Whenever you started looking in detail, you always found that the best candidates for protostars were actually sources of very energetic outflows." Indeed, these outflows are now thought to be ubiquitous: for reasons that no one fully understands, every young star appears to go through a phase where it sends massive amounts of material streaming back into interstellar space. Understanding just how and why such outflows begin is in fact a major reason that astronomers want to study embryonic stars.

The star that finally ended the search was actually first detected by the Infrared Astronomy Satellite (IRAS), as part of the spacecraft's pioneering infrared survey in 1983. IRAS 1629A, as the object is known, lies about 520 light years from Earth in the Rho Ophiuchi molecular cloud, which in turn lies just north of the bright star Antares in the constellation of Scorpius. The Rho Ophiuchi region is well studied—it is one of the closest molecular clouds—but this particular source had never been noticed before; Lada and his colleagues accordingly examined it in detail last January using the National Radio Astronomy Observatory's 12-meter dish located on Kitt Peak in Arizona. They looked specifically at two transition lines of the carbon monosulfide molecule, which is sufficiently abundant in the cloud to serve as a tracer of the overall gas motions.

The astronomers already knew that IRAS 1629A is emitting strong jets of material into the surrounding molecular cloud, just as other such infrared sources do. However, they found that the object shows a definite elongation along the direction perpendicular to the jets, which suggested that it might be a disklike structure with the jets squirting out the axis of the disk. (If so, the disk is about 1600 astronomical units across, or about 20 times the diameter of Pluto's orbit in our own solar system.) And when Lada and his colleagues scanned across the source in the direction of elongation, they found emission-line profiles that showed the clear signature of infalling gas. Indeed, through a careful analysis of the profiles they could infer that the inner parts of IRAS 1629A are collapsing onto a central core—the embryonic star itself—while the outer parts are static. "This is exactly what you would expect," says Lada. "Most theories of star formation imply that protostars will collapse from the inside out."

A comparison of the data with standard theories also suggests that the collapse of IRAS 1629A began only about 30,000 years ago, which makes the object extremely young by stellar standards. If the collapse should continue for another 100,000 years or so, notes Lada, the central core will have approximately the same mass as our sun. "So what we're seeing here is something very similar to what happened when our own solar system formed." ■

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*Christopher K. Walker, Charles J. Lada, Erick T. Young, and Phillip R. Maloney, University of Arizona; Bruce A. Wilking, University of Missouri.

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